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Reviewed Article:

The Itinerant Artist: Portraiting Early America Using Scissors, Soot and Beer

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Hundreds of thousands of profile portraits known as silhouettes were created in the new United States in the first decade of 1800 alone. Since the 1990s, museum conservators have wondered how to best care for the materials of these objects in their collection, and a key to understanding conservation is to understand the original fabrication. Volumes of histories have been written of the art and artists, but few analyses and no published experimental studies about the materials themselves have been produced.

> Silhouette portraiture is often recognized by the public as "quaint old-timey" portraits, as cute pictures made in Disneyworld, made by street artists in Paris, on historical house walls, or related to the cameo jewellery from their mother's jewellery boxes. The stark black profile figures on a light-colored background are highly recognizable as portraits from the past, but often the public does not know from what era they originate or much else about these portraits.

Preface

I started this project with three words: "soot and beer". These ingredients, specified from English sources in the eighteenth century, seemed to have been mentioned as an unofficial recipe. I was intrigued by these words (Jackson, 1911, pp.28, 45; Bolton, 1915, pp.31-32; Woodiwiss, 1965, p.33). In an era before black paper became readily available commercially, art historians have barely mentioned silhouette materials at all. Historians of silhouettes (Jackson, 1911, pp.24, 40-41); Woodiwiss, 1965, p.19); and only one French artist, Auguste Edouart, referenced materials in his own words: "*...I produced the Likeness; the paper being white, I took the black* [soot] *of the* [candle] *snuffers, and rubbed it on with my fingers...*" (Edouart, 1835, p.6) "*...The beauty of those Likenesses consists in preserving the dead black, of which the paper is composed...*" (Edouart, 1835, p.13). "Dead black" is mentioned eight times in Coke (1913, pp. 56, 59, 78, 142, 170, 241, 252, 308). The few conservation analyses (Smith, 1995; Knipe, 2002; Fallon and Lockshin, 2008), offer a detailed dive and ask many important questions about materials and methods, but do not answer the questions of "how". While modern people struggle to understand methods of the past, contemporaneous people thought that the tradecraft of silhouette portraiture was unimportant to discuss: "*Little mention is made of freehand paper or vellum cutting in the early written treatises, probably because, needing only talent for catching a likeness and skill in wielding the scissors, there was little to be said about it*" (Jackson, 1911, p.49)

My practical experiments follow behind their scientific analyses by making theories and carrying out experiments using possible 18th- and early 19th-century resources. This study attempted to recreate silhouette artist's 'black paper' made in the era approximately 1780-1820, accounting for the factors of artist itinerancy, a main driver of this craft. Given the limited number of direct primary sources, I experimented with clues from multiple sources and compared these references to known conservation scientific analyses. I believe that itinerancy was a factor in supply management and quality control.

Introduction

My initial theory was that itinerant silhouette artists in early America created their own 'black paper' due to the difficulties of obtaining supplies during the rigours of travel in this era. I theorized that artists used soot from lamps (or wood fires) found in the fireplaces of their

overnight accommodations in inns or taverns, mixed with easily available beer in the same taverns, to create their blackened papers as they travelled. Itinerant artists may have less opportunity to purchase ready-made materials so may have made some of their own. The materials that they obtain may vary depending on fabrication, sourcing, or a combination of both. Even the stressors of itinerancy and the nature of different materials could change the quality of artists' work. Since itinerant artists seemed to be outside of the typical British craft guild system, (see the section on itinerancy) I theorised that these independent itinerants used the information contained in published pamphlets of artist techniques and recipes to learn about and mix their own materials without a need for formal apprenticeship and structure passed down from a trade-master.

My research centered around physical experimentation of "soot and beer" coatings, but soon exploded into an experiential investigation of itinerancy itself. Artist itinerancy requires understanding small-scale commerce, marketing, travel, accommodations, carting (transporting supplies), sourcing, and problem-solving. Overall, these experiments are meant to build upon previous research and analyses, then focus on elements of interest to my host site, while giving an experiential voice to the process.

As the 2024 EXARC fellow to Colonial Williamsburg Foundation, the largest American history museum in the United States, it felt important to seek answers to this iconic portrait form of the early modern era, especially given the over 1500 silhouettes in its collection. Due to my host's focus on the colonial Virginia capital city of Williamsburg, I stayed within the time period before and after the American Revolution against its mother country, England, although there are vast amounts of profiles made in this era across North America, England, France, and Germany.

This paper will review my initial theory, the cultural background underneath my theory; the materials and methods to reproduce the pigments; my results; and conclusions with discussion.

Background, cultural notes, and definitions

Silhouettes were profile portraits, generally as a simple dark image of the sitter with a light-coloured background. In the American Colonies and early United States during the 18th and early 19th centuries, these portraits were affordable to the middle classes and easily afforded by the wealthier.

Silhouette artists in the American colonies and early Federal period were often itinerant, travelling on few or difficult roads offering likenesses to people unable to afford painted portraits, or to wealthy customers who collected both expensive and inexpensive portraits (Benes, 2016). Artisans traveled from town to town, creating brief residencies, and experiencing a myriad of technical and social challenges.

Silhouettes in America, like all crafts and trades, originally came from its motherland England, as well as influences from the travellers and settlers from German- and French-speaking cultures. The American Colonies were, first and foremost, a subset of the British Empire's culture and subject to its laws. British laws and customs about trade, craft, and labour show this dominance (see below, on Itinerancy). Likenesses were first mentioned in England in the modern era in a diary dated 1699, with references throughout the 18th century; Germany and France experienced a popular experience of profile likenesses due to the adoption by the upper classes (Jackson, 1911, pp.16-18). Silhouettes in the German lands were important enough to require a court silhouettist in Berlin in 1770 (Jackson, 1911, p.91). Cut silhouettes in Britain have been referenced as early as 1748 (McKechnie, 1978, p.181). As the American Colonists were considered British subjects, travel between England and the Colonies would undoubtedly influence travellers who could see craft and popular culture in England, including, but not limited to, stationary artists or itinerant artists."Mrs Collins" (McKnechnie, 1978, p.197); and her teacher, "Mrs. Harrington" (McKnechnie, 1978, p.223,) who seemed to do early work in the 1770s using a camera obscura. Any American artist or operator might have been inspired by these British artists, as well as the German and French silhouettes, to make a similar quick and inexpensive black and white profile. Indeed, King George III (b.1760-d.1820) loved having his profile made (Jackson, 1911, p.74). After the end of the American War for Independence (1776-1783), and the focus on building a new society based on free-market systems, less expensive portrait forms arrived.These portrait forms included, but were not limited to profile portraits.

Cut silhouettes - as all works made by human hands - vary in all materials, quality, colour, and variety. Even silhouettes by the same person could differ from year to year, month to month, day to day, and even hour by hour. There are two different types of silhouettes: "cut-and-paste", whereby the figure is the dark (or black) colour, pasted onto a lighter surface (See Figure 1); and "hollow-cut", whereby the white background is cut in the shape of a silhouette with the black background placed behind it (See Figure 2). The former is a *positive* figure in black; the latter is a *negative space*, backed with black. This paper will refer to the blackness which could be used in either cut-and-paste *or* hollow-cut, and will refer to these elements.

For example, the silhouette artist Auguste Edouart (active 1825-c.1849) used the cut-and-paste method, while Raphaelle Peale (active 1804, using a physiognotrace) worked in hollow-cut. A physiognotrace machine traced a human's face to attempt to create an accurate profile likeness; a machine was used when machine operator had no artistic talent to render an accurate portrait, or when the operator wanted to convey a sense of scientific accuracy of the profile, instead making any aesthetic changes the representation of the sitter. There were many different types of physiognotrace machines, ranging from pantograph machines, to direct tracings to machines using a shadow. The word phyiognotrace comes from the French: *physiogno-* (face) and *tracer* (to draw). In general, artists using a face-tracing machine created a profile drawing on a small piece of paper. These profile drawings were then cut from paper

using the hollow-cut method. (Benes, 2016, pp.314-328). While there were profile artists who worked in engraving and pastel crayon, we will focus only on the "black shade" artists (Edouart, 1835). This paper will focus on the black coated paper itself, but not the methods of making silhouettes. Discussions about itinerant physiognotrace operators will be addressed at the end of this paper.

Woodiwiss suggests economic conditions for British expansion of cut-paper silhouettes, "an experienced artist could earn more money in small amounts each day than would have been possible by the slower and more complicated process of painting". (Woodiwiss, 1965, p.72) Additionally, he writes, "[countryside] *scissor-workers were cleverer than their* [painting] *predecessors*..." By the word 'countryside', and the example that he offers, he seems to mean itinerant silhouette artists: travelling, working, and earning income with scissors and paper.

Artist manuals have been providing instructions and recipes for centuries and in many languages (Reissland, 2022). This paper will endeavour to give attention to the fact that these manuals have varied (and voluminous) details which normally would be passed down in the master's shop; but were, for the attentive, clever and independent-minded craftsperson, accessible for anyone with the place to buy a manual and the money to pay for it.

Itinerancy; artists outside of the apprentice system

Itinerancy - the act of moving from place to place in the course of business - could easily be a major factor in the materials of silhouettes. In the American colonies, many crafts tradespeople - called "artificers" - formed a system of apprenticeship, journeymen, and masters for certain trades. In England, the master-ship was called "freemen". This apprentice system, set forth from the 1563 British Statute of Artificers set to regulate labour, was still technically in effect when North America was still ruled by King George III in London. The original act seemed to be on containing vagrancy, preventing labour shortages (Davies, 1956, p.7), controlling strikes, and keeping the rural poor from sending their children into towns (Woodward, 1980). The guild system in England, the American colonies, and the new United States, controlled craft membership; access to the "arts and mysteries" (techniques, recipes, methods, etc) was also clearly controlled as well (Rorabaugh, 1986). Visual artists (painters, portraitists, etc) do not seem to be mentioned as requiring apprenticeship in the British apprentice system, and perhaps were not covered by any guild system. The 1563 Parlaimentary Statute seems to not mention visual artists but it is unclear. Statute of 1563, section XXIV: "[...] *it shall not be lawful to any person or persons, other than such as now do lawfully use or exercise any Art, Mystery or Manual Occupation, to set up occupied use or exercise any Craft Mystery now used or occupied within the unless he hath been Realme of Englande or Wales, Except he shall have been brought up therein Seven years at the least as Apprentice* [...]" Many continental European guilds did cover some artists. However, the apprentice system did notcontinue in pre- and post-Revolutionary United States due to the

"dynamic settler society" and difficulties of indenture enforcement created competitive labour markets (Elbaum, 1989). The confusion about the legitimacy of travelling artists was further complicated by an original set of British vagrancy laws, The Vagabonds Act of 1597, and subsequent colonial laws, which attempted to corral those people who had no property.

The increase of how-to books and pamphlets both in England and in the Colonies spread the "mysteries" until they were no longer any mystery (See Figure 3) (Rorabaugh, 1986, Chapter 2; Mortimer, 2012, Chapter 11). Artist manuals, available to those who could read, passed knowledge to those readers who found the writings and could practically experiment with the contents; including (but not limited to) the use of making inks, using inks, mixing pigments, and production of other art methods. As a good example: in 1762 Charles Willson Peale, journeyman saddler, purchased a copy of *Handmade to the Arts* (1758), traded some saddles to the artist Hessalius for three days of portrait painting observations, and newly-styled himself as a painter. He continued to work as a painter and then as a museum innovator (Miller, 1983, p.33). "*No longer would tradition dictate how life was lived or business conducted...everything under the sun was open to challenge - to improvement.*" (Rorabaugh, 1986, p.58)

Inks of the period: black and not quite black

It was difficult to choose whether to look into "paints" or "inks" to define, research, and test the coatings for these papers. Smith (1995), Knipe (2002) and Fallon and Lockshin (2008) have conducted chemical analysis of original silhouettes to be able to conserve and preserve the many thousands of silhouettes in museum collections. These museum collections hold historical portraiture as well as popular culture, which makes silhouettes culturally valuable. Previous analyses have theorized the black of the papers as "coatings", a layer of a particular substance that covers a surface. (Knipe, 2002).

To colour a surface, there must be one to four factors: the colour (the dye or pigment, although this study is restricted to pigments, used hereafter in discussion), a substance which binds the pigment molecules to itself (the binder), the substance which binds the pigment to the surface, and a solvent or carrier, which dissolves or dilutes the binder in solution. Because beer was mentioned in Jackson (1911), it was with beer that I started the search.

Interest in black profiles was spurred by the British and Europeans taking their Grand Tours to Italy and Greece, and being inspired by the classic art, architecture and culture (Jackson, 1911, pp.13, 81). To explain the 18th and 19th-century silhouettes' blacking "coating" (Smith, 1995; Knipe, 2002; Fallon and Lockshin, 2008) we must define the difference between ink, paint, and coating. Since I have defined coating above, ink is defined as "colored liquid used for writing, printing, and drawing" and paint as "a colored liquid that is put on a surface such as a wall to decorate it". As paint and ink are similar, historical uses for each word assist in their definitions. This gave me historical choices for using black colour, whether ink or paint.

Watercolour "paints" as we know them had not emerged into British culture until 1804 (Krill, 2002, p.184), so ink seemed like the direction to search. To define inks that were used in the American period of the latter 18th and early 19th century, one must define what came beforeas well as during this period .

Lampblack-and its cousins carbon black, ivory black, and bone black-have been used as carbon pigment. The first known discoveries of human "art" cave paintings 19,000 years ago have shown that the earliest paintings were charcoal (Reiche, et al., 2023). Lampblack was used to make ink in various cultures for thousands of years, until the emergence of iron gall ink in the fifth century AD (Christiansen, 2017). Lampblack is black carbon, the semi-combusted black powder residue gathered from a flame when burning an oily or resinous substance, such as burning the wood of pine trees or using a flame made with fat or oil. Oil lamps, tallow candles made with animal fat, or lamps made with burning oily or fatty substances within a casing (such as the "rushlights" using reed) release lots of carbon soot. Depending on what material is being burned, the carbon residue differs in its chemical makeup; however, each carbon-black appears to the naked eye as black, blue-black, dark-grey-black, or a brownish-black. *Atramentum* is the Latin term for very black ink (Cennini, *Book of the Art*, circa 1340-1427; Eastaugh, et al., 2007). The artist's manuals through the centuries provide colour descriptions of each black and its source: lampblack, ivory-black, bone-black, vine-black, and more. This paper will focus on lampblack.

Gutenberg used lampblack inks for his printing press (Stinely, 2024), and the inks for presses continued into the American Colonial period. Peacham (1612) said: "*The making of ordinary Lamp blacke. Take a torch or linke, and hold it under the bottome of a latten basen, and as it groweth to be furd and blacke within, strike it with a feather into some shell or other, and grinde it with gumme water* [...]" Printers continue to use lampblack as the base of their black ink, but the binder varies; in Colonial Williamsburg today, Pete Stinely, the master printer in Colonial Williamsburg, mixes his powdered lampblack with linseed oil for making his printing inks by hand.

During the late eighteenth century CE, iron gall ink was the prevalent writing ink of the period. It is best used on vellum (fine calfskin) or parchment (sheep or goatskin), as it etches the surface (Gupta, 2021). Iron gall ink fades to a red/brown and is known to create breaking lines and holes in some papers. I have disregarded the use of iron gall ink as coatings for silhouette papers for three reasons:

- Lampblack or carbon black has been seen in analyses (Smith, 1995; Knipe 2002)
- Iron gall ink was tested in analyses and found *not* to be present (Fallon and Lockshin, 2008)
- Casual, non-technical observations of silhouettes with both very-black background coatings and manuscript (handwriting) on the same artwork shows different colour, hue,

pigment. I theorize that the writing was iron gall ink and the coating was a lampblack pigment coating of some type. The Bache silhouette book's analysis (Fallon and Lockshin, 2008) supports my visual observation.

Homemade (non-commercially made) ink was not unknown in the 18th and early 19th centuries; there have been several famous British writers who have made ink for their own needs, including Robert Burns, Isaac Newton, and Jane Austen. All three of these homemade ink-makers also used beer (especially stale beer), in their recipes. Indeed, in *School of Arts,* 1740, there is a recipe for beer in a writing ink (Smith, 1740, p.145). Homemade ink for writing purposes will not be addressed in detail in this paper, but only lightly referred to as an example of homemade ink, especially with beer, in the 18th and 19th centuries.

Beer as an art ingredient

This paper will refer to grain and hopped drinking products generally as "beer", instead of defining in detail the many brewed grain products including, but not limited to: small beer, strong beer, beer, ale, mum (spiced beer), porter, et cetera. Beer is, in general, the process of mixing grains in hot water with yeast. Beer can be drunk fresh (ale) or put aside to ferment (beer), and its poured-off water (the "wort") used as well.

Inks or paint have some sort of liquid content, ideally water. However, water sources have not been 100% clean for several centuries in England, whether it has been river water sources, standing water, or pumped water. Many contemporaneous artist manuals that refer to water also mention the necessity of a pure water source, and indicate the purest possible: rainwater or distilled water (eg; Smith, 1740, p.145; Newton, et al., 2018, pp.5-6). When reading many of these manuals, the specificity to clean water was clear, however, each contemporaneous recipe did not specify *from what* the water needed to be clean, during this era when mould theory was not yet widely known. Robert Hooke's Micrographia was published in 1665 (Hooke, 1665) discussing microbes, and even Smith, 1740, understood that water doesn't stay fresh for long, and how to mitigate the factors of 'fouled' water. (Smith, 1740, pp.145-148)

Lampblack, as partially-burned hydrocarbons, is hydrophobic (does not combine, nor wash well, with water), and cannot be mixed with only water; this means water-only cannot be a binder within the final media. It is necessary to have a liquid that can be combined ("mulled") with the lampblack to make a thin, ink-like emulsion. Mulling is the art process to reduce the pigment particle size and ensure that the particulate matter is wetted, coated, and intermixed with the binder. Beer wort is mentioned as a useful binder in *Handmade to the Arts*, "...the wort of ale or beer, either in its original state or rendered thicker by boiling, has been found to answer the end of a binder... As it gives them a proper cohesion, by its viscosity, without drying to that brittle state to which the gums are subject [...]" (Dossie, 1758, p.188). Beer-making requires pouring out the soaking grain water (the wort) which is essentially sugar water; sugar is antimicrobial (Mizzi, et al., 2020). Hops, found in beer products which need to

sit without getting mouldy, are also antimicrobial (Kolenc, et al., 2006). Beer to which the hops have been added is essentially boiled sugar protein water which is antimicrobial and not hydrophobic; beer was easily obtained in both rural and urban settings in the United States from 1780 to 1815. (Smith 1995 analyses found protein, which could be beer, or perhaps isinglass)

Cennini mentions beer as an ingredient with which to grind pigment (*Book of the Art)*, with the interesting mention that it refers to a source 400 years earlier, Eraclius: "'*...all* [pigment] *colours may be ground with clear water, if they are allowed to dry-and then with white of egg, or oil, or gum-water, or wine, or cervisia (beer)* [...]" In addition, cereal grain residue, or beer/baker's yeasts, has been found in scientific analyses of Dutch paintings of the 1820s and 1830s (Di Gianvincenzo, et al., 2023), using the same arguments as here: a common liquid, which is used as a binder and emulsifier as well as having the side benefit of being antimicrobial, used in the production of paint substances in the same era. Smith, in *School of Arts*, mentions "*iron filings steept in beer and Urin make a good black.*" (Smith, 1740, p.153).

Gum arabic

Gums, including arabic (*Acacia*, originally from the Middle East and Africa), senegal *(Senegalia,* originally from sub-Saharan Africa, the Middle East, and India*)*, and its cousins, such as tragacanth (*Astragalus* from the Middle East) and dammar (*Dipterocarpaceae,* from South Asia), are resins from the sap of trees, used as early as the 17th century BC. Each gum type is used as a binder in various ways for different trades/crafts The gums are purchased as raw materials and crushed when needed. These resins are polysaccharides (a.k.a., sugars) which thicken and bind the pigment to the liquid in which it is used. Gum arabic is dissolved in warm or boiling water; and was used in the 18th century as adhesives and binders, including, but not limited to, arts, candies and medicines. (Cottner, 2024) "[...] *the principal reason of their preference to other bodies, which render water viscid and glutinous ... the mixture made of them with the colours to be instantly reduced to a working state* [...]*" and "The gums have, nevertheless, a very untoward quality, when mixed with most kinds of pigments, which is their being very liable to crack and peel off from the paper or vellum* [...]"
(Dossie, 1758, p.136).

Dry pigment generally can be mixed with gummed water (gum arabic dissolved in water), but to make a long-lasting ink with gum arabic a refined sugar is often required: "Dissolve one ounce of pure white gum-arabic, and half an ounce of double-refined sugar, in a quart of spring water; strain it through a fine sieve or a piece of muslin, and bottle it off for use, keeping it free from dust [...]" (Dossie, 1758). Note again in this example that spring water, a clean source of water unable to grow algae because it is moving, is encouraged with sugar added, without explaining the use of each. "Sugar-candy has the admirable virtue of restoring bad ink into good. It blackens it, renders it shiny, and makes it run properly." (Hay, 1775)

Smith's original analysis from 1995 mentions "gum ghatti" (*Anogeissus latifolia)* as the gum source analyzed in Edouart's silhouette coatings. The trees featuring gum ghatti and gum arabic grow in different places, and gum arabic seems to have a longer history.

Paper

While some important documents were still made on calfskin vellum parchment mid-to late 18th century, daily writing paper made from leftover cloth (or cloth scraps) was hand-made in a mold per sheet, over wires; the impression of these wires was seen in the paper. Large-scale paper manufacturing was minimal. 1799 saw the invention of the first continuous-sheet paper-making machinery in France, with new mills and improvements occurring rapidly, including continuous-sheet manufacture of wood-pulp wove paper. Williamsburg-based historical bookbinder Bob Lyon recommended keeping in mind this general rule: hand-made cotton paper: 18th century; wood-pulp wove paper: 19th century (Lyon, 2023).

My experiments were conducted on these types of paper as would have been available in the 18th and early 19th centuries: chiefly, laid paper, albeit from modern (not antique) large-scale manufacture.

The question of later-19th century commercially available black paper for the profiles will be addressed in the Discussion section of this paper. However, it is important to remember that as this paper hews to a specific era in American history, we will address the methods of itinerant artists, before the invention of larger-scale commercial manufacture. Even Brückle (1993), mentioned, "...[regarding] *the overall surface tinting of paper... single coloured paper sheets belong to the craftsman's or artist's (sic) rather than the papermaker's domain.*"

My experiments: materials and methods

This experiment began with the effort to be as scientific as possible for my experiments: tightly controlled measurements of materials. I began by photographing my measured materials to identify the amounts used. My original methods - inspired by my desire to hew towards scientific precision - contrasted with period art books often mentioning approximate or no measurements at all. At first, these vague descriptions felt frustrating. After my first few sessions mixing materials, I realised why period 'art recipes' may have decided to use vague measurements like: "*a little*", "*dissolve what quantity you want* [...]" and "*it would be improper to add* [...]" (Hay, 1775, throughout); variations in conditions: humidity in the room, beer type, lampblack type (lampblack made by different sources or hand-made, or ivory black) all affected the measurements of my experiments.

The Mid-Atlantic seaboard of the United States can vary between dry and humid, cold or warm, sometimes daily, hourly, or a fraction of an hour. In addition, buildings vary in relative humidity depending on their construction. I realised that varied environmental conditions,

even indoors, variations in beer, differences in the age of beer, and lampblack made from different manufacturers would have affected travelling artists, as well as regions whose humidity and temperatures varied widely throughout the year.

I found that I could compensate for differences in source materials and environmental conditions: I treated each new mix like from-scratch bakers make their dough: by starting with a small amount and then adding as needed. I started experimenting with levels of supplies, rather than exact measurements. This "from-scratch" method of practical mixing allowed for all factors such as ambient moisture, cold, heat, or dryness, and simulated the varying conditions that travelling artists would have experienced.

As conditions varied for me each day (see above), I used as a 'gold standard' comparison the final dried samples as the visual comparison to the Bache silhouettes at the Smithsonian Institution, (as described in the Fallon and Lockshin, 2008) some of which showed a varnish-like sheen, some of which showed no sheen, presumably unvarnished.

When possible, I tried the authentic hand-made materials first, weighed the amount of time to create that material, and decided whether to keep the hand-made material as a factor. It is also important to note that when possible, I only used supplies which would fit into an artist's trunk as an artist who would travel between locations.

I also tried a side-experiment experiment using Prussian blue powdered pigment and heated it. Mérimée stated that heated Prussian blue would create black (1839, p.183).

General Ingredients of Black-Ink coated paper which simulates Early American Silhouette Paper

- Lampblack.
- Stale/flat brown beer or ale.
- Gum arabic.
- Top Coating (seen occasionally on William Bache silhouettes): egg glair.

Brushed onto reproduction unbleached laid papers.

Source Notes

Lampblack dry pigments (five different types tested)	1. "Printmaker's Lampblack": source: commercially-bought, commercially-produced lampblack supplied by Colonial Williamsburg printer, as used in their printshop. 2. Ivory Black: Source: Cornelissen in London, England. 3. Lampblack: Source: Cornelissen in London, England. 4. Hand-harvested lampblack from hand-made tallow candle.

	5. Hand-harvested lampblack from pine wood stick: source: pine wood stick found on the woodpiles for cressets at Colonial Williamsburg.
Turkey feathers	for harvesting lampblack: source: Colonial Williamsburg master farmer Edward Schultz.
Large tin cup	for harvesting lampblack: source: Steve DeLisle, master tinsmith, Colonial Williamsburg.
Large ladle	(blacksmith-made) for testing harvesting lampblack: source: farmer Barbara Corson's personal collection.
Mulling tool	Pigment is normally "mulled", or combined completely, with a specially made muller: a flat-bottomed glass tool which uses weight and smoothness to grind binders and pigment. This is called a muller.
Palette knife	a flat knife with a bend partway, with a wooden handle.
Beers (Beer starts going stale after about four days uncorked and unrefrigerated; it slowly starts going vinegar-like)	1. "London's Pride" brand Amber Ale (commercially purchased): recommended by Williamsburg Brewing club member and amateur brewer as the most similar commercially made beer to the original cask-type ales from the era. 4.7% alcohol by volume. Hops: Target, Goldings, Northdown, and Challenger (used both fresh and stale). 2. "Printmaker's Brown Ale": homebrewed traditional style [hopped] ale, circa 1770s recipe, brewed at home by the journeyman printer David Wilson in Colonial Williamsburg (used both fresh uncorked and stale). 3. "Keeping Beer", 1770s: brewed by the Palace Kitchen of Colonial Williamsburg, April 2023 (used both fresh uncorked and stale).
Gum arabic (two types)	1. Gum arabic crystals, mixed 1:2 with hot water to dissolve: *supplied by traditional bookbinder Bob Lyon.* 2. Pre-mixed, pre-dissolved liquid gum arabic, *commercially purchased: Winsor & Newton brand.*
Coating	Egg Glair made with one frothed hen's egg-white and a few drops of Aguadiente.
Thick brush	A brush is needed to brush the pigment onto paper for testing purposes, as well as for "final" paper coating. I used a thick "ponyhair" round brush.
Lab notebook	Handbound notebook, quarto size (9 inches x 6 inches (23cm x 15cm)) using "Canson" Ingres period-similar papers and thin hand-

	marbled paper cover.
Paper types	1. "Neenah Brand Classic Laid" (color: Baronial Ivory) alpha-cellulose paper, (aka wood pulp), ~80 gsm. 2. Unnamed British laid paper, "GR" watermark, may have been cotton, approximately 80-lb paper, ~90gsm, provided by Bob Lyon, historic bookbinder, Williamsburg, VA.
Test	Prussian Blue
Prussian Blue pigment	Source: Provided by historic bookbinder Bob Lyon.

Hand-made lampblack

As my original hypothesis started with the theory that itinerant artists made their lampblack pigment, the first experiment was to make my lampblack. I tested both methods of using pine wood as well as tallow candles and conducted these experiments in safe conditions. Another classic Eastern method of making lampblack is to put oil into a vessel with a wick coming out; the oil provides the fuel for the flame in the same way as the candle or wood method. This oil method will not be detailed here.

Step 1. Making a tallow candle

Materials to make a candle:

- Beef fat (my source: fresh-frozen from a farm-raised calf).
- Cotton candle wick.
- Pot or metal canister large enough to hold melted tallow.
- Location to hang dipped wick between dipping.
- Horizontal stick to hang candles between dipping.

Tallow Candle Method:

1. Find a location where an open flame can be used safely.
2. Melt approximately one-pound (453g) chunk of beef fat, cut into smaller pieces, in a pot. Small pieces melt more easily than one large piece. The melted fat is called tallow.
3. Cut wick lengths 12 - 14 inches long; folded in half, the bottom 6 inches of each string is available for dipping. This means that each side of the folded wick becomes 2 candles.
4. Dip each side of the candle wick into the melted tallow one time. Hang each dipped double wick for 2-8 minutes before dipping again (See Figure 4). The colder the outside temperature, the shorter the time between dipping, as the wax will cool quickly. The warmer the temperature outside, the thinner the wax and the more dips are needed.

5. Final hand-dipped tallow candles for my purposes were approximately 0.5 to 1-inch (1.25cm-2.55cm) in diameter, with approximately 8-10 dips for each thin, small candle. Store after drying and cooling.
6. Storage: Tallow candles are pure fat; so if the smell is an issue, or in a hot climate, store the candles in a cool location, in closed, rodent-proof containers. Keep tallow candles in a labelled sealed plastic bag in a refrigerator or cool area whenever possible, especially in a region with a warm climate. Tallow starts to get soft when temperatures reach 90 - 95 degrees F (32-35 degrees C). Candles should be stored horizontally so that they don't slump.
7. Leftover tallow: leftover tallow can be frozen and reused for any recipe needing tallow.

Step 2. Using a tallow candle or pine wood to harvest lampblack

Lampblack pigment is the result of incomplete combustion of burning material using a fatty or resinous source; tallow candles, oil lamps, and pine wood were all mentioned in the artists' manuals. I will refer to only the candle and the pine wood. Capturing the lampblack pigment is time-consuming and filthy; the pigment is oily as well as black-colour. An oily, "incomplete combustion" soot behaves much differently than a dry, fully combusted soot found in a fireplace; any experimenter needs to understand the differences before embarking on this effort. I called this process "harvesting" the soot. There were several experiments to find the correct vessel and the correct method to harvest the soot into a sealable vessel. I went through this process several times, refining my technique and materials each time. The following will explain the successful procedure only, with any important failures annotated.

Materials:

- Tallow candles (instructions above), OR cut pine wood shard with an obvious heavy amount of pitch.
- Candlestick holder for tallow candle, with its own drip tray.
- Holder for the pine wood if using pine. This holder may grasp the pine wood horizontally or vertically, depending on the size, to be hands-free to harvest the lampblack.
- Lighting source (matches or lighter).
- Feathers of varying firmness (feathers may melt, so have several).
- A smooth metal surface to capture the lampblack (soot). The smoother, the better (see Source Notes above for my recommendation for my era: tin cup). I also used a large metal spoon for my initial tests. It was not as good as the metal cup.
- *Optional:* flat knife (I used an 18th-century style eating knife with no serrations).
- Sealable container. I used a household preserving jar with a rubber seal and metal clasps (brand unknown). All of my dried lampblacks are stored in these containers.

- Have handy: cleaning materials: reusable, washable cloths, disposable paper towels if needed, soap, water, and a bleach-soap solution might be needed to clean ceramic sinks.

Method: Harvesting lampblack

1. An apron (or protection for clothing), preferably wool or 100% cotton. Polyester clothing can melt to itself and skin.
2. Set up a location outdoors where the wind will not blow out the candle (or pine wood); or indoors where the smoke from the candle will not cause blackness on walls, nor set off a fire alarm. I used both an outdoor location and an indoor location at different times. My best location indoors was in an unlit fireplace. Note: both the burning and the "harvesting" are messy, but do not put down easily burning newspaper underneath. If a spark jumps off, it could set the paper on fire. Think about a non-burning surface like wool or a flame-retardant cloth, or just over bricks or ceramic or stone.
3. Gather utensils to collect the soot: the feathers, candle in candlestick holder, and/or pine stick, collection container, (and, if desired test harvesting/scraping with the optional flat knife).
4. If using a stick of cut pine wood, find a way to hold the pinewood so the flame is safe. Place the pine wood in a narrow-necked, ceramic or not-easily-burned metal container container to keep the wood upright.
5. Light the candle or pine wood. If using pine wood, allow it to burn and smoke a bit before applying to the harvesting metal object (in my case, that's the large tin cup). For more precision, I use the words "the metal" to indicate using this object. Observe the burning process; think about how to harness the best flame from the burning source.
6. Hold the metal above the flame; test the best way that the flame makes a sooty blackness without actually charring any metal. The amount of time will be about five seconds or so. Lightly interrupt the flame with your metal object; soot (lampblack) will be deposited on the metal object, Turn the object around the flame, so soot is deposited on the object lightly all over the object (See Figure 5a).
7. Let the metal object cool for a moment before doing the next step.
8. Place the metal object, now covered with soot, over the collection jar. Use the feather to lightly brush over the soot to gently and lightly wipe the powdery soot into the jar (See Figure 5b). The soot which transfers into the jar this way will be lighter and fluffier than any other method of collecting soot.
9. Repeat this process of using the flame to soot up the metal container, cooling it for a moment, and then brushing the soot into the collection container. Depending on the shape of the metal, choose an oblique soot-capturing angle or a direct capturing angle. Soot will be slightly different as you go through this process. It will take many times to fill the container using this method; perhaps many hours and/or days.

Step 3. Inky options: Mixing lampblack with binders

Now that we have lampblack, it's time to make pigment using binders - in this case, beer and gum arabic. Observe smooth flow versus runniness to feel for grittiness. Watch for the ingredients to combine well, artists are accustomed to observing minute differences in inks, paints, and glues in thickness, flow, wetness or dryness. The differences in these factors will change the output. However, non-artists can develop these observational senses, using experimentation time well. I started testing each different soot (hand-made lampblack harvested with a flat knife; hand-made lampblack harvested with a feather; printer's lampblack; Cornelissen Lampblack; and Cornelissen ivory black). Details below, before the materials and methods:

1. The hand-made lampblack which I tried to scrape with a knife was lumpy, so I tried a small mortar and pestle (Maker: Haldenwanger, item 55, size: 75ml) to pound the soot curls into powder. However, I found that hand-made lampblack clings to the pestle due to the oily nature of the soot; it wasn't very efficient to use this pulverizing method with this material. I abandoned using the scraped lampblack and started using only the commercially made powders.
2. The hand-made feather-harvested lampblack was decent enough but I didn't have enough of this pigment to make more than one test. It was very complicated to hand-make lampblack, and then harvest with a feather, so I had very little.
3. The Cornelissen ivory black was not as finely ground, so I abandoned using that item.
4. The Cornelissen lampblack was good, however:
5. I stayed with the Williamsburg Printer Lampblack for most of the rest of the experiments. *(Details of using lampblack from printers in the Discussion).*

Pre-made lampblack was available in the era and location of my research, due to the global British trade routes. Whether or not you make your lampblack, or purchase lampblack pre-made, both methods should work for you to test making your pigment. I suggest trying each method when possible.

Materials:

- Materials mentioned above: Palette knife, beer, mulling tool, apron.
- Protection for the table from the filthy lampblack. I used a glass table for mixing, which could be cleanly washed of lamplack.
- Empty wide-mouthed jar with a sealable lid. I used a leftover jar from commercial jam or preservatives.
- Paper/tape to label jar.
- Flat-bottomed dish or plate to serve as a mixing plate. This cannot be wooden; it is not to absorb liquid. My plate was a white ceramic plate with lifted edges and a flat bottom,

purchased at the American store Target. My plate resembled a plain creamware colour, similar to a plate colour of the late 18th century

- Gum arabic, prepared by hand as per traditional recipes and also commercially manufactured fluid. Both versions worked equally, however, using hand-made required hours of cool-down.
- Handbound lab notebook (See Figure 6) using Canson Ingres laid paper.
- Neenah Brand Classic Laid paper, cut into 3-inch (~7.5 cm) squares, plus larger cut paper of 5-inch (~12.5 cm) squares. These will be for testing larger pieces (prior to preparing larger silhouette papers).
- Optional: corkboard (or something to receive pins), at least 12 inches square (30.5 cm square) + pins.
- Butcher paper or other unprinted paper for trying the test-squares.

Method: Making the black coating

The following materials and methods are provided for technical reproduction of the black coating. The Results are listed before Conclusions and Discussion in this paper. There were many tests using different beers as well. The type of beer from my list (above) didn't matter, since every beer used was a brown-hued 18th century-recipe (or style) beer, brewed with hops, and fermented for at least 8 weeks. My best results came when I used stale beer, a beer left outside of refrigeration and uncorked for 4-10 days. These good results with stale beer could have been accidental: perhaps I learned enough through the experimentation process how to mix the right amounts of ingredients *as well as* using a stale beer.

1. Mix together in a glass container: 1:1 gum arabic + beer ("GA + Beer"); put in a sealable jar.
2. Spoon onto plate 1 teaspoon (5ml) lampblack pigment. As stated above, I stayed with the "Williamsburg Printer" lampblack for consistency with the Historic Area. If I was a traveling artist I would have bought the lampblack from the printer, or possibly from the same source from which he bought his lampblack.
3. Drip GA+Beer mixture onto lampblack, starting with 2 drops. Mix with a palette knife like a dough, mixing all the wet into the dry, folding the dry into the wet over and over. Look for a wet but not a dripping/running texture. Spread across the plate, but not near the edges.
4. Place the muller on the wet mixture, flat/thick side down. Use one hand to steady the plate, and the other hand to move the muller in circles on the plate. This method is grinding the liquid into the pigment, and thoroughly mixing the dry into the wet. Continue to mull for at least 5 full minutes. This paint-like/ink-like emulsion is what we are going to call the "black coating" for the paper (See Figure 7).

5. Test the coating on paper using the brush. I used a reproduction handbound lab notebook made from laid Canson Ingres paper, a paper similar to a thicker writing paper of the era. This bound book provided a firm ground to receive the first impressions of the coating colour and thickness. Wait until the brushstrokes are fully dry to see the results. You will be looking for factors of; barely thicker than your original paper, smooth with no brushstrokes, even colour, as black as possible, opaque, and contained (not coming off). Note your results.
6. If the dried coating is too thick, and you still have a wet mixture, drip an additional 1-2 drops into your mixture before mixing with the palette knife and then mulling again. Use the brush to take another sample on your paper, note the mixture, and try again. The goal is to make a thin opaque coating which, after drying, does not come off when you lightly wipe your finger across it.
7. (It is important to write down your results. Every day could be different for the measurements of ingredients in each try due to all conditions).

   The next step after finding the correct coating "recipe" for your day is to try coating a piece of unbound, loose paper. As most artists would be using single sheets of paper for their artwork, our effort is to identify how to coat the daily supplies of silhouette paper to use with customers. I tried two methods: coating paper and pinning these wet, coated sheets on a corkboard and also coating sheets without pinning them down first. The method will pick up after finding a correct coating thinness *(as stated above)*:

8. Pin down several small inked/painted/blacked squares and also several large squares of test paper.
9. Use the brush to coat each test square with the brush.
10. Wait until each square is dry to review your final coating. What factors please you for your final work? Is the coating flexible, yet stays on the paper without little (if any) powdery residue?
11. Next, try to coat unpinned paper: you will coat both small and large pieces of paper which are lying on a surface. I used unprinted butcher paper spread over my table surface, and placed the pieces of paper on top of the butcher paper. As you coat the paper surface, your bush may accidentally wipe the coating outside your paper onto the protective butcher paper.
12. The coated unpinned paper will curl when a liquid is coated on one side. Be calm and watch: the paper will curl up and then flatten out on its own.
13. Review each type of coating to determine your desired thickness of the coating, its resiliency when handled, and relative flatness, along with other criteria of craftsmanship as you need. Note your results (See Fig 8 for both pinned and unpinned methods).

Step 4. Coating paper with soot, beer, and egg:

It was important for my experiments to consider all the silhouettes I had seen in person in collections, as well as consider the technical analyses from Smith (1995), Knipe (1999, 2002) and Fallon and Lockshin (2008), yet focusing on my era (pre-1820). As Smith saw Prussian blue in Edouart's coatings from the era outside of my focus, but my initial experiments with Prussian blue were unsatisfactory so I left it aside to follow methods without adding Prussian blue, including trying to reproduce the sheen as seen in the Bache silhouettes mentioned by Fallon and Lockshin.

As Fallon and Lockshin mentioned "sign painter's glair" as a possible major varnish (top coat) component of the Bache silhouette book, "glair is the name for the liquid which leeches from the froth of eggs, and offers an answer to the albumen (egg white) seen in the Fallon and Lockshin analysis. As eggs will go bad if left uncooled, I used a clear alcoholic spirit to help preserve the egg longer: I chose Aguardiente, a sugar cane alcohol. My reason for using this spirit is that it seemed like the word *aqua vitae*, the name used for any strong, distilled liquor in the 17th century Americas (Bernhard, 1999). My effort was to create a similar shiny surface as seen in some of the Bache silhouettes.

Materials:

- Coated black paper as stated above (Lampblack, Keeping Beer + Gum Arabic, thinned).
- 1 egg.
- Several bowls, forks, and any device for whipping the egg whites, such as hand-whisk.
- Aguadiente alcohol (see explanation above), or any clear spirit alcohol.
- Pony hair brush, as used to coat the papers.
- 1-2 small jars with sealable tops.
- Protection for your table (butcher's paper, etc).

Method: Egg Glair

(based on Cennini, using the 1899 Herringham translation, p.136)

1. Crack open an egg, and separate the white (albumen) from the yolk. (Discard or use yolk later in a different project).
2. Froth/whip the egg white until very fluffy and rather firm
3. Set the bowl with the froth leaning sideways over another bowl. This setup is to allow the liquid underneath the froth to drip into the second bowl (See Figure 9). The froth will leech (drip) a liquid. Let this set-up remain undisturbed for up to 12 hours. Throw away the remaining froth; it is unneeded for further use. This dripped liquid is the "glair".
4. Optional step: strain the glair after several days if it starts getting too thick to use.

5. Glair will not sit in an unrefrigerated area for very long or it will stink. Recommended: put into a jar with a sealable top.
6. Optional: Pour some glair into a second jar, add a few drops of Aguadiente and mix with a spoon to prevent mould growth.

Method: Egg Glair on Paper

1. I used one of the large sheets of paper which had a black coating. "Paint" half the paper with the Glair-only liquid (only egg), and the other half the paper with the Glair + alcohol mixture.

Results

My original aim was to experientially determine whether "soot and beer" could make a period-appropriate silhouette paper thatmatched at least one of the papers seen in many extant objects. Here are my results:

1. It *is possible* to harvest lampblack (soot) from an oily burning substance - tallow candle or pine wood, and, with enough time and patience, collect enough material to create a silhouette-black coating for paper from "soot and beer" (lampblack and beer or ale, with or without an egg-glair varnish).
2. The pigment I created used recipes from artist manuals purchasable in the late 18th and early 19th centuries, which were consistant with materials analyzed by Smith (1995), Knipe (1999), and Fallon and Lockshin (2008).
3. My final results had a N1 color value (as measured by the Munsell scale; Centore, 2010).
4. The black-coated thin laid paper was flexible without much curl. This is appropriate paper for use in cutting silhouette profiles with paper-cutting scissors.
5. The black-coated paper has visual results, both front and verso, consistant with extant objects such as described by Fallon and Lockshin's experiments and study of the Bache's ledgerbook, 1803-1812 (2008) (See Fig 11 and Fig 12).

Conclusions and remaining questions

The itinerant-artist experience is a difficult one, requiring deep planning for routes, marketing, transportation, carting, and sourcing - even before the difficulties of creating detailed silhouettes for paying customers.

I found my original hypothesis of making my lampblack too time-consuming (and rather annoying!) to make enough in bulk to be useful for even one day of enough black "silhouette" paper if I was an itinerant artist working the 10 hours listed on my trade card. The process of hand-making lampblack from a flame source was extremely tedious, filthy, time-consuming, not at all a quick task easily left to downtime hours in a tavern bedroom.

My *new* hypothesis suggests:

Travelling artists might not make the lampblack themselves using oil lamps or pine wood; they might more easily buy lampblack from local printers or stationers as they moved through larger-populated areas. Pre-made lampblack was exported from source countries, and imported to Britain and its colonies. Lampblack arrived on American shores on ships and was available to the purchasing public (See Figure 10). Ships' manifests frequently listed lampblack, as did stores' advertisements; printers, post offices, and/or stationers who often sold lampblack and paper as they had these items for their use in printing broadsides, pamphlets and/or books (Stinely, 2024).

Artists who were stationary for longer periods could choose to mix their own black paper coatings made with lampblack, bone black, ivory black, or pay other artists (or assistants) to create their paper. The amount of additional materials needed for an artist to carry on an itinerancy implies that only artists with large packing capacities and/or full control of his/her cartage might try to colour paper "on the road".

In addition to the challenges above, I found an economic challenge: new experimentation with materials is time-consuming (and messy) when every minute counts for income. Travelling artists, advertising their services for 10 hours each day, face each day with the requirement to make income to plan and pay their multiple expenses: advance-advertising, broadsides, lodging, meals, transportation (either public transportation or their own livery needs), paper/artist supplies. While the most creative artists might think about creating new ways to make their silhouettes blacker or better, the fact remains that they travel to make income. Every minute spent in an artistic pursuit, such as experimenting with adding Prussian blue into their lampblack palette, might not bring them additional income. I make the supposition that most artists kept doing the same thing over and over, getting their creative juices flowing over the final portraits rather than making incremental changes in their supplies.

Another theory:

The more I looked at American extant *hollow-cut* itinerant-silhouettes before 1820, the more I saw evidence of backing made of silk (or other cloth) and not paper. As described previously in this paper, hollow-cut (i.e.: cutting the negative shape of the profile) silhouettes tended to be exclusively produced by people using physiognotrace machines. It is my observation that *some* physiognotrace machine-employing itinerants such as Raphaelle Peale distinctly asked one or more customers to back their hollow-cut silhouettes with black silk (See Figure 12). Other silhouette customers also did likewise but we do not know whether they were instructed to do so at the time of purchase. Bolton refers to unmounted hollow-cut silhouettes of students of Bowdoin College in 1826, all without black backgrounds (Bolton, 1914, p.52) Edouart mentions the speed at which face-tracing machine operators worked

"offering to execute Likenesses in a second, by the Royal Patent Machine..." (Edouart, 1835, p.59); with the examples above of rapid work made by machine, it is easy to imagine that some machine-operators might not complete artwork.

So it is possible that frequent-travelling, busy itinerant silhouettists such as those using a hollow-cutting physiognotrace machine operators might leave the silhouettes *unbacked* when they sell to customers, instructing the customers to back the silhouette with a black material themselves. By not providing a black material at the point of purchase, either paper or fabric, travelling artists are relieved of the efforts to either make the black paper or carry black cloth, which is challenging in the era when travel was difficult with public or private transportation.

For an artist to ask a customer to finish an artwork was not unheard of, as seen in the book *Meet Your Neighbors* (Jaffee, et al., p.30) which describes a recipe for the customer to varnish a painting after the artist has moved on. While Knipe (2002, section 5.2), discusses hollow-cut silhouette backing, her discussion did not mention the possibility of the customer 'finishing' the silhouette with a backing, as I have mentioned in the Raphaelle Peale example above.

Discussion

Silhouette portraiture is often recognized by the public as "quaint old-timey" portraits, as cute pictures made in Disneyworld, made by street artists in Paris, on historical house walls, or related to the cameo jewellery from their mother's jewellery boxes. The stark black profile figures on a light-colored background are highly recognizable as portraits from the past, but often the public does not know from what era they originate or much else about these portraits. This section will give some background to the cultural factors behind this portrait form and the materials.

However, behind public misimpressions and museum exhibitions, there lies an entire real-world set of artisans serving a vital role: creating affordable portraiture for a new class of people in Colonial- and Federal-era America. Indeed, artist itinerancy is often overlooked except as the province of cheap peddlers or homeless people; itinerants are often not categorized as professional skilled craftspeople, yet a large percentage of them were both professional and skilled. I shall reiterate the quote from Woodiwiss, "[countryside] scissor-workers were cleverer than their [painting] predecessors..." (1965, p.72). Itinerant artists were often true craftspeople who willingly sought clientele in a wide range of locations, bringing a set of often-overlooked, highly-honed interlocking skills and knowledge.

The craft of silhouettes is also tied to American popular portraiture, social engagement, and cultural history. Profile portraits tie together history, historical reference, popular culture, and craft culture. Coupled with artist and science technologies of pigment-fabrication, we have a unique window into a popular entertainment and portrait form in the early modern era,

useful to historians, curators, conservators, art historians, culture historians, and material culture historians as well.

Lingering questions, and an experiential approach

There have been a handful of books dedicated to examining the craft of silhouette-making in combination, highlighting the beauty of silhouettes throughout the centuries. However, in earlier eras, such as the turn of the 20th century, authors of silhouette history often used flowery anecdotes or light historical details rather than scientific data to tell the silhouette stories (Jackson, (1911), Coke (1913), Carrick (1928), et cetera). The trustworthy data are often hidden in primary sources (Peale, Eduoart) which need detailed reading by a technical, experienced specialist such as myself to read details that general historians might miss. For example, American artist Charles Willson Peale's diary mentions costs and items during his portrait-painting itinerancy in 1788 (Sellers, 1969; Miller, 1983, pp.548-550) which means little to many curators, but means much for my cross-references on artist itinerancy. However, many of Peale's papers are still unpublished and only available, in limited locations, on microfiche. How many fine details of itinerancy and/or of the Peale family (and important era information) are hidden away waiting for a technical researcher to find the material contained within the words?

Hollow-cut silhouette makers - ostensibly made with a physiognotrace machine by either artists or just technical operators - sometimes created an archive of the cut-out heads from the hollows (or "blockheads", as described by Charles Willson Peale) (Sellers, 1969; Fallon and Lockshin, 2008). These centre faces, normally thrown away, were occasionally saved. The Peale Museum in Philadelphia pasted the white wove paper blockheads on a black background (See Figure 13).

Bache coated his heads black, and pasted them in the previously mentioned archive book (Fallon and Lockshin, 2008). It was the Bache analyses which inspired many of my experiments. However, we do not know when the heads were pasted: whether at the point of 'making', or at a pause in the travels.

One difficulty in examining extant objects is the state in which museum collections house and examine these objects. In my examinations of American collections in Colonial Williamsburg, the Philadelphia Museum of Art, and the Winterthur Museum, many of the silhouettes are pre-framed without the ability to examine the silhouettes outside of the glass. In many cases, the objects have been re-framed from the original frames, often (as in the case of Colonial Williamsburg's collections) with the original black backgrounds removed and replaced with a modern black Bainbridge board (matboard) for public exhibition. Only by reading the collections and conservation notes could I see details of the original objects before conservation, though no detailed notes on the black papers are mentioned.

In the Philadelphia Museum of Art, several items can show a painted black coating on verso, especially Coleman Seller's silhouette cut at the Peale Museum between 1803-1805. The Peale special project curator had never thought to turn the silhouettes over to see the back before my interest in the black coatings. Did Moses Williams hand-mix a black coating for the physiognotrace, hollow-cut silhouettes he made in the Peale Museum? Are there additional silhouettes in private ownership whereby the original materials are still intact?

In London's National Portrait Gallery, I had access to silhouette collections without frames, noting that the black colour of the extant silhouettes is visually consistent with my experiments. Most of their silhouettes date after 1820, just outside of the era to which I was investigating. However, their many Augustin Edouart "cut-out" black silhouettes, dated the years c.1825-~1849) have been tested (Smith, 1995; Knipe, 2002) and bear the results of containing bone black, Prussian blue, and an unnamed protein. Could this protein have been from a grain, as would be found in a beer product? Additionally, could Edouart have instructed his assistant to coat papers for him?

Finally, we return to Knipe's (2002) original question of whether there was a commercial source of black paper. At least by Edouart's era of cutting silhouettes (circa 1825-1849), there *may* have been a commercial manufacture of black paper in a small way, as hinted in his words, "...*Why do* [customers] *come to me* [if they do not want to pay my fee for a silhouette]? *I am not a black paper vender* [sic], *if that were the case, they could go to another shop and satisfy themselves in prices*..." (1835, p.102). Indeed, a Glasgow Herald review of Edouart mentions, "... *a piece of common black paper*..." (ibid., p.119), hinting that, at least in Glasgow, there was a common way of obtaining black paper which heretofore was not commercially available before or just past the turn of the 19th century. Indeed, a passing mention of Edouarte's silhouette paper, "...*printed in solid black on one side only*" (Mayor, 1977, p.xiii; refuted by Smith, 1995), has no notes nor information on his source. McKnechnie (1978) mentions black paper available in 1829, but no identifiable sources. Was this mention of "printed" paper a guess by Mayor, or based on a historical detail that he left vague because he was telling a story, not providing facts?

The unfinished silhouettes also raise a question, since many of these itinerants did sell frames on their journeys (Edouart, 1835, p.59; Miller, 1983, p.550; Fallon and Lockshin, 2008). More questions arise: did they sell frames to the customer, but did not frame the item during the visit? Did they sell the frame but not the black backing?

One difficulty in discovering answers is that chemical analysis can be destructive; only a dedicated conservator in a passionate conservation department might recommend giving up some material for analysis if non-destructive techniques are unavailable. With the pressures of a museum's conservation schedule (and perhaps its funding), silhouette paper does not take a front seat.

Travel routes and travel: William Bache

William Bache's ledger of silhouettes, 1803-1812, (https://npg.si.edu/bache/) provides an excellent proof of concept for an itinerancy. An original idea for this paper to understand an artist's travels was to plot his silhouette ads on a map and figure out the transportation methods (https://npg.si.edu/bache/newspaper-advertisements). The Smithsonian also plotted his advertisements on a timeline (https://npg.si.edu/bache/biography). What is especially interesting in the advertisements are the changes in language, partners, wording for cut or painted silhouettes, and multiple threats to leave town when he is staying. The length of stays in each town is interesting too. What is unspoken regarding his itinerancy is the amount of time to travel (eg: Fells Point, MD to Petersburg, VA), transportation methods, travel time, travel costs, division of labour between Bache and his partners, et cetera. All of these factors would influence how he created his materials for profile-cutting.

August 1803:	Baltimore MD
September 1803:	Fells Point, MD (near Baltimore Town)
November 1803:	Petersburg, VA
January 1804:	Richmond, VA
March 1804:	Richmond, VA
May 1804:	Fredericksburg, VA
June 1804:	Fredericksburg, VA
July 1804:	Baltimore MD
November 1804:	New Orleans, LA
December 1804-May 1806:	Havana Cuba
July 1808:	Boston MA
Sept 1808:	Salem MA
October 1809:	New Haven, CT
November 1809:	Hartford, CT
November 1809:	New Haven CT
December 1809-January 1810:	Providence RI
February-March 1810:	Providence RI
April-May 1810:	Newport RI
June 1810:	New Bedford MA
July-August 1810:	Salem MA
October-November-December 1810:	Newburyport, MA
January-February 1811:	Portsmouth NH
February 1811:	Portland ME
March-April 1811:	Portland ME

May-June 1811:	Portland ME
January-March 1812:	Philadelphia PA
1817-1845:	Settles down in Wellsboro, PA, becomes a town founder, postmaster, and distiller

A Thought-Experiment

An interesting consideration is an imagined artist in the year 1804, setting up the conditions for a successful visit to an imagined town. Let us imagine a scissoring silhouette artist coming into a town ready to cut silhouettes. For the sake of discussion, this is a male artist who travels in a used small carriage and one pre-owned horse which he bought on credit in his hometown. He carries some supplies such as paint brushes, large shears and small scissors and buys lampblack and wove paper at printers' or stationers on his travels. He arrives in this imagined town, looks for a respectable lodging house, and meets the owner to arrange room, board, livery, and a porter to bring his belongings to his room. He might start with a short stay, with an option to expand his time; he would pay extra for a private room, not shared with any other travellers, and pay more for his solitary room than if he was sharing a room or a bed with passing strangers. His next stop would be to visit the newspaper printer to put a notice of his arrival into the paper, with his location, an approximate length of time he will stay, and his hours of business.

Our artist has no assistant to help him create his work. So, he is at once the paper painter, the artist, and the businessman at the same time, in contrast to William Bache's itinerancy (see above) where he often travels with one partner or another. In his private room in his lodging, assumed on a high floor so that light enters his room, cutting up paper in the correct sizes in advance, our artist can effectively batch-paint at least 20 papers per morning. Perhaps the papers he cuts for portraits each day are the papers he left to dry from the previous morning. He uses gentle, diffused morning light entering his room to mix, coat, and dry the coated paper for the next day. He might have even asked his landlady for old newspapers or scraps upon which he could paint so he did notharm her furniture or floor; to keep her customer happy and to keep him paying her a steady rent for an entire month, perhaps the landlady would indeed supply him with scraps and supplies. It was in her best interest to keep him working. If he uses up his paper each day, cutting 20 silhouettes grosses him $5.00 in income (if sold at William Bache's 25-cent prices for 4 copies, seen in the section above), which would be over the minimum $2 needed in good accommodations, meals, and livery per day. Working using morning light would mean that our artist would need to rise at dawn to prepare his papers before any visitor would call on him. $5 per day would be a good income; the more paper he coats black, the more customers he can serve.

An artist like this would start making good money, though in exchange we can imagine that it would be a gruelling schedule of making papers and working. While some artists specified

their available times in advertisements for making portraits (often 9 am to 9 pm); our artist could work more if he had additional supplies, or work less if he ran out of pre-coated papers early. Perhaps in summers, when the day was long, he might arise early to create his black papers, perhaps even to stockpile for times when he needed more. In the evenings, he might visit with other lodgers at dinner or find a larger tavern or inn to take a drink and dinner; it was not uncommon that travellers in town would make new acquaintances in taverns and talk about their business to drum up new customers; in this way, out artist might use these evening tavern visits to create his advertisements. If he has a successful visit, perhaps he tells the newspaper that he will stay an additional amount of time; this advertisement is placed in the paper, but there is no exact time stated except that his stay has been extended and he will soon leave.

Overall, a scissoring artist working at a brisk pace if he is popular in a town could see up to twelve customers per hour, and functionally work for six hours per day, potentially bringing him seventy-two customers per day; thereby he might need seventy-two sheets of blackened paper per day. At seventy-two customers per day, at 25 cents per customer, our artist might gross $18.00, which is 1800% of an agricultural labourer's daily wage; 300% of the wage of a Congressional Representative. If our artist hired an assistant to make his papers (at a $1 labourer's wage per day), our artist would still net $15.00 per day after daily expenses, giving him money to save as well as to pay off his horse and used carriage, as well as pay for toll roads to his next location. Even accounting for money exchanges in the next state he visits, an enterprising artist would make a good income in this town if he negotiates well, works fast, and makes a good reputation while in town.

Experiential, practical and phenomenological knowledge

Itinerant silhouette artists did not continue their itinerancy beyond a handful of travel years (Bache ledger, 1803-1812; Miller, 1983; Benes, 2016). Whether they stopped travelling as artists were due to the difficult artist trade, the challenges of travelling in early America, or another reason, many itinerants ended their travelling days. Itinerants, by the nature of their many challenges, face typical problems of their era. I believe that the silhouette trade serves as a microcosm of small-scale Colonial- and Federal-era American commercial efforts.

Because my fellowship location was the largest living-history/open-air/"reenactment" museum in the United States, I additionally chose to spend six days, (over 20 hours total) interpreting this material to museum visitors in 18th century period-accurate reproduction clothing, supplies, and materials. Experiential work is vital to in-depth investigative and interpretative processes. Educating the public in an engaging way was the original aim for my silhouette work. Additionally, questions from visitors test my knowledge and my ability to offer easy-to-understand answers.

During my six interpretation days in the Historic Area of Colonial Williamsburg, I offered to cut the silhouettes of the staff of the Historic District so they could experience their portrait being taken/cut- and for the visitors to watch this experience. The only compromise I made toward this interpretation was not to use paper that I had coated myself in my experiments but to use modern-day silhouette paper which I have been using for 16+ years. I was determined to use only one [recreated] artist's trunk to hold all of my materials, each item created (to the best of my ability) for an artist of the period was sourced and used daily (See Figure 14). My artist trunk included the ingredients of my "soot and beer" paper, my experiment notebook, silhouette examples, and even a circa 1745 poem about cutting silhouettes. The silhouettes I made for these tradespeople and staff allowed them to experience a trade - silhouette portraiture - outside of their chosen trade.

These "sitters" sat on a small stool, or stood, as I cut their silhouette freehand with only scissors without drawing anything first, or using any shadows or any machine of any kind. Keeping in line with understanding the experience and limitations of the 18th and early 19th century, I chose not to mount their finished, black silhouette on modern cardstock; but to enclose their hand-cut silhouette in an 18th-century folded "envelope" made from a paper stock that may have most closely resembled paper from the era. Giving them their silhouette in an envelope, unmounted (rather strange for a 21st-century recipient!) I explained that these portraits were often mounted in hand-made [silhouette] family albums, often onto blue paper; a few albums on blue paper can be seen in the Collections of their museum. Not only was my interpretation for the museum visitors, but also an interpretation for the other craftspeople and staff.

Conclusion

This research paper supports my goal of engaging the public in live history interpretation, discussing the cultural, economic, and personal forces behind people from past eras. This project helps us see portraiture as a true craft trade, and provides an understanding of the multiple levels of skills (and difficulties) clarifying this trade thatwas so predominant in popular culture of the past but so little known about its technical nature. What is especially interesting to me is the artist of the period seeking and sourcing outside of the prevailing apprentice (guild) craft system of the American Colonial era. However, while straight experiments,as well as curatorial generalists, fail to tell the entire story behind this trade, an experimental and experience-based archaeology fellowship truly supported the exploration of the intertwining elements behind creating what seemed like a simple black profile. Investigation into the making of a material (in this case: black silhouette paper) required a phenomenological understanding of the culture which birthed the material (Inker, 2018).

Since ending my fellowship, as of this writing, I have additionally been able to share elements of my research with curation departments at Colonial Williamsburg Art Museums, Philadelphia Museum of Art, Winterthur Museum and the Winterthur Program in American

Material Culture. Considering the value of silhouettes to collectors as well as to cultural, social, and material-culture historians and curators, this project has already garnered attention and fans. There is an footnoted, early version of this paper available from the author with more historical details for anyone interested.

I am looking forward to continuing my research and interest in this highly popular portrait form, and what we can learn about materials and methods of a detailed, yet uncomplicated set of ingredients: paper, scissors, soot, beer, and a good eye.

Acknowledgements

I am a professional artist pursuing an interest in experiential history and public history; this is my first experimental archaeology research, process and paper. The fellowship connected to these experiments was co-sponsored by the Colonial Williamsburg Foundation in Williamsburg, Virginia, USA. The interpretive focus of its Historic Area is Williamsburg in the 1770s, but the Foundation's primary resources, including its John D. Rockefeller Library, Special Collections, and its Arts Museums extend to additional decades, into the 1840s. Additionally, the Colonial Williamsburg Foundation uses an apprentice system to train and support its historic trades in its Historic Area, which provided me with a cultural counterpoint to the itinerancy dimension of this investigation.

Without the assistance of many individuals, this paper, and the fellowship which grounded its research, could not be possible. First and foremost, EXARC and Colonial Williamsburg Foundation ("CWF") created the fellowship; and especially Roeland Paardekooper, EXARC Founder, and Peter Inker, Historic Research Director at CWF, deserve my most hearty thanks for assistance and encouragement, both of whom I had only a passing knowledge before this project. Both EXARC and CWF have each created an atmosphere of learning and support. A fellowship is not only the four weeks residency, but the twelve (-plus) months of preparing, building period-correct supplies, experimenting, interviewing, public interpreting, meeting, writing, and re-writing.

Many other people have offered time, answered questions, reviewed documents, and/or listened to the countless times that I have said the words, "soot and beer". As an independent craftsperson, researcher, and also new to experimental archaeology, there is so much to learn - anyone who helps a learner becomes a beloved guardian angel and teacher.

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Keywords cutting
interpretation
story telling

Country USA

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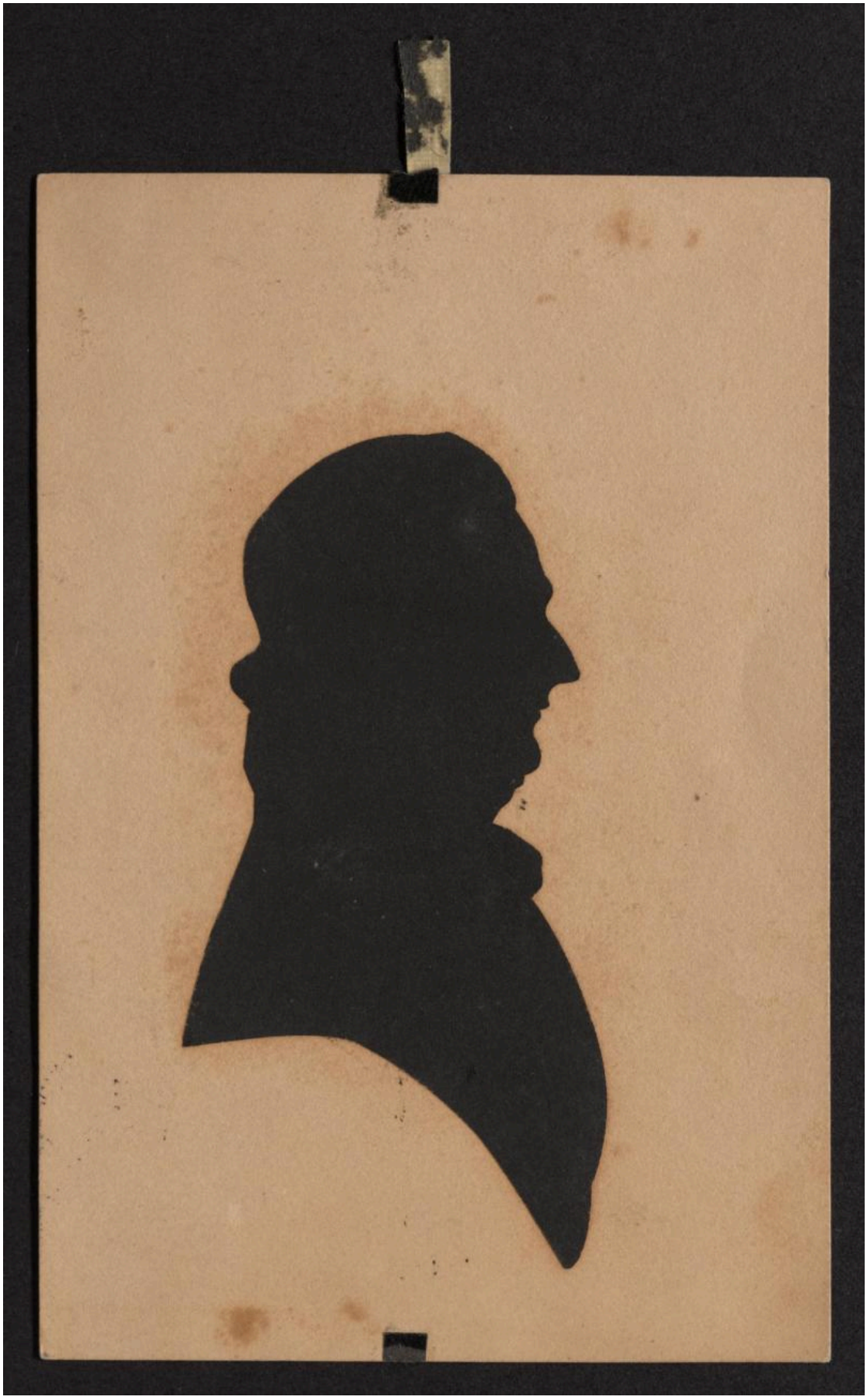
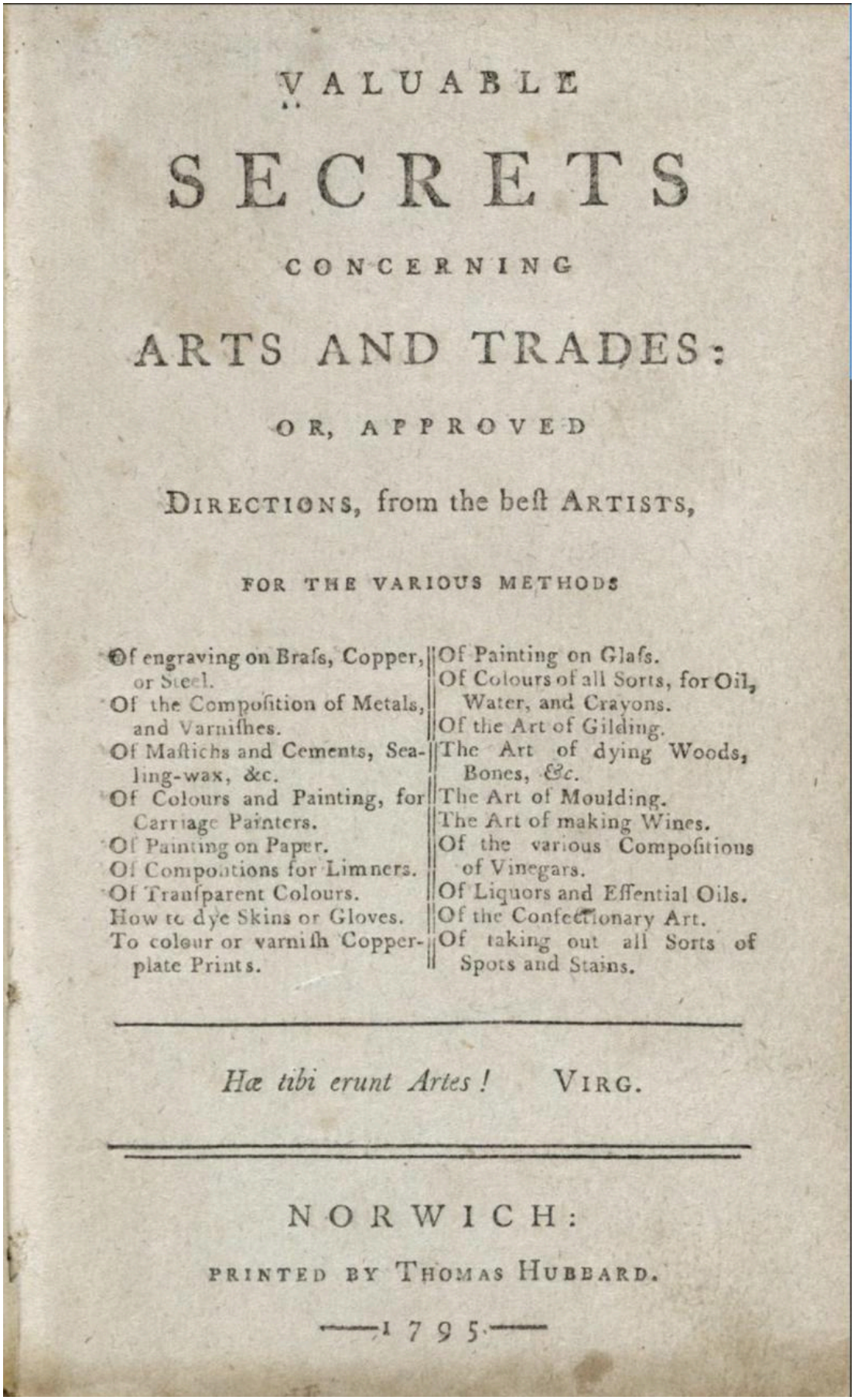


FIG 1. FREEHAND CUT POSITIVE SILHOUETTE PASTED ON WOVE PAPER OR CARDSTOCK UNATTRIBUTED IN THE COLLECTION, HOWEVER THE VERSO STATES “CUT WITH SCISSORS BY MASTER HUBARD WITHOUT DRAWING OR MACHINE” (WILLIAM JAMES HUBARD, 1807- 1862, PHILADELPHIA MUSEUM OF ART, GIFT OF THE MCNEIL AMERICANA COLLECTION, 2009, ACCESSION NUMBER 2009-18-47.)

FIG 2. HOLLOW-CUT (NEGATIVE) SILHOUETTE, DRAWN BY A PHYSIOGNOTRACE MACHINE AND RE-CUT BY ITS OPERATOR, AND STAMPED TO PROMOTE AN ARTIST OR LOCATION. ELIZABETH COLEMAN SELLERS (1756-1831), CUT BY PHYSIOGNOTRACE DESIGNED BY JOHN HAWKINS AND CHARLES WILLSON PEALE, CIRCA 1805. (ATTRIBUTED TO MOSES WILLIAMS (AMERICAN, BORN 1777, ACTIVE 1803–1833). MADE AT PEALE'S MUSEUM, PHILADELPHIA (1786–1849). PHILADELPHIA MUSEUM OF ART, GIFT OF THE MCNEIL AMERICANA COLLECTION, 2009, ACCESSION NUMBER 2009-18-42(4).)



VALUABLE

SECRETS

CONCERNING

ARTS AND TRADES:

OR, APPROVED

DIRECTIONS, from the beſt ARTISTS,

FOR THE VARIOUS METHODS

Of engraving on Braſs, Copper, or Steel.
Of the Compoſition of Metals, and Varniſhes.
Of Maſtichs and Cements, Sealing-wax, &c.
Of Colours and Painting, for Carriage Painters.
Of Painting on Paper.
Of Compoſitions for Limners.
Of Tranſparent Colours.
How to dye Skins or Gloves.
To colour or varniſh Copper-plate Prints.
Of Painting on Glaſs.
Of Colours of all Sorts, for Oil, Water, and Crayons.
Of the Art of Gilding.
The Art of dying Woods, Bones, &c.
The Art of Moulding.
The Art of making Wines.
Of the various Compoſitions of Vinegars.
Of Liquors and Eſſential Oils.
Of the Confectionary Art.
Of taking out all Sorts of Spots and Stains.

Hæ tibi erunt Artes! VIRG.

NORWICH:

PRINTED BY THOMAS HUBBARD.

1795

FIG 3. ARTIST MANUALS “VALUABLE SECRETS CONCERNING ARTS AND TRADES; OR, APPROVED DIRECTIONS FROM THE BEST ARTISTS” (SHOWN HERE, 1795 EDITION)

FIG 4. TALLOW CANDLES, DRYING BETWEEN DIPPING. PHOTO BY LAUREN MUNEY.

FIG 5A. COLLECTING TALLOW-CANDLE SOOT ON A LARGE TIN VESSEL. PHOTO BY LAUREN MUNEY.

FIG 5B. BRUSHING THE CAPTURED SOOT INTO A VESSEL WITH A FEATHER. PHOTO BY LAUREN MUNEY.

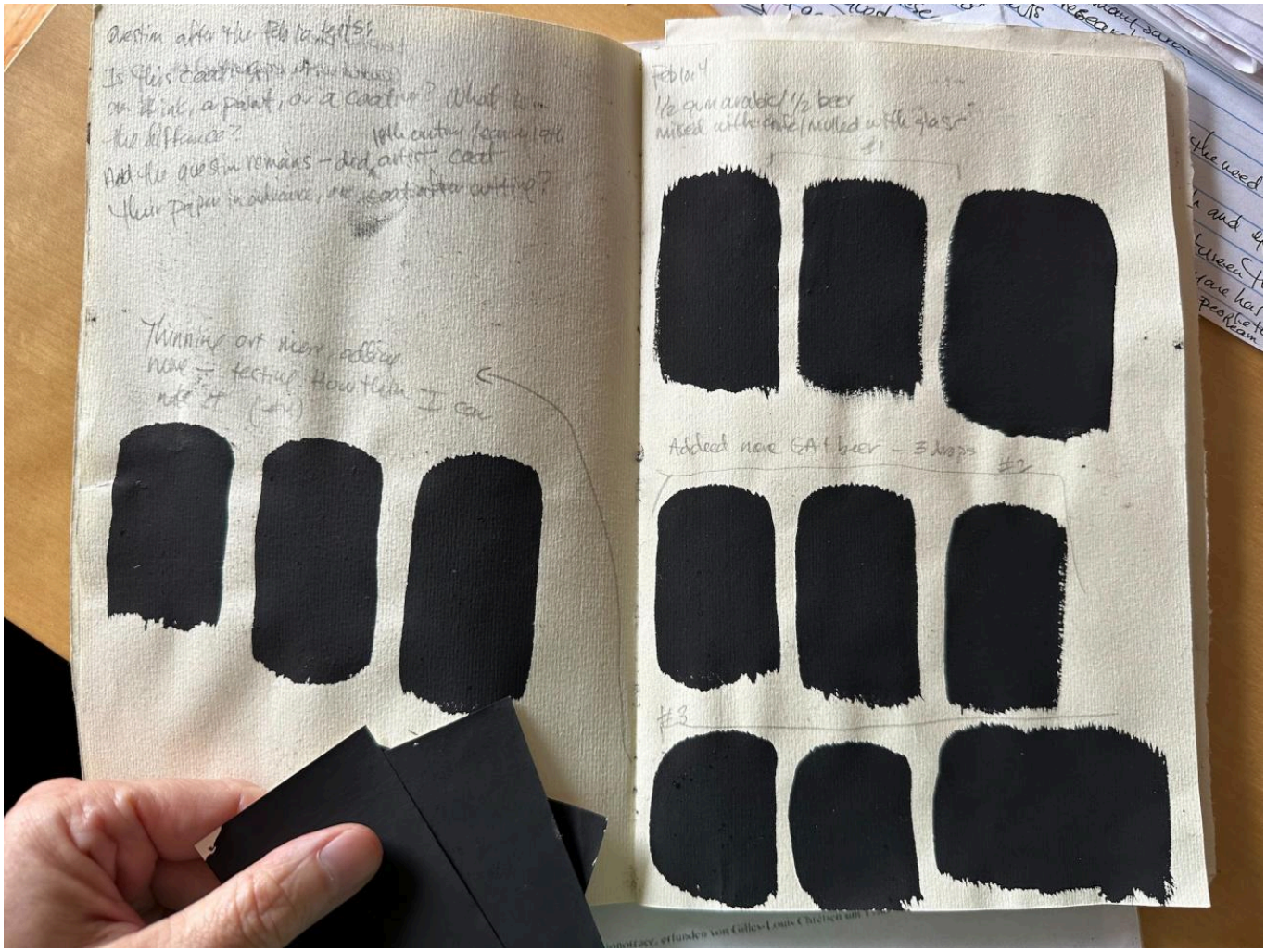


FIG 6. LAB NOTEBOOK. PHOTO BY LAUREN MUNEY.

FIG 7. MULLING THE BLACK COATING USING A SIMULATED MULLER. PHOTO BY LAUREN MUNEY.

FIG 8. COATING THE PAPER, USING THE LOOSE METHOD (ABOVE) AND THE PINNING METHOD (BELOW). PHOTO BY LAUREN MUNEY.

FIG 9. FROTHED EGG FOR EGG GLAIR. PHOTO BY LAUREN MUNEY.

WILLIAM DIGGES.

Just IMPORTED, *in the Ships* Neptune *and* Bland, *and to be* SOLD *at* John Carter's *Store, in* Williamsburg, *the following Goods, viz.*

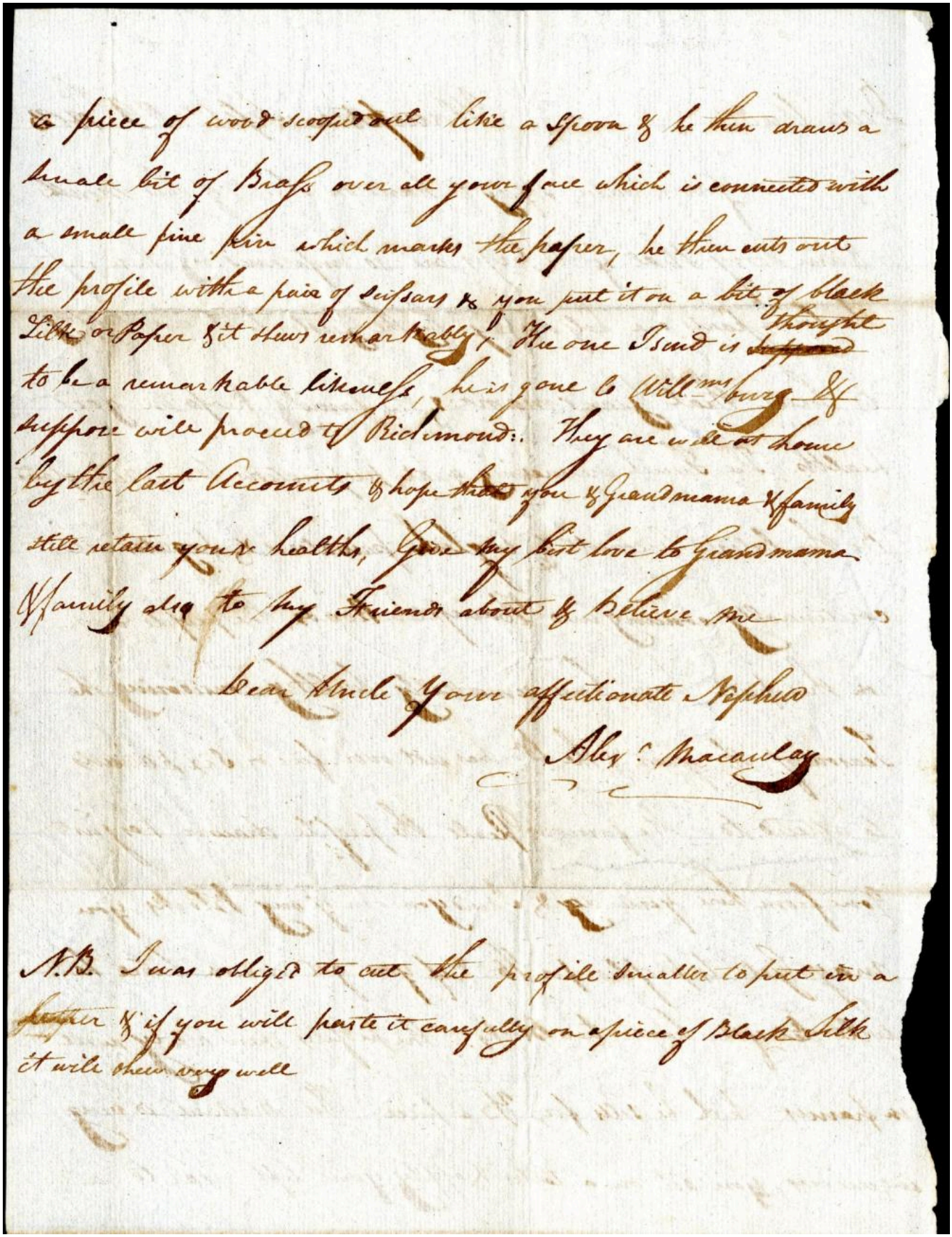
SUPERFINE and coarse Broadcloths, Cotton Serges, Beaver and Bath Coatings, *Dutch* Blankets, Hatchetts, Grubbings, Bells, fine and coarse *Irish* Linens, Damask Tablecloths and Napkins, Cambricks, Lawns, Muslins, Mens Buckskin Gloves, Womens and Girls Thread and Leather Gloves, Net Hoods, Glove Rows, black Catgut and Patent Net, black and white spotted Blond, Cotton Threads, *India* Ditto, Floss Silk for working Catgut, white and black Thread Edgings and Lace, Womens white and coloured Satin Pumps, Womens and Girls Calimanco Pumps, Childrens Purple and red Morocco Leather Pumps, Mens and Boys fine and coarse Hats, Ladies Riding Hats trimmed, Hair Brooms, painted Hearth Brooms, Flue Rubbers, brown Copper Tea Kettles, Copper Tea Kettles and Trivets, Coal Scoops, Cinder Shovels, round Iron Fenders, square Iron Chafing Dishes, Locks and Hinges of all Sorts, Glue, Sets of Bed Screws, wooden and Brass Castors, Brass Door Knockers, Brass and wooden Screw Pullies, yellow and white Chair Nails, Brass Chafing Dishes, House Bells, Scales and Weights, Jar Raisins, Currants, Almonds, Figs, white and brown Sugar Candy, Barley Sugar, Coriander Comfits, white and coloured Carraway Comfits, candied Orange Peel and Chips, Mace, Cloves, Cinnamon, Nutmegs, white Ginger, Pepper, Allspice, Anchovies, Capers, Olives, *India* Mangoes, pickled Barberries and Samphire, Linseed Oil, white Lead, Lampblack, Verdigrife, *Dutch* Pink, Umber, Vermilion, *Prussian* Blue, Alum, Brimstone, Rotten Stone, Powder Blue, Fig Blue, Starch, Saltpetre, best Salad Oil, Sacks of Salt, Playing Cards, old Gin, *Hardam's* best *Strasburg*, Nov 9. Bohea and very fine Hyson Tea, Chocolate, Coffee, Mustard, &c. &c.

For S A L E,

FIG 10. EXAMPLE OF PRINTED LAMPBLACK IN AD, 5TH LINE FROM THE BOTTOM. (VIRGINIA GAZETTE, NOV. 11, 1773. P.2.)

FIG 11A. HOLLOW-CUT SILHOUETTES CUT WITH A PATENT PHYSIOGNOTRACE (PATENT LOST). (SITTER: PEPITTE FANGUI, ACTIVE C. 1803-1812) (FROM WILLIAM BACHE'S SILHOUETTES ALBUM, 1803-1812, SMITHSONIAN NATIONAL PORTRAIT GALLERY, S/NPG.2002.184. COURTESY OF SENIOR CONSERVATOR NORA LOCKSHIN, SMITHSONIAN INSTITUTION ARCHIVES.)

FIG 11B. VERSO OF HEAD #238 OF WILLIAM BACHE'S SILHOUETTES ALBUM. (SITTER: PEPITTE FANGUI, ACTIVE C. 1803-1812, [HOLLOW-CUT SILHOUETTES CUT WITH A PATENT PHYSIOGNOTRACE (PATENT LOST)], SMITHSONIAN NATIONAL PORTRAIT GALLERY, S/NPG.2002.184.238. COURTESY OF SENIOR CONSERVATOR NORA LOCKSHIN, SMITHSONIAN INSTITUTION ARCHIVES.) VERSO OF HEAD #238 OF WILLIAM BACHE'S SILHOUETTES ALBUM.



a piece of wood scooped out like a Spoon & he then draws a small bit of Brass over all your face which is connected with a small fine pin which marks the paper, he then cuts out the profile with a pair of scissars & you put it on a bit of black Silk or Paper & it shews remarkably. The one I send is thought to be a remarkable likeness, he is gone to Williamsburg & suppose will proceed to Richmond. They are well as home by the last Accounts & hope that you & Grandmama & family still retain your healths, Give my best love to Grandmama & family also to my Friends about & believe me

Dear Uncle Your affectionate Nephew

Alex^r Macaulay

N.B. I was obliged to cut the profile smaller to put on a paper & if you will paste it carefully on a piece of black Silk it will shew very well

FIG 12. MANUSCRIPT LETTER DESCRIBING RAPHAELLE PEALE'S SILHOUETTE MACHINE PROCESS AND ASKING THE CUSTOMER TO BACK THE SILHOUETTE WITH BLACK SILK. " ...HE THEN DRAWS A SMALL BIT OF BRASS OVER ALL YOUR FACE WHICH IS CONNECTED WITH A SMALL FINE KNIFE WHICH MARKS THE PAPER, HE THEN CUTS THE PROFILE WITH A PAIR OF SCISSORS & YOU PUT IT ON A BIT OF BLACK SILK OR PAPER & IT SHEWS REMARKABLY." (MACAULAY, 1803.)

FIG 13. WHITE WOVE PAPER SILHOUETTES CREATED WITH THE PHYSIOGNOTRACE MACHINE AT THE PEALE MUSEUM IN PHILADELPHIA, CA. 1802-1830. THIS LAID PAPER WAS HAND-COATED, SHOWING THE DEPTH OF THE BLACK PIGMENT COAT. (VOLUME 57, SILHOUETTES LEAF 2. PEALE-SELLERS FAMILY COLLECTION, 1686-1963, MSS.B.P31. COURTESY OF THE AMERICAN PHILOSOPHIC SOCIETY MUSEUM.)

FIG 14. MY ITINERANT-ARTIST SETUP IN THE BOOKBINDERY WORKSHOP IN THE HISTORIC AREA OF COLONIAL WILLIAMSBURG. MY DISPLAY INCLUDED CUT SILHOUETTES, EXAMPLES OF DIFFERENT SILHOUETTE TYPES, MATERIALS WHICH MADE UP THE BLACK PAPER, AND CONTEMPORANEOUS ADVERTISEMENTS FOR THE INGREDIENTS. PHOTO BY LAUREN MUNEY.