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Cover Page Footnote

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GLASS AND ENAMEL BEADMAKING IN NORMANDY, CIRCA 1590-1635

Brad Loewen

*The archaeological study of glass bead proveniences raises theoretical questions regarding the idea of "beadmaking centers" as defined by typological, technological, and geochemical means. Also important for defining beadmaking centers are historical sources in various languages. In the 19th century, French scholars interested in glassmaking in Normandy noted beadmaking ca. 1590-1635. Their publications show a rural cottage industry in the county of Eu and the forest of Brotonne, and an urban guild of patenôtriers in Rouen. While the historical data mostly show the production and export of rosary beads, the Normandy "beadmaking center" coincides with a major outfitting region of the late 16th and 17th-century transatlantic fur trade. This geographic correlation allows us to hypothesize that some French beads found in North America may have originated in Rouen. Interestingly, an archaeological collection from 1869 contains a chevron bead production tube and two frit-core (*faïence*) beads, similar to North American examples, in a Rouen production context.*

INTRODUCTION

While the origins of glassmaking in Normandy are medieval, its written record only begins in the 15th century. From this time until 1873, no less than 59 glassworks existed in Normandy with about a third of these in operation at any given time. Each glassworks had a *privilège* – a licence including a limited patent on products, conditions on fuel procurement, etc. – that promoted specialization in certain types of glass and finished products. Some glassworks fabricated tubes called *canons* that they sold to beadmakers. In two rural areas, beadmakers cut *canons* into short lengths and modelled them in small ovens built into the chimneys of their houses. Some made their own *canons* out of crushed glass if their oven was suitable to the task and the local glassworks tolerated the competition. Reflecting their principal use in rosary strands, beads were called *patenôtres* ("our-fathers") and their makers, by extension, *patenôtriers*.

We do not know when *patenôtriers* began working in Rouen, but they were able to form their own guild in 1593. Members enjoyed the right to make and sell *canons*, and some applied strands of different-colored glass onto the tubes to create striped beads. Rouen *patenôtriers* exported rosary beads as far away as southwest France, Spain, and Portugal. In 1605, a crystal glassworks opened in the suburb of Saint-Sever. Using techniques said to compare with the highest Venetian standards, the factory also produced *canons* for beads, triggering a legal battle with the *patenôtriers*' guild that left a valuable record of beadmaking in Rouen.

For archaeologists who study European beads found in consumers' contexts in North America, it is significant that the Normandy beadmaking region corresponds with the area in France where many transatlantic fur-trading ventures were organized in the early 17th century. This paper contributes to the concept of a "beadmaking center" and hypothesizes that Normandy, and particularly Rouen, may have produced some of the beads found in northeastern North America in contexts from about 1600 to 1670.

THEORIZING "BEADMAKING CENTERS" ACCORDING TO THEIR MODE OF PRODUCTION

Theorizing "beadmaking centers" is vital to the study of bead proveniences. While a full theorization is beyond the scope of this paper, we may contribute by classifying the known centers according to their mode of production. Based on a literature review, we find seven European centers from the 15th to the 19th centuries that fall into three categories. Firstly, we have urban beadmakers, organized in guilds and clustered in the neighborhoods of Murano in Venice and Montorgueil in Paris. Each city had up to 20 or 30 workshops (Francis 2008; Turgeon 2001).

Secondly, in three rural border areas of Bohemia and Bavaria, beadmakers worked in dispersed farms or hamlets, using small ovens that enabled families to supplement their subsistence with cash income. They obtained raw materials from merchants residing in Nuremberg, Bayreuth, and Gablonz, who also marketed the beads. Archival and archaeological research on beadmakers in the Bavarian and Bohemian forests from the 15th century to the late 19th century identified 61 beadmaking ovens in the area

(Karklins 2019), while a survey of the Fichtelgebirge region to the north near Bayreuth revealed that 15 beadmaking furnaces operated there between 1440 and 1800 (Karklins et al. 2016).

Thirdly, in 17th-century Holland and London, financiers with connections to the colonial trade founded glassworks that also produced beads. Often short-lived, these factories had salaried workforces and were strategically located to sell their products to major colonial trading companies. The factory model was similar to the faience, porcelain, and pewter industries of the same period (Karklins 1974; Karklins, Dussubieux, and Hancock 2015).

Each mode of production had implications for the techniques and distribution patterns we see in archaeology. In Normandy, we find rural and urban beadmaking, but no industrial bead factory.

BEADMAKING IN FRANCE AND HOLLAND

Beadmaking in Normandy was influenced by developments in the adjacent centers of Paris and Holland. In Paris, Laurier Turgeon (2001) has studied beadmaking based on notarial contracts and postmortem inventories from 1562 to 1610. He identifies 37 *patenôtriers* who worked in glass, enamel or frit-core, shell, jet, coral, and amber. The techniques for working glass and enamel include drawing, lamp-winding, and mold pressing. A Paris archaeological assemblage from the 1590s, with parallels to the materials and techniques that Turgeon found historically, includes several beads that correspond to types found in North America (Turgeon 2001). Chemical analysis of two Parisian archaeological collections shows a variety of recipes at work (Dussubieux and Gratuze 2012). In 1565 and 1587, the Parisian bead merchant Charles Chelot supplied La Rochelle and Bordeaux merchants involved in the Canadian fur trade. Evidence of the Paris beadmaking industry thus precedes that from Rouen by about 30 years and some early Rouen beadmakers, notably the Delamare family, possibly originated in Paris (Turgeon 2019:189-190). In writing about French beadmaking, researchers often cite relevant passages from two historical works, *L'art de la verrerie* by Jean Haudicquer de Blancourt (1718 [1697]), and *Dictionnaire universel du commerce* by Jacques Savary de Bruslons (1723), which have been translated in Appendices A and B (q.v.) for easier reference.

As for Dutch bead production, Karlis Karklins (1974) has identified seven factories, in five cities, that operated for spans of 20 or 30 years between 1597 and 1697. Archaeologists have studied three of the Amsterdam factories and compared their beads to examples found in North America (Karklins et al. 2001, 2002). Bradley (2007:41-43) has proposed a chrono-typology of beads in the Dutch colonial trade from ca. 1614 to 1665. In noting similarities between beads found on French sites in North America and types fabricated in Holland, he has also asked whether Champlain carried Dutch-made beads to Canada (Bradley 2014).

There is some debate regarding the influence of Venetian beadmakers, celebrated for their technical prowess, on Dutch, French, and English production and colonial trade. Some authors have suggested that beads made in Venice found their way to the Americas (Francis 2008:67, 2009; Lapham 2001). Others believe that the hiring of Venetian artisans enabled beadmakers in northwest Europe to imitate the Venetian style (Turgeon 2001:67). While Norman glassworks hired Italian specialists between 1665 and 1730, any influence they had on beadmaking remains unknown (Le Vaillant 1873:277, 398-401, 410, 532-535; Schuermans 1893:111-113).

BEADMAKING IN RURAL NORMANDY: THE COUNTY OF EU AND THE FOREST OF BROTONNE

In late medieval France, four families enjoyed nationwide hereditary glassmaking rights and they expanded their operations into lands retaken from the English during the Hundred Years War, including Normandy. Their names – Bongars, Brossard, Caqueray, Le Vaillant – were still prominent in the French glass industry of the 19th century (Le Vaillant 1873:1, 22). Their rights were not exclusive, however, and other players quickly entered the field.

In 1873, Onésime Le Vaillant de la Fieffe, whose family owned the La Haye glassworks in the forest of Lyons, published a history of the Norman glass industry. In addition to scouring various private and public archives, he tapped into a vast network of informants who supplied him with oral traditions and the results of "archaeology." His work mentions two rural beadmaking areas that were active from the 16th to the 18th century (Figure 1). The first was in the Dieppe hinterland, at the adjacent hamlets of Villers and Aubermesnil in the county of Eu. The second area lay about 20 km west of Rouen in the forest of Brotonne, in the villages of La Mailleraye and Jumièges (Le Vaillant 1873:235-236, 266-267).

Given the personal nature of Le Vaillant's text, I have translated the relevant passages, the first of which mentions beadmaking at Aubermesnil and Villers:

> Around the middle of the 16th century, some inhabitants of Aubermesnil and Villers made *patenôtres*. A furnace set up in their chimney served

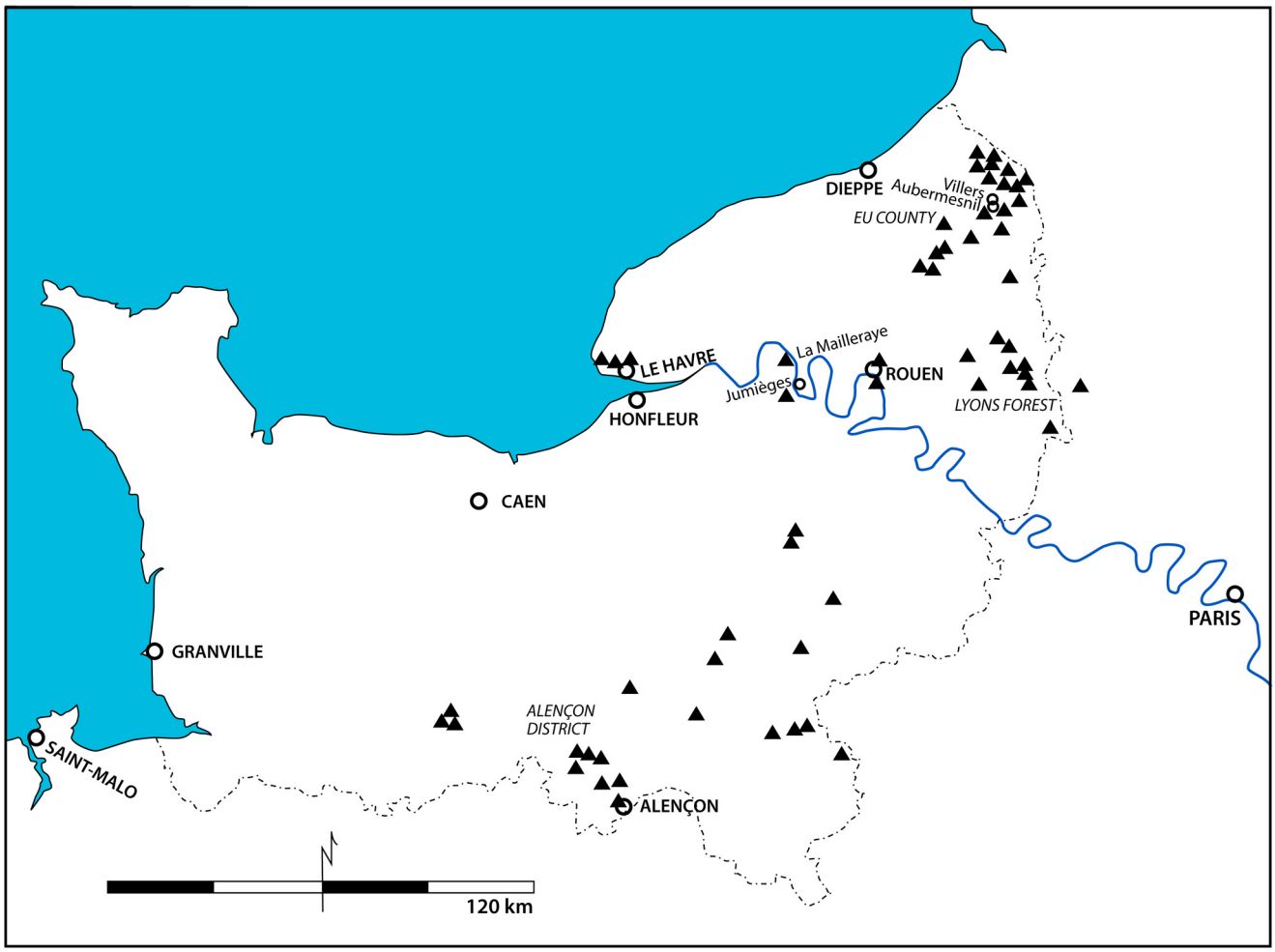

Figure 1. Glassworks in Normandy, 1402-1873 (after Onésime Le Vaillant de la Fieffe 1873) (drawing: Brad Loewen).

> to divide [*diviser*] the *canons* (tubes) made for this purpose in crystal glassworks; the segmented tubes were used to make rosary strands.… It was not a proper industry, but a small craft that anyone could master without apprenticeship or equipment, during one's spare hours.… The glass beads were called *rocaille* and this is what Haudicquer de Blancourt said about them in his *Art de la verrerie*: "All our mercers sell this *rocaille*, which are yellow and green seeds from which rosaries are made and sold to country people. This kind of merchandise is also worn in the Indies, Africa and the Islands. The peoples of these countries adorn themselves by wearing beads around the neck as scarves, on bracelets, or around the waist (Le Vaillant 1873:235-236).

We can retrace the reference to Jean Haudicquer de Blancourt's 1679 work, often cited with respect to beadmaking in France (Haudicquer de Blancourt 1718 [1679], II:132-134) (*see* Appendix B). As for his source for the beadmakers of Eu, Le Vaillant cited an article by Timothée Trimm entitled "Bizarreries de la noblesse" that appeared in *Le Petit Journal*, a major Paris daily newspaper, on 25 June 1868. Trimm cited the historian and heraldist Henri Gourdon de Genouillac (1868:119-120), who mentions Aubermesnil. Only Le Vaillant mentions the *patenôtriers* of Villers, so he must have obtained this detail independently. He may have seen records from the 16th century, or combined historical data with oral tradition. The two adjacent hamlets lie in the county of Eu, southeast of Dieppe, in the heart of a major glass-producing region. Le Vaillant documented no fewer than nine glassworks within 10 km of Aubermesnil and Villers between 1441 and 1873. The two closest ones, Saint-Martin-au-Bosc and Rétonval, were active in the 16th century and they may have supplied the *canons* used by beadmakers in the two hamlets.

Le Vaillant also mentions beadmakers at La Mailleraye and Jumièges, in the forest of Brotonne along the lower

Seine, west of Rouen. This passage cites more substantive sources:

> A glassworking oven for heating and working glass by *patenôtriers* was established at La Mailleraye in the 16th century. We know of this furnace from a ruling handed down by the Norman parliament on 22 December 1595, in a lawsuit opposing Antoine Delisle, a "master glassworker residing at La Mailleraye," who had appealed two sentences "rendered by the jury presiding at Rouen on 8 May and 26 June" of the same year, and Thomas Bodin, "master button-maker and enamel *patenôtrier* at Rouen."
>
> The parliament heard that Delisle had promised to lend Bodin, the first time he used the furnace, a pot for heating cullet [*groisil*; crushed glass] and drawing it into tubes [*canons*]. This glassworks must have taken its fuel from the forest of Brotonne.
>
> Knowing that Dr Guéroult of Caudebec, a town separated from La Milleraye by the Seine, devoted himself energetically to archaeological research, I sought his help. He was unable to obtain any information on Sieur Delisle's establishment, but was told that in Jumièges and the surrounding countryside in the 16th, 17th and 18th centuries, many individuals used glass to make [tubular?] beads, and white and polychrome globules for use by *patenôtriers*.
>
> Presumably, the glass used by these small beadmakers came from the glassworks at La Mailleraye; while the glass may also have come from the Rouen [Saint-Sever] and La Haule [Brotonne] glassworks, the distance from the former must have led beadmakers to prefer glass from La Mailleraye, whereas the La Haule glassworks only existed for a short time. The glassworks operated by Antoine Deslisle must have been sizeable, and surprisingly there is no memory left of it in the area.
>
> In a previous section, I spoke of a similar industry that occupied some inhabitants of two parishes in the county of Eu (Le Vaillant 1873:266-267).

Analysis of these two passages provides a general view of rural beadmaking in Normandy. About 70 km separate the beadmaking areas of Eu and Brotonne, and other rural *patenôtriers* may have worked elsewhere in conjunction with local factories. Rural beadmaking continued from the 16th to the 18th century, but the number of workshops is hard to estimate. Beadmaking appears to have been a part-time activity for rural artisans and their families. They worked at small furnaces built into the chimneys of their houses, and used tubes[1] (*canons*) obtained from glassmakers or made from crushed glass or cullet (*groisil*). Most information refers to monochrome tubes and beads, but artisans at Jumièges also made polychrome globular beads. Beadmakers risked lawsuits from local glassmakers whenever they heated cullet and drew it into *canons*. We have no evidence of the use of enamel in these rural settings, contrary to the situation in the city of Rouen.

BEADMAKING IN ROUEN: THE HISTORICAL EVIDENCE

Authors in the 19th century also published information of beadmaking in the urban context of Rouen. In the 1590s, the Norman capital was home to several beadmakers and, in 1605, saw the establishment of a Venetian-style glassworks that competed with the *patenôtriers* until about 1635. Evidence of this thriving industry was published by three erudites: Alexandre de Girancourt (1867), the same Onésime Le Vaillant de la Fieffe (1873:278), and Charles de Robillard de Beaurepaire (1897:427-429) (cf. Mazauric 2001).

The earliest reference to beadmaking in Rouen comes from an apprenticeship contract in 1591 (Robillard de Beaurepaire 1867:428). In 1593, the Rouen *patenôtriers* requested recognition as a guild and two years later their statutes received royal approval. The charter authorized them to make beads and buttons in enamel, and to use metal to string beads into bracelets, chains, and necklaces in their own ovens (Le Vaillant 1873:278). While most guild members worked in glass and enamel, the community included artisans who fashioned rosaries in ivory, bone, and "exquisite wood" (*see* Léouffre et al. 2019; Lotti 1993). We know the name of one artisan, Claude Martel, from a 1613 apprenticeship contract (Robillard de Beaurepaire 1897:428-429). Two other guild members, Geoffroy and Mathieu Delamare, operated a glass and enamel furnace in the suburb of Cauchoise, northwest of the city (Le Vaillant 1873:278, 287). In 1608, they exported a shipment of "round and olive-shaped rosaries, small black seeds beads, violet seed beads, and other accessories for fabricating rosary chains" to Spain (Mazauric 2001). Another family member, Guillaume Delamare, purchased beads from Paris for the Canadian fur trade in 1610 (Turgeon 2019:190). The Rouen clan may have been related to an eponymous beadmaker in Paris, Jean Delamare (Turgeon 2001:66).

The 19th-century historian gleaned descriptions of Rouen *patenôtres* from records of bead shipments to Béarn, Portugal, and Spain between 1607 and 1629 (Robillard de Beaurepaire 1897:429). Two consignments sent to Béarn in

southwest France included 100 dozen beads, and 200 dozen white and red beads (8 May 1607); and bone rosaries and glass beads (19 July 1608). Of two cargos expedited to Portugal, one held 676 thousand yellow beads and 58 thousand beads "*façon et manufacture de Rouen*" (10 January 1607), and the other 200 gilded olive beads, 4 dozen "*buffle*" (buffalo horn) rosary strands, and 5 pounds of amber beads made in Rouen (19 March 1607). Finally, four shipments were destined for Spain: 54 dozen rosary strands with crosses and 30,000 cut-glass garnets (1 July 1608); 200 thousand of "*pois de la Chine*" made in Rouen (25 September 1628); a thousand "*masses*"[2] of small cut-glass garnets "*façon de Rouen*" (13 October 1629); and rosaries "*façon d'Espagne*" made of wood and buffalo horn (15 October 1629). We may translate "*façon de Rouen*" and "*façon d'Espagne*" as styles associated with Rouen and Spain, while "*pois de la Chine*" literally means "China peas."

Rouen *patenôtriers* may have diversified into product lines more typically associated with Venetian-style crystal glassworks. Evidence comes from three notarized sales cited by Claude Mazauric (2001). One contract mentions "glass seeds, crystal seeds, gilded mirrors, reading glasses, *tablettes* and small mirrors, all made in Rouen and its environs" (20 December 1605). Another sale mentions "rosary chains with crosses and cut-glass garnets" (1 July 1608). Mazauric also cites a sale of "glass beads, reading glasses, large gilded mirrors and small mirrors, all made by Rouen *patenôtriers* and their workers" (19 July 1609).

These references show the importance of the market for rosary beads, as well as the capacity and technical range of the Rouen *patenôtriers*. In 1598, the king sought to strengthen the city's glassmaking industry by granting a privilege to two artisans from Mantua, Vincent Busson and Thomas Bartholus, for a glassworks to make crystal and fabricate objects in the Venetian style. The project failed to materialize, so in 1605, the king gave a similar privilege to a glassworker from Aix-en-Provence, François Garsonnet (Girancourt 1867; Le Vaillant 1873:276-308). This factory, built in the suburb of Saint-Sever on the south shore of the Seine,[3] began production about 1608 (Girancourt 1867:7). Hampered by a shortage of firewood, it imported English coal to make crystal as early as 1616, some decades before coal-fired glassworks developed in England (Girancourt 1867:11).

Garsonnet soon clashed with *patenôtriers* already established in Rouen. In 1613, he sued Mathieu Delamare for operating a furnace in the Cauchoise suburb and using it to make *canons*, alleging it violated his own glassworks privilege. In taking up Delamare's defense, the Rouen beadmakers' guild got help from its Paris counterpart, revealing the guilds' shared interest and possibly their links via the Delamare clan. The court ruled that Mathieu Delamare could keep his furnace and use it to make enamel and glass *canons*, for his own purposes and for sale to other Rouen beadmakers (Girancourt 1867:9).

In 1618, Garsonnet transferred the Saint-Sever glassworks to two artisans from Languedoc, Jean and Pierre d'Azémar, and a Rouen merchant named Antoine Girard. The Azémar brothers operated the plant while Girard sold the products (Girancourt 1867:10). The new owners brought in artisans from Languedoc, one of whom moved on to supervise a factory in Eu (Girancourt 1867:17-18). In 1619, Pierre Azémar married his partner's daughter, Anne Girard. After the Azémar brothers died between 1635 and 1642, Girard fought a legal battle to conserve the privilege for her children, although other Rouen glassmakers gained the right to make crystal in 1650 – the last record of the Azémar-Girard family. The Saint-Sever glassworks still operated in 1753 under other owners (Girancourt 1867:20-24).

These archival traces thus show there were several beadmakers in Rouen about 1590-1635, and that they fabricated their own glass tubes or *canons*. The same artisans also made buttons and worked metal to string beads into rosaries, and they may have manufactured mirrors, reading glasses, and other products normally associated with high-quality glassworks. When the Saint-Sever glassworks came on the scene in 1605, its privilege overlapped with the Rouen *patenôtriers*' activities. Although the glassworks likely did not produce beads, it may have fabricated *canons* for beadmakers' use.

Like their Paris counterparts, the Rouen *patenôtriers* used enamel to add a decorative glaze to beads and buttons. On the limited scale of their craft, their enameling techniques were similar to those of glassworkers who made enameled plate and objects. Enamel was a glaze based on tin and lead, and colored by adding various metal oxides (Haudicquer de Blancourt 1718 [1697], II: 3-47)[4] (see Table 1). The use of enamel by Rouen and Paris *patenôtriers* indicates they may have fabricated the "frit-core" beads found in northeastern North America, which have a decorative enamel glaze (Karklins 2016). In French, these beads are called *perles de faïence* in reference to the enamel coating over the frit core and its technological parallels with tin-glazed *faïence* earthenware.

BEADMAKING IN ROUEN: THE ARCHAEOLOGICAL EVIDENCE

In addition to historical evidence of *patenôtriers*, two archaeological discoveries shed light on the Rouen glass and bead industry. In 1972, archaeologists encountered the

Table 1. Recipes for Basic Enamel and Colors (Haudicquer de Blancourt 1718 [1697], II).

Chapter	pp.	Product	Ingredients
148	4-6	Basic enamel to be colored	30 lbs lead, 33 lbs Cornwall tin, calcined together into a lime; 50 lbs of this lime, 50 lbs white tartar frit (ch. 6), 8 oz salt made from white tartar (ch. 15)
149	6-7	Milk-white color	6 lbs basic enamel, 48 grains Piedmont magnesium
150	8-10	Turquoise color	6 lbs basic enamel, 3 oz copper scories [slag] calcined 3 times (ch. 34), 96 grains cobalt, 48 grains magnesium, stir with iron hook
151	11-12	Blue color	4 lbs basic enamel, 2 oz prepared cobalt, 48 grains copper scories calcined 3 times
152	12-13	Other blue color	4 lbs basic enamel, 2 copper leaves, 48 grains cobalt
153	13-14	Green color	4 lbs basic enamel, 2 oz copper scories calcined 3 times, 48 grains iron scories
154	14-15	Other green color	6 lbs basic enamel, 2 oz *Ferret d'Espagne* [hematite] (ch. 22), 48 grains Saffron of Mars [iron sulfide] (ch. 25), vinegar
155	15-16	Other green color	4 lbs basic enamel, 2 oz copper scories, 48 grains Saffron of Mars, stir with iron hook
156	16-17	Black color	4 lbs basic enamel, 2 oz cobalt, 2 oz Piedmont magnesium
157	18-19	Other black color	6 lbs basic enamel, 2 oz cobalt (ch. 17), 2 oz Saffron of Mars with vinegar (ch. 25), 2 oz *Ferret d'Espagne* (ch. 32)
158	19-20	Other black color	4 lbs basic enamel, 4 oz red tartar, 2 oz Piedmont magnesium
159	20-23	Purple color	4 lbs basic enamel, 2 oz Piedmont magnesium (ch. 164)
160	23	Other purple color	6 lbs basic enamel, 3 oz Piedmont magnesium, 6 oz copper scories calcined 3 times
161	24-25	Violet color	6 oz [sic] basic enamel, 2 oz Piedmont magnesium, 48 grains copper scories calcined 3 times
162	25-26	Yellow color	6 lbs basic enamel, 3 oz tartar, 62 grains prepared magnesium
163	26-28	Basic crystal to make red enamels	48 lbs sodium salt (ch. 5), 16 lbs white tartar (ch. 6), mixed into loaves; add 4 lbs lead and tin lime (ch. 148), 4 lb calcined white tartar (ch. 5)
164	28-30	Fusible magnesium for red enamels	Equal weights of Piedmont magnesium and nitrous salt, calcined 24 hours; wash to remove nitrous salt and leave to dry; add an equal weight of ammonium salt and grind while spraying with vinegar; leave to dry; precipitate 12 hours in a glass vase; replace the precipitated ammonium salt, repeat as needed until the magnesium remains at the bottom of the vase

remains of a small glass workshop from the 17th century in Rue Saint-Lô during the construction of a shopping center called L'Espace du Palais, revealing a variety of small personal adornments but few beads (Dussubieux 2009). In 1869, however, roadbuilders unearthed beads from about 1600 at the corner of Rues du Gros-Horloge and Jeanne-d'Arc. An antique collector, Jacques-Michel Thaurin, obtained the beads and donated them along with many medieval and post-medieval glass objects to the Musée départemental des Antiquités in Rouen (Barrera 1990; Davison 1972:v). The beads are still at the museum (inv. no. 1718.1.2 [D]) and a selection has been photographed (Figure 2).

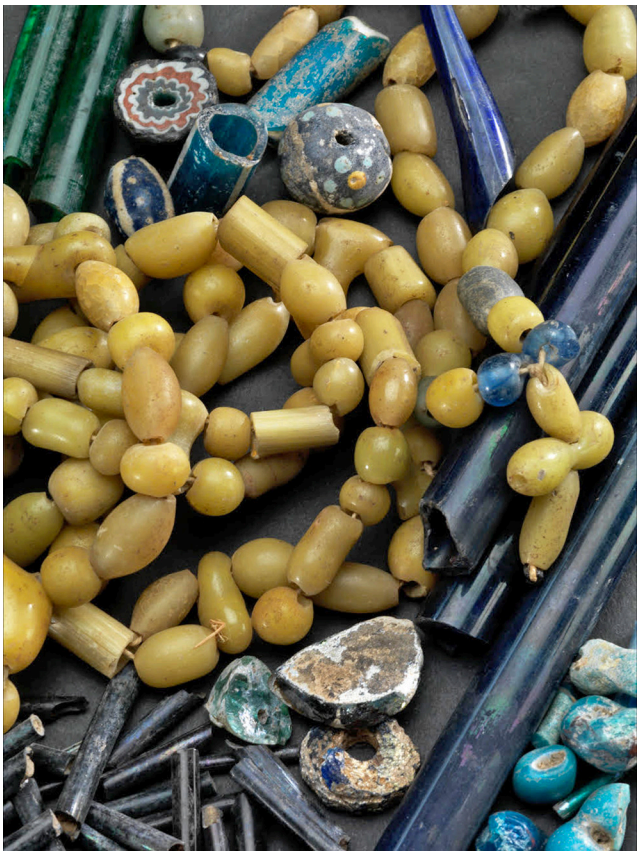

Figure 2. Beadmaking wasters found at the Rue du Gros-Horloge site, as well as two strands of beads from another site (© Musée-Métropole-Rouen-Normandie; Cliché Yohann Deslandes).

The photograph shows black and dark blue production tubes, as well as several beads. Of special interest are two frit-core (*faïence*) beads decorated with dots and stripes on a navy blue background, and a production tube for seven-layer chevron beads (*see* Karklins and Bonneau 2019). These highly diagnostic beads resemble examples found in northeastern North America (Figures 3-4), and are generally assigned to Glass Bead Period 1 (1580-1600) or, in some cases, to the early 17th century (Karklins and Bonneau 2018). Present in northeastern North America during a short period, frit-core (*faïence*) beads occur in eight varieties. The Rouen examples correspond with Types 2 and 6 (Karklins 2016; Karklins and Bonneau 2018).

Chevron beads, found in many varieties on Spanish colonial sites, had a limited circulation in northeastern North America. The seven-layer type seen in the Rouen photograph has a close parallel at Red Bay, Labrador, on a whaling and sealing site occupied by Basques from Spain about 1543-1635 (Delmas 2016:81-84). Other types of chevron beads have four layers: one is tubular and sometimes faceted, found in the Saint Lawrence and Saguenay valleys; the other is

Figure 3. Type 2 frit-core or *faïence* bead (photo: Adelphine Bonneau; courtesy Laboratoire et Réserve d'archéologie du Québec).

spherical and appears to have emanated from Dutch trading posts in the Mohawk Valley (Loewen 2016:279-281).

NEW FRANCE TRADE MONOPOLIES AND THEIR SUPPLY NETWORKS, 1599-1663

The Norman bead industry is important for North American researchers interested in bead proveniences because this region was the seat of several companies that held a monopoly over the fur trade in New France from 1599 to 1663. We may assume that these companies expedited most of the beads found in archaeological contexts related to the fur trade. Thus, the geography of their outfitting networks in France is an important clue to the provenience of beads found in northeastern North America, especially if the supply region included a beadmaking industry. As well, their chronology correlates well with the Glass Bead Periods widely used by archaeologists for the study of beads

Figure 4. Seven-layer chevron bead found at Red Bay, Labrador (EkBc-17-4272) (photo: Vincent Delmas; Delmas 2016:81).

found in northeastern North America (Kenyon and Kenyon 1983). We may look at these companies as they relate to the Norman bead industry and the chrono-typology of beads found in North America.

In a recent study, Turgeon (2019:101-134) documents the origins of the Normandy fur trade along the Atlantic coast from 1559 to about 1600. "While Cape Breton Island, Nova Scotia and the coasts of the Gulf of Maine have generally been considered as places of lesser importance in the early fur trade, it is truly here that the trade was born" (Turgeon 2019:107). The incipient trade belonged to a loose network of outfitters and captains from several French Atlantic ports, but especially from Rouen. For this period, Turgeon (2019:190) cites three sales of glass beads from Paris to fur trade outfitters headed to this coast, including one to the Rouen trader Guillaume Delamare whose relatives were *patenôtriers*.

During the initial period of the French fur trade monopolies, from 1599 to 1627, charter companies based in Normandy outfitted their supply ships at Honfleur, Dieppe, Rouen, and Le Havre. Although the companies restructured on two occasions, Samuel de Champlain remained their representative in New France. From 1599 to 1510, the principal outfitter and shareholder was Aymar de Chaste, the governor of Dieppe, who had extensive interests in Rouen. During these years, Champlain outfitted his voyages in Honfleur, and other supply ships left from Havre-de-Grâce (Le Havre). From 1610 to 1621, under the restructured *Compagnie des Marchands de Rouen et de Saint-Malo*, Champlain continued to sail out of Honfleur. When the shareholders reorganized to create the *Compagnie de Montmorency*, active from 1621 to 1627, control of the colonial trade shifted back to Dieppe and Rouen, where Champlain's ships took on their cargo for New France (Allaire 1999:74-83). The period of these companies coincides with the greatest visibility of Norman beadmaking, as well as with the dates of Glass Bead Period 2 (1600-1630) in northeastern North America.

From 1627 to 1663, the trade monopoly of New France fell to the *Compagnie des Cent-Associés*, named in recognition of its hundred shareholders. Based in Paris, the company had a complex structure allowing it to draw capital, supplies, and merchandise from several regions of France (Trudel 1983). It tolerated other actors in New France, notably the *Société de Notre-Dame* from Paris that founded Ville-Marie (Montréal) and conducted trade on Montréal Island (Trudel and Baboyant 1992). A subsidiary company based in La Rochelle, the *Compagnie de Miscou*, controlled trade in Acadia, although infighting in 1643 opened the door to investors from Nantes who financed and outfitted posts on Cape Breton Island, under Nicolas Denys. Thus, merchants from Paris, La Rochelle, and Nantes gained footholds in several regions of New France.

Normandy returned to the forefront of the colonial trade between 1652 and 1663, when the parent company received an injection of capital from the *Compagnie de Rouen*, in exchange for trade goods drawn from this city. During this period, coinciding with Glass Bead Period 3 (1630-1670), beads may have come from several French regions, some of which traded into specific regions of New France. For example, La Rochelle and Nantes outfitters traded into Acadia.

In 1663, the French crown abolished the system of trade monopolies and assumed direct control of New France. Colonial governance fell to the Ministry of the Marine and the Colonies, with an administration in Québec City overseen by an intendant and a council. Lasting until the British conquest of New France in 1759, this historical phase corresponds to Glass Bead Period 4 (1670-1760). Some individual traders based in Québec City and Montréal maintained their own transatlantic supply networks. As seen from the wreck of *La Belle*, in 1684 the Rochefort arsenal expedited a box of blue beads for René-Robert Cavelier de La Salle (Perttula and Glasscock 2017).

There is a striking symmetry between the periods of French colonial trade and North American bead chrono-typologies, or Glass Bead Periods. Each period brought greater complexity to transatlantic bead supply and distribution networks. Glass Bead Period 2 (1600-1630) stands out for the relative homogeneity of its bead types and this period corresponds to the time when Norman companies dominated the colonial trade. More research is needed to characterize the beads of this period, both in France and in North America, in order to explore their provenience.

CONCLUSION

While researchers have identified several "bead production regions" in Europe, one region documented by three 19th-century erudites in Normandy has hitherto escaped attention. Stimulated by a large regional glassmaking industry, beadmaking took place on a limited scale in at least two rural areas in the county of Eu, near Dieppe, and in the forest of Brotonne, near Rouen. An urban industry existed in Rouen as early as the 1590s, organized on a model similar to that of Paris or Venice at the same time. It mainly produced rosary beads, but sales contracts also show a variety of other small glass products. This professional community made its own crystal tubes, called *canons*, and also worked with enamel, raising the possibility of a link with glazed frit-core beads found in late 16th- and early 17th-century contexts in northeastern North America.

There seems to be a possibility that the Rouen and Norman beadmakers supplied the fur trade companies operating in New France, if we consider the fur trade's 16th-century origins in Rouen and the 17th-century companies' base in Normandy. The potential link between Norman beadmakers and bead varieties found in North America is strongest for the period from about 1590 to 1635. As a contribution to the archaeological study of bead proveniences, this paper places Normandy on the map of potential origins for beads found in North America.

APPENDIX A. TRANSLATION OF "*RASSADE*" AND "*VERROTERIE*" BY JACQUES SAVARY DE BRUSLONS (1723, II:1282, 1936)

RASSADE (tome 2, column 1282), which some inappropriately call and write RAZADE. This is a kind of *verroterie*, or small glass grains in diverse colors, with which the Negroes of the coasts of Africa and the peoples of America adorn themselves, and which one gives them in exchange for quantities of rich merchandise.

Not all sorts of *rassade* are good for the coasts of Africa. In Angola, particularly at Loango de Boire and at Malimdo and Cabindo, one needs little other than black and white-and-black. The latter is called *Contre-Brodé*. The black is sold, or rather exchanged, by the *masse* weighing three and a half pounds. The *contre-brodé* also by *masse*, but not by weight. Each *masse* contains a certain number of strands.

In a cargo to trade 612 Negroes, principally between the Seffre and Andres rivers, one needs about 3,000 pounds of rassade, that is, 1,200 pounds of *contre-brodé*, 800 pounds of black *rassade*, and 1,000 pounds of all the other colors. See VERROTERIE.

VERROTERIE (tome 2, column 1936). These are small glassworks that serve in the Commerce that Europeans conduct in several places on the Coasts of Africa, as well as in the Islands and the continent of America.

This *Verroterie*, also called *Rassade* or *Razade*, consists of various glass grains in all colors and diverse sizes, pierced in the middle in order to string them, and to make necklaces, bracelets, ear pendants, and other ornaments that the inhabitants and especially the women of these countries like for adorning themselves.

This merchandise, among other places, is good for Senegal and the coasts of Guinea, and the kingdom of Congo, from Cape Vert to the Cape of Good Hope. Large quantities were formerly distributed in the Isle of Madagascar, when the French had establishments there. It is still one of the things appreciated by the peoples of New France, particularly those discovered beyond the Lakes and along the banks of the great Mississippi River. The glass used to make this *verroterie* takes its color during the fusion itself of the vitrified materials, by mixing diverse elements according to the desired color. Iron rust alone produces red; red copper and calcined cobalt produce blue; for green one needs calcined copper, iron rust, or *minium*; and for violet, cobalt and magnesium.

The different sorts of *Verroterie* and *Verrots* that are good for Natives of America or Blacks of Africa are:

Large and small red *Ambréades*
Large and small *Comptes de lait*
Large and small fine Crystals
Red *Galet* and others striped
Striped grains
*Margrièt*es in diverse colors
Citron *Olivettes*, and others white
Yellow *Pesant*, and green *Pesant*
Citron *Rassade*

Of the four sorts of *Verrots*, that is red, yellow, black, white and mixed colors, there are two kinds, that is, large and small.

Finally, *Contre-Brodé*, not yellow and red. See RASSADE.

APPENDIX B. TRANSLATION OF "HOW TO MAKE *ROCAILLE*" BY JEAN HAUDICQUER DE BLANCOURT (1718 [1697], II:132)

All our mercers sell this *Rocaille*, which are yellow and green grains of which rosary strings are made for sale to country people. Most of this kind of merchandise is carried to the Indies, Africa, and the Islands [of America], with which the peoples of these countries adorn themselves, wearing them around the neck in scarves, as bracelets, and around the waist.

Enamel and glass painters use a lot of this kind of *Rocaille*, although of poor quality that has impure lead, as we have said elsewhere. They do so to avoid making a good flux, making do with the clearest *Rocaille*, the most transparent and having the least lead in it. This apparent quality does not make it better, unless there is less lead; in any case, the lead is always impure, having undergone no purification.

We have counselled enamel workers, and we must do so here again, to take instead of this *Rocaille*, our crystal material made with glorified Saturne (*see* Chapter CXII) or other similar materials as we have taught, which have

perfect purity. However, to satisfy everyone, we will give the composition of *Rocaille*, which is very easy.

To make the yellow, take one pound of very fine, very white sand, with three pounds of lead; grind these together in the mortar, and put it all in a strong crucible, covered and well-luted. Once the luting is dry, place the crucible in the glassworker's furnace, or in an aerated furnace which produces intense heat in order to reduce this material to glass, as is done with lead glass (Chapter LXXXII), and your *Rocaille* material is made. You put it in grains, or any other shape you desire.

To make green *Rocaille*, one needs the contrary of the yellow. Put three pounds of fine sand with one pound of lead, and it will be harder. This material changes color during fusion, becoming pale red. That is how to make the *Rocaille* used by most workers, and one sees there is no preparation of lead that makes the *Rocaille* full of impurities.

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ENDNOTES

1. Turgeon (2001:66) translates *canons* as rods, however the l'Association des Verriers au Chalumeau de France (2018:16) uses *flûte* and *canon* as synonyms for glass tube.

2. A *masse* was 3.5 French pounds (1.6 kg), or could signify a certain number of bead strings (Savary de Bruslons 1723, II:1936).

3. Girancourt (1867:7, 11) pinpointed its location on a street connected to that called Bonne-Nouvelle, later known as the rue de la Verrerie.

4. Turgeon (2001:66) considered enamel to be the frit core itself.

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