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Elisabetta Neri

### GLASS HAND GRENADES FROM SHKODRA: ARCHAEOLOGICAL EVIDENCE OF A CITY UNDER SIEGE?

The 86 spheroid glass vessels found in Shkodra can be identified as hand grenades in use during the Ottoman siege of the castle in 1478. They are 13–14 cm high, 12 cm in diameter, black (deep green), opaque red or marbled in colour. The glass is 0.8–2.0 cm thick. The vessels are fragmentary, but the shape can be reconstructed as either spherical or ovoid. Close to 29 rims are recognizable rims; they are biconical or a low ring-shaped mouth, the opening being between 1.5 and 2 cm [Figs. 1–2]. Traces of pontil marks on the surface are proof that these vessels were made by blowing.

The fragments were all found in demolition layers inside the castle, especially in US 1805 in trench 19 [Fig. 3]. This layer and the one below it is made up mostly of waste from the destruction of castle buildings. Cannonballs and iron fragments in the same layer suggest that these vessels came from a military installation. Concerning their chronology, the material associated with the spheroid glass vessels points to the fifteenth–nineteenth centuries with some residual ceramics from the Hellenistic and early medieval periods.

The function of vessels of this type has long been debated: containers for precious liquids, perfumes or medicine, stick-a-light vessels,<sup>1</sup> fire extinguishers assuming it was water that they contained.<sup>2</sup> The hypothesis that they had been used as hand grenades<sup>3</sup> has recently been confirmed by the discovery of about a hundred intact glass vessels of this type in the castle of Mytilene. Examination of the vessels revealed the presence of an organic explosive mixture inside them, corroborating their use for the purposes of the artillery. They were stored with light ammunition and gun powder in a fifteenth-century silos in the internal court of the Mytilene castle which was originally built in the early Byzantine period, occupied by the Genoese in the 1355, repaired and reinforced by the Gattilusi during the fifteenth century and finally occupied by the Ottomans<sup>4</sup> [Fig. 4].

1 ETTINGHAUSEN 1965.

2 KALOKERINOS, MITSOTAKI, TZEDAKI-APOSTOLAKI (eds.) 2013, p. 14; BONOVAS, TZITZIBASSI (eds.) 2011, p. 62.

3 TRIANTAFYLIDIS 2016, p. 298.

4 WILLIAMS 1996, pp. 49–58.



Fig. 1. Spheroid glass vessels (hand grenades): a. black; b. marble red (photo D. Dubois)

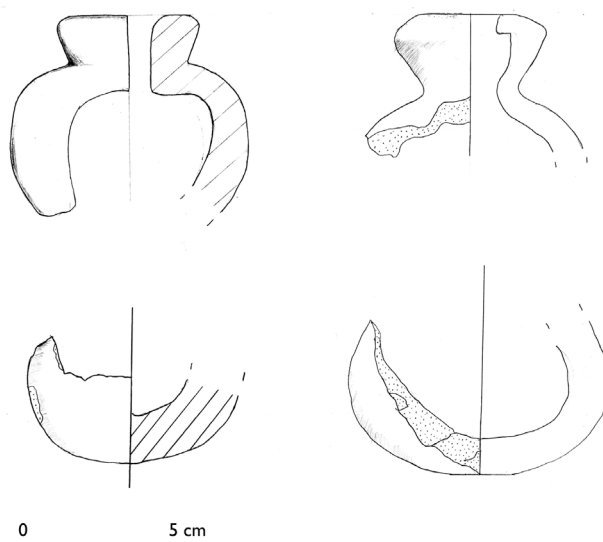


Fig. 2. Spheroid glass fragments (drawing S. Shpuza)



Fig. 3. Trench 19 where the hand grenades were found



Fig. 4. Fifteenth-century glass hand grenades from Mytilene (after Triantafyllidis 2016)

Glass projectiles from the tenth to sixteenth century are known from Greece and Venice. Typological parallels of black, blue and red glass are found in the National Historical Museum of Athens [Fig. 5]. Two of these are from the castle of Chania, from a context attributed to the tenth–twelfth century, after the early Byzantine fortress destroyed by the Saracens was rebuilt and before its occupation by the Venetians in 1252.<sup>5</sup> Similar artifacts of middle Byzantine chronology are recognized also from Heraklion, an important city from the early Byzantine period, conquered by the Arabs, reinforced by the Byzantines in the tenth century and again by the Venetians in the thirteenth century.<sup>6</sup> The other specimens in the Athens collection are from other Greek sites and generically attributed to the medieval period. Glass grenades are also known from fortifications on the islands of Euboea and Chios as well as Mytilene already mentioned above. The military role of Chalkis in Euboea, mentioned already by Procopius, became prominent again under the Venetian kingdom and in particular during the confrontation with the Ottomans.<sup>7</sup> The castle of Chios was constructed in the tenth century and enlarged in the Genoese period in the fourteenth century.<sup>8</sup> Some specimens from the military equipment of a fifteenth-century ship are in the collection of the Naval History Museum of Venice.<sup>9</sup> The continuity of their use in the Venetian ships is also attested by the sixth–seventh-century Koločep wreck<sup>10</sup> discovered near the Adriatic redistribution centre of Ragusa (Dubrovnik) [Fig. 6]. However, the latter type demonstrates a different morphology of the rim, suggesting a more ancient chronology than that of the Shkodra glass grenades.



Fig. 5. Medieval glass grenades from the National Historical Museum of Athens



Fig. 6. Glass grenades from the Koločep wreck (after Radić Rossi 2010)

5 DETORAKIS 1990.

6 KALOKERINOS, MITSOTAKI, TZEDAKI-APOSTOLAKI (eds.) 2013, p. 14.

7 ANDREWS 1953, pp. 185–186.

8 MONIOUDI-GAVALA 2001.

9 Unpublished material.

10 RADIĆ ROSSI 2010, pp. 114, 309.

The military use of these spheroid glass objects is corroborated by their provenance from defensive structures and assemblages of munitions from a wreck. Their Byzantine origin is established as well as their continued use in Venetian war practices.

These glass grenades probably carried “Greek fire”, something that was called “liquid fire”, “automatic fire” and “divine fire” in Byzantine sources. It was an incendiary mixture of naphtha, sulphur oil, resin and lime, used by the Byzantine and the Venetian in military operations, notably sieges.<sup>11</sup> According to the sources,<sup>12</sup> the grenades were used with an iron fuse, which was ignited and the grenade thrown against the enemies. After contact with the target, they would break and burst into flames. The composition of this mixture is known from the Hellenistic period and was probably perfected in the seventh century by the Greek Callinicus of Syria. Liquid fire was carried into ships equipped specially with hand siphons, clay vessels and handheld devices. Clay vessels for launching incendiary materials, called *ostraka skeuê* in the Byzantine sources, are found in numbers at Islamic sites (Afghanistan, Iraq, Iran, Syria, Palestine, Lebanon and Turkey)<sup>13</sup> and in Byzantine Rhodes and Thessalonica.<sup>14</sup> The use of glass for this purpose is not as frequent, but it reinforced the power of these weapons, because the glass would shatter into small fragments and strike a mortal blow.

The specimens from Shkodra add to the small number of attestations of medieval hand grenades; this is a rare and noteworthy find, for Albania and for the wider Mediterranean region.

The fragmented state of the finds from Shkodra could suggest that the grenades had been used in a military operation. The chronology of the context and the association with cannonballs point to the Ottoman siege of the Venetian castle of Shkodra in 1478. The violence of the confrontation between the Shkodrans and the Ottomans attacking the castle is underscored in the sources of Sabellicus, Jacob Moneta and Marino Barleti. The latter in particular mentioned the use of rockets, balls of fire (*ignei globi*) and cannons.<sup>15</sup> Sentries located at several corners of the city watched the Turkish artillery and, when the cannons were ready, they rang the church bells so that the besieged could take cover.<sup>16</sup> Cannons were used against incoming cannon fire, the total reaching more than 3200 shots daily. It is likely therefore that the hand glass grenades found with cannonballs in this trench were used in this operation.

11 BONOVAS, TZITZIBASSI (eds.) 2011, pp. 62–65.

12 PARTINGTON 1999.

13 WASTON 2004.

14 BONOVAS, TZITZIBASSI (eds.) 2011, pp. 62–65.

15 BABINGER 1978; M. Barleti, *The siege of Shkodra: Albanian's courageous stand against Ottoman conquest, 1478*, trad. and ed. D. HOSAFLOOK, Tirana 2012, p. 74. The *ignei globi* are quoted on page 76 of

the Latin version of the text. The *ignei globi* could be balls of rags, but also perhaps glass munitions.

16 Barleti, *ibidem*, pp. 74–100.

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