Renaissance *Millefiori* Glass: The Portuguese Case Study

AUTHORS

Francisca Pulido Valente*
Department of Conservation and Restoration, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, and Research Unit VICARTE
m.valente@campus.fct.unl.pt

Rosa Varela Gomes
Department of History, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa
rosagomes@netcabo.pt

Mário Varela Gomes
Department of History, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa
mvsg@fcsh.unl.pt

Inês Coutinho
Department of Conservation and Restoration, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, and Research Unit VICARTE
icoutinho@fct.unl.pt

Teresa Medici
Research Unit VICARTE
teresa.medici@gmail.com

Márcia Vilarigues
Department of Conservation and Restoration, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, and Research Unit VICARTE
mgv@fct.unl.pt

**Corresponding Author*

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INTRODUCTION

The Italian word *millefiori* literally means "thousand flowers" and encompasses glass objects with surfaces decorated in multi-coloured slices of glass canes, usually having concentric patterns.

The use of canes is first related to mosaic glass, which is amongst the glass working techniques rediscovered by Venetian glassmakers during the Renaissance. The *millefiori* technique was developed adapting it to the glassblowing process by rolling a bubble of molten glass over glass cane slices to pick them up (Barovier Mentasti 2012, 17). In this work, the term *millefiori* will be used to describe glassware decorated by this process.

Millefiori glass seems to be rare, and only few examples are known in museums and private collections or have been documented in European archaeological excavations (Medici 2014, 143; Pulido Valente et al., forthcoming). However, 185 glass fragments (yielding at least 39 objects) plus two intact pieces (Figure 1) with a wide variety of patterns, resulted from five Portuguese archaeological excavations: *Largo do Chafariz de Dentro* (LCD) and *Santana Convent* (LSC) in Lisbon, *Santa Clara Convent* (MSC) in Moura, *Santa Clara-a-Velha Monastery* (SCV) in Coimbra, and *São João de Tarouca Monastery* (SJT) in

Figure 1. *Two intact millefiori glass bottles found in Santa Clara Convent: left) small globular bottle. 17th century, H 56 mm × D 30 mm. Municipal Museum of Moura, VID485; and right) small gourd-shaped bottle. 17th century, H 100 mm × D 38 mm. Municipal Museum of Moura, VIC486 · Courtesy of the Municipal Museum of Moura*

Lamego. The fragments are dated to the end of the 16th and middle of the 17th centuries (Ferreira 2004; Lima et al. 2012; Medici 2014).

Historical research and documentation is a phase of paramount importance to preserve and value cultural heritage; therefore, a survey that combines formal and morphological observation with chemical characterisation was started

to expand our knowledge about the history of these glass objects. This work aims to provide preliminary observations regarding the Portuguese archaeological fragments, comparing them with *millefiori* glassware documented in the literature.

16TH- AND 17TH-CENTURY GLASS IN PORTUGAL

In Portugal, as in the rest of Europe, Venetian glassware was very popular, and several documents record its import and diffusion among the wealthiest members of Portuguese society (Medici 2014, 90). However, from the 16th century onwards, the emigration of Venetian glassmakers throughout Europe, including Portugal, led to the establishment of glass workshops producing glass in the Venetian way, the so-called *façon de Venise* glassware, whose quality was comparable to genuine Venetian objects (Valente 1950, 35-38; Medici 2014, 86-87; Coutinho et al. 2016, 437).

Historical documents show that several glass furnaces were active in Portugal between the 16th and 17th centuries, namely in Coimbra, Lisbon and surroundings, Oliveira de Azemeis, and Vila Viçosa (Amado Mendes 2002, 37-39). Unfortunately, the link between these production centres and the archaeological fragments found in the country is still missing, as no archaeological data concerning the furnaces, nor glass objects directly associated with these manufacturers are currently available.

Only a few studies characterized the chemical composition of early modern archaeological glass found in Portugal (Lima et al. 2012; Coutinho et al. 2016; Varela et al. 2018). Based on specific compositional features, these works allow one to conclude that some glass fragments from *SCV* (Lima et al. 2012, 1247; Coutinho et al. 2016, 447) and from *LCD* (Varela et al. 2018, 164) were of genuine Venetian production; they also opened the possibility that some of the other fragments could have been locally produced. In particular, the analytical results of *millefiori* objects analysed by Lima et al. 2012 were not comparable with any glass composition of known provenance.

Based on these previous investigations, we intend to deepen our knowledge on both Venetian glass import and *façon de Venise* production in Portugal by exploring one of the most successful glass techniques among the Venetians, *millefiori* decoration.

LOOKING THROUGH *MILLEFIORI* GLASS IN PORTUGAL

Of the fragmentary 39 objects plus two complete ones, the body glass colour can be broken down as follows: two (one from *LSC* and one from *SCV*) are opaque red, two are turquoise (from SCV), two are yellowish (from *SCV*), five are dark green (from *SCV*), six are greyish (one from *SCV* and five from *LSC*) and 25 (two from *LCD*, two from *LSC*, two from *SJT*, three from *MSC* and 16 from *SCV*) are blue. This result shows that the majority of *millefiori* glass found in Portugal have a blue body glass (about 60 percent), and this is the only colour that is present in all the considered contexts (Figure 2a).

Millefiori decoration on dark green, red and turquoise body glass was only recorded in Portugal.

Looking at the colours on the decorative motifs, these are recorded based on the number of individual fragments. Red (171 fragments) and white (158 fragments) are the most popular, being present in almost all the 185 fragments, plus two complete pieces. These colours are followed by cobalt (109 fragments) and turquoise blues (63 fragments), absent only in *MSC*. Less common are, respectively, the greenish (two fragments), purple (four fragments), and green (six fragments), all belonging only to *SCV* context (Figure 2b).

Looking at the patterns on the decorative motifs, a variety can be distinguished (Figure 3):

1. In 96 fragments, the original pattern is impossible to determine due to corrosion layers or deformation from slice orientation;
2. Rosette (40 fragments); this is the pattern most frequently found in *millefiori* glass objects (Hollister 1983, 202);
3. Flower (37 fragments);
4. Rosette with a cross in the centre (five fragments);
5. Possible caravel (three fragments);
6. Cross (two fragments);
7. Concentric circles (one fragment).

Finally, 24 glass fragments (four were found at *LSC* and the remaining at *SCV*) have the presence of gold leaf applied under the sliced canes; only

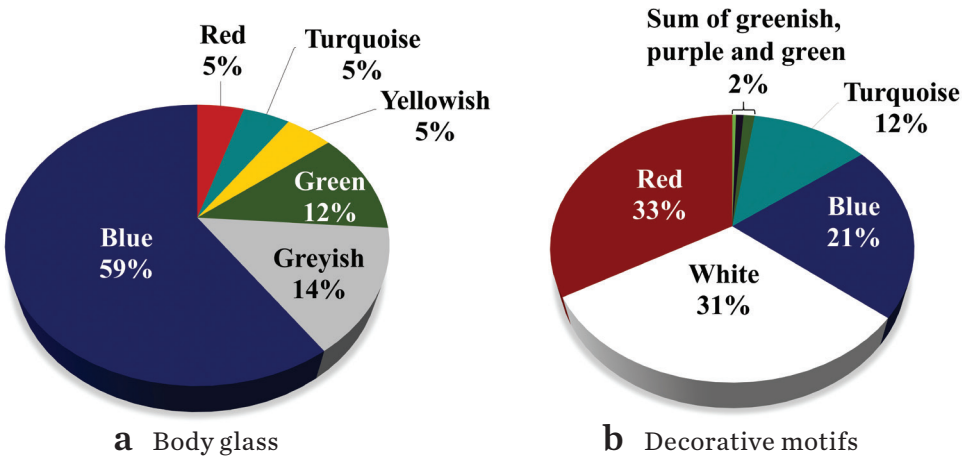

Figure 2. *a) The range of colours found in the body glass and b) in the decorative motifs of* ***millefiori*** *glass fragments of Portuguese assemblages*

Figure 3. *Examples of the different decorative motifs*

the fragments that have blue (12) or greyish (12) body glass present this characteristic, and they represent about 12 percent of the total of the Portuguese assemblages.

A minimum number of 41 glass objects were estimated: 12 of unknown shape, 13 small flasks (11 of them have gourd shape), eight bowls, three bowls or flasks, three cylindrical cups, one cruet, and one bird head. It is interesting to note that, as far as the authors know, the gourd shape and the bird head were only found in Portugal.

FINAL REMARKS AND FUTURE WORK

The work developed so far allowed us to understand that when comparing different decorative patterns present in the Portuguese assemblages with the literature, new motifs were found. In addition, it was possible to determine a large variation in glass compositions, colours, and manufacture quality.

With this work, one could understand that a wide range of colours (body glass or decorative motif) were used in the production of *millefiori* glass objects found in Portugal, and that the different decorative patterns can be grouped in six discernible categories.

Concerning the shape of the 41 estimated objects, the gourd shape and the bird head were so far only found in Portugal.

We hope that this systematic study will not only enhance the historic and artistic value of the *millefiori* technique in Portugal, but that it will also advance the knowledge about trading relations between Portugal and other European countries, thereby providing a body of knowledge that might assist the preservation of this important heritage.

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