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EDITORIAL

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to glass art and the conservation of glass artifacts

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Vidros, do século XVI, do Poço-Cisterna de Silves

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Área de interesse: Arqueologia

Resumo

Escavações arqueológicas, conduzidas pelos signatários, no Poço-Cisterna islâmico de Silves, hoje Monumento Nacional, verificaram que aquele foi entulhado nos finais do século XVI. Entre o numeroso espólio ali exumado contam-se fragmentos de diversos recipientes (garrafas, frascos) e adornos (contas e braceletes) de vidro (***Fig. 1***), produzidos com vidro transparente ou colorido que, embora alguns estejam em exposição no Museu Municipal de Arqueologia daquela cidade, não se encontram devidamente estudados. Trata-se tanto de produções possivelmente nacionais como de outras importadas, usadas nos quotidianos urbanos de casas de populações com relativo poder económico, conforme se pode deduzir das faianças, espanholas e italianas, das porcelanas chinesas e de muitos outros artefactos a que aquelas se associavam.

Palavras-chave: Poço-cisterna, Silves, garrafa, bracelete, contas

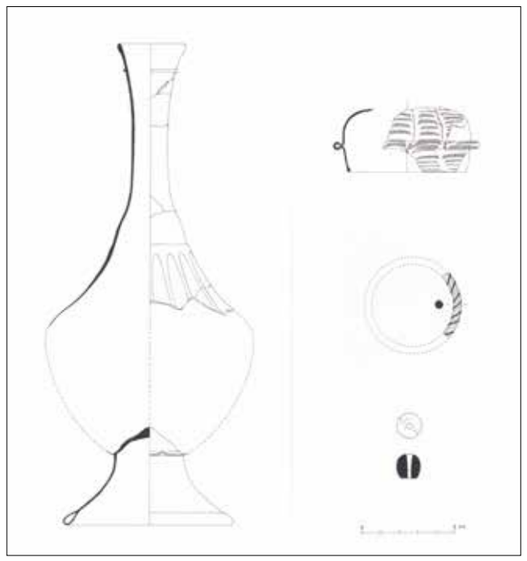

Fig. 1 Espólio vítreo do Poço-cisterna de Silves (seg. M. V.Gomes e R.V.Gomes)

Bibliografia

Gomes, M.V. e Gomes, R.V. (1986) - Cerâmicas estampilhadas, muçulmanas e mudéjares, do poço-cisterna de Silves, Actas do I Encontro Nacional de Arqueologia Urbana, Setúbal 1985, pp. 127-141,Trabalhos de Arqueologia, 3, I.P.P.C., Lisboa.

Gomes, M.V. e Gomes, R.V. (1989) – O poço-cisterna, almoada, de Silves (Algarve, Portugal). El Aqua en Zonas Aridas; Arqueologia e História, pp. 575-606. Instituto de Estudios Almerienses, Almeria.

Gomes, M.V. e Gomes, R.V. (1991) - Cerâmicas vidradas e esmaltadas, dos séculos XIV, XV e XVI do poço-cisterna de Silves, A Cerâmica Medieval no Mediterrâneo Ocidental, pp. 475-490, Campo Arqueológico de Mértola, Mértola.

Gomes, M.V. e Gomes, R.V. (1996) - Cerâmicas vidradas e esmaltadas, dos séculos XIV a XVI, do Poço-Cisterna de Silves, Xelb***, vol.***3, pp. 143-205.

Gomes, R.V. (2006) - Silves (Xelb) **–** Uma Cidade do Gharb al-Andalus. O Núcleo Urbano, Trabalhos de Arqueologia, nº 44, Instituto Português de Arqueologia, 224 pp., Lisboa.

Potassium-rich glass in Lisbon in the 18th century

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Field of interest: archaeometry, history of glass, archaeology

Introduction

From two archaeological interventions performed in Lisbon (more precisely at Rua do Arsenal (LRA), where the ruins of the Côrte-Real Palace were partially discovered, and at the Roman Theatre Museum (LTR), where the remains of a middle-class house dated to the 18th century were found), a group of twenty-five colourless glass fragments was unearthed. This group of colourless glasses was analysed by μ-PIXE and proved to be of a potassium-rich composition, which relates with the Central European glassmaking tradition. The shapes and decorations of the glass fragments can find parallels with other coeval European archaeological assemblages, as well as with the glass production from the Coina Glass Factory in Portugal.

As far as it is known, until the end of the 17th century glass circulating in Portugal was of a soda-rich composition (Coutinho 2016). This suggests that Portugal followed a Mediterranean glass-making tradition, and that the trading in glass with the North and Central European areas was low or inexistent. The 18th century European glass innovations, related to the development of lead glass and potassium-rich glass, spread very fast all over the Portuguese territory and its use (and production?) quickly became almost exclusive (Pulido Valente et al. 2016; Coutinho 2016).

The information about Portuguese glass production comes in majority from historical documents, and the only excavated furnace was the Coina Royal Glass Factory, active between 1719 and 1747. According to J. Custódio, glass *à la façon de Bohème* was being produced in the Coina Glass Factory during the first half of the 18th century (see figure 1) (Custódio 2002, p.113). Concerning other Portuguese glass productions, in 1768 a contract was made between two German entrepreneurs (João Galo and João Jorge, the original German names unknown to us were adapted to Portuguese in the written documents) and the Salvaterra de Magos glass manufactory, with the intent of making its production closer to that of the Bohemian tradition (Custódio 2002, pp.52, 54).

Keywords: Potassium-rich glass, Early Modern period, Archaeometry

Results and Discussion

Analysing the shapes and decorations of the unearthed objects, fragment LTR0014 (figure 1), belongs to an octagonal flask decorated with polychrome enamels, a feature typical of Central European glass from the 17th to 18th century (see for example: Metropolitan Museum of Art, Accession Number 13.179.70a). Flasks with the same shape and very similar decorations were identified among the objects excavated at the Coina Glass Factory. One flask with this shape and a resembling motif is present in the Soares dos Reis Museum, Porto, attributed to the Marinha Grande Glass Factory (figure 1 b). The difference between the two objects is that the design on fragment LTR0014 is enamelled, while on the flask at the Soares dos Reis Museum was engraved (Custódio 2002, p.244,246). Another flask also attributed to the Coina Glass Factory can be seen in figure 1 a), presenting an enamelled motif of the Portuguese shield.

The faceted drinking glasses represented in figure 1 (fragments LTR0055, LTR0063, LTR0064, LRA0126) often appear among the LTR and LRA archaeological excavations in different sizes. These shapes were identified in the Marinha Grande Glass Factory Catalogue, which proves that these type of beakers were produced in Portugal. These shapes were also identified among the finds from the Cistercian nunnery of Clairefontaine in Belgium, showing that these models were in fashion and circulating throughout Europe (Hellemans et al. 2014).

The archaeometric study tried to answer the provenance questions. Chart in figure 2 has the representation of literature values for K_2O ***vs.*** CaO contents taken from Table X.3 (Coutinho 2016). This comparison with literature is based on limited number of data and for that reason the conclusions drawn are only tentative. The reported values for Bohemian glass have very high contents of CaO apart from one reported group (Group F). This is also true for the values reported for Polish glass from Elblag and Poznan (Hellemans et al., 2014). Fragments LTR0064, LRA0006, and LRA0076 are the only fragments that in terms of potassium and calcium oxides can be related with Polish glass from Elblag and Poznan. The great majority of fragments analysed from the LTR and LRA sets are consistent with the Portuguese production from the Coina Glass Manufactory. These fragments are also consistent with the Belgium CL1.1 group reported in Hellemans et al. (2014). However, in general, the values of titanium, manganese and iron oxides of the samples unearthed in Lisbon are lower comparing with the Belgium CLF reported values.