

Identification of gunflints from shipwrecks

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INTRODUCTION

Although gunflints have been recognized as an artefact type for a good many years, little primary research has been carried out within this field, with most gunflint papers referring back to a handful of useful – although by now partially outdated – publications (Skertchley 1879; Emy 1978; Hamilton & Emery 1988). This is a great pity, as gunflints could be developed into a valuable tool to form part of general conflict research, informing on the nationalities of the conflict's (sometimes many) opposing parties, the timing of the conflict, as well as on post medieval alliances, trade relations, etc. With this in mind, I have organised a Pan European working group, the purpose of which is to define the different gunflint types used throughout Europe (*Gunflints – beyond the British and French Empires*), aiming at publishing the Group's findings in BAR's new series *Contemporary and Historical Archaeology*.

To allow gunflints to be transformed into this useful tool it is necessary to define at least rough chronological frameworks around the individual gunflint types, their raw materials, and the technological approaches applied to make these pieces. Traditionally, archaeologists would focus on stratigraphy and radiocarbon dating, but even the best radiocarbon dates have standard deviations of plus/minus several decades. In terms of dating gunflint types, raw material use, and technology, the most valuable finds are those made in connection with shipwrecks, as we usually know the exact year, frequently even the day, a ship was lost either to the elements or in battle.

Published gunflint assemblages from named and dated shipwrecks are still relatively rare, but key finds include those from the British *Invincible* (1758) and *Earl of Abergavenny* (1805), and the French *L'Astrolabe* and *La Boussole* (both 1788) (Bingeman 2004; Cumming 2007; Delaney 1989). Unfortunately, some shipwrecks were 'salvaged' and their finds auctioned off before tighter regulation could be put in place, such as the gunflints from British *Admiral Gardner* (1809) and Danish *Wendela* (1738) (English Heritage 2014; CANMORE 2014). However, there are still many known, named and dated shipwrecks which might potentially yield gunflints, and new shipwrecks are found every year, such as the potentially interesting (early) *Sussex* (1693), discovered off Spain in 1998 (Wrecksite.eu 2014).

It is my hope that this paper may help divers and archaeologists to recognize gunflints affected by their marine environment, as well as to define these pieces in terms of approximate age and nationality. It is particularly important to investigate which gunflints formed part of the armament or cargo of Danish ships, as no research into Danish gunflints has been undertaken since Carsten Hess wrote his paper on the topic in Skalk (1968). Hess explains how the Danes produced some gunflints themselves, but that they also imported large numbers of gunflints, and my own research of Scandinavian ships wrecked off Shetland showed that Danish *Wendela* (1738) carried Danish gunflints, whereas Danish *Concordia* (1786) were equipped with French gunflints (Ballin 2014).

Marine archaeology has developed considerably in recent years, in popularity as well as in approach, and there are now several museums and institutions dedicated to this specialized field,

as well as a tailored education (eg, University of Southern Denmark). However, much of the archaeological work carried out ‘below the waves’ has focused on prehistoric sites and *their* flint assemblages, rather than on post-medieval flint. It is therefore necessary as part of this paper to briefly discuss the differences between prehistoric and post-medieval flint, to allow researchers of shipwrecks to safely distinguish between these categories.

WHAT TO LOOK FOR

Like most other materials and artefact types, gunflints are affected by their environment, and after years, or even centuries, in sea water, they may look quite different to how they appeared when they entered their ‘watery grave’. Although gunflints could be affected by an almost infinite number of environmental factors, it is possible to subdivide the recovered gunflints into a small number of general groups defined by their appearance and degree of surface alteration, namely:

1. Fresh pieces
2. Patinated or lightly re-corticated pieces
3. Heavily water-rolled/abraded pieces
4. Concreted pieces

Although gunflints deposited in sea water would frequently be affected by the chemistry of their environment, almost ‘mint’ quality gunflints are occasionally recovered. They would look like the pieces in Fig. 1, which were retrieved from the *St George*, which was lost 24 December 1811 near Thorsminde on the Danish west-coast. According to diver Gert Normann Andersen (pers. comm.) the mint condition of these gunflints is a result of the wreck having been completely covered in sand almost immediately after the disaster.

Fig. 1. Fresh gunflints from the St George (courtesy of Gert Normann Andersen, JD Contractor A/S).



If gunflints were deposited in relatively calm waters, they would not be exposed to the abrasive effects of under-water currents, but their flint raw material, which is acidic, would probably be affected to some extent by the specific alkalinity of the surrounding sea water. In some cases, the chemistry of the sea water, in connection with algae, may lead to a degree of patination, whereas greater differences between the acidity of the flint and the alkalinity of the sea water may lead to re-cortication, that is, a new chalky exterior is slowly formed. The gunflints from Danish *Wendela*,

which sank in Shetland waters just before Christmas 1738 (CANMORE 2014), are generally heavily patinated (Fig. 2).

Fig. 2. Three patinated gunflints from Danish *Wendela*, which sank off Shetland (photo: Beverley Ballin Smith).



The effect of turbulent waters is usually considerably greater, combining chemical changes with the abrasive effect of the currents. Gunflints from shipwrecks in the more exposed parts of the English Channel fall into this category (for example some of the flints from the *Douro*, which sank off the Isles of Scilly in 1843; Wrecksite.eu 2014), as well as most of the gunflints recovered from shipwrecks in Shetland waters. Fig. 3 shows a series of gunflints from Danish *Concordia*, which was wrecked in Lerwick Harbour in 1786 (Ballin 2014). Some of these gunflints are now so abraded that they are in the process of being transformed into small flint pebbles, but as there is no natural flint in or around Shetland, flint from shipwrecks in these waters must be either gunflints/strike-a-lights or ballast flint. Heavy abrasion may pose a greater problem to investigators of shipwrecks in, say, Danish waters, where natural flint is abundant, but in most cases the morphology and technological attributes of the pieces should allow them to be safely identified.

Fig. 3. Heavily abraded gunflints from Danish *Concordia* (photo: Beverley Ballin Smith).



In some cases, gunflints may become concreted together, occasionally with other artefacts or objects from the seabed. These concretions may be cemented together by for example metal corrosion (rust) (eg, Fig.4 – gunflints from the *Invincible* [1758]), coral, or other crustaceans (eg,

Fig. 5 – concretion found on a North Carolina beach, USA [unknown ship]), and they may be difficult to recognize for what they truly are.

Figs 4-5. 4) Gunflint concretion from the *Invincible* (courtesy of John Broomhead, diver and bead investigator of the *Invincible*); 5) gunflint concretion from North Carolina beach (USA) (courtesy of Thomas Santangelo, avid 'beach comber').



AGE AND NATIONALITY

The present section is intended to form a gunflint 'crash course' for divers and marine archaeologists, presenting gunflints which may be expected in Danish and neighbouring waters. It should be possible to distinguish between the most common chronological/national gunflint types encountered in Danish waters on the basis of a small number of attributes: 1) are they flake- or blade-based?; 2) if they are flake-based – do they have two ventral faces or one ventral and one dorsal face?; 3) general outline; and 4) type of raw material.

Fig. 6 shows two different types of flake-based gunflints, namely ventral/ventral flints from the *Invincible* and ventral/dorsal flints from a field near Lejre, possibly associated with a skirmish between Danish defensive forces and a British raiding party during the early 1800s Danish-British hostilities (kindly donated to my research by metal detectorist Tommy H. Olesen). The former ones are dark-grey, and the fact that they have two ventral faces defines them as British. The latter are light-grey, and the fact that they have a ventral and a dorsal face defines them as Danish, although similar flints were also produced in southernmost Sweden (Engström 1980). This type of gunflint have been recovered from the wrecks of two Danish ships, namely *Wendela* (1738) and *Fredensborg* (1768). The French produced flake-based gunflints similar to the British ones, but they were mostly in honey-coloured flint.

Fig. 6. Flake-based gunflints: Upper row – the two faces (ventral/ventral) of gunflints from the *Invincible* (1758); bottom row – the dorsal and ventral faces of Danish gunflints found in a field near Lejre on Zealand (photo: Beverley Ballin Smith).



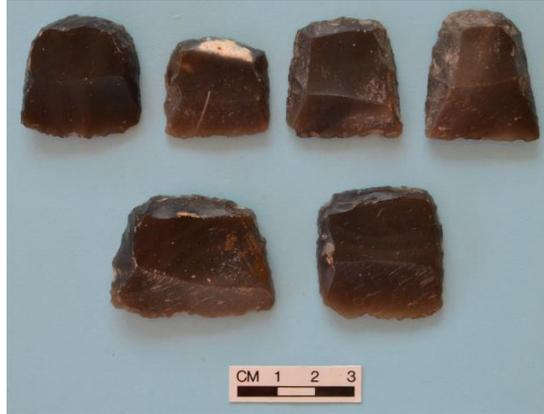
The British and French flake-based pieces are generally early, and they were succeeded by blade-based pieces (Figs 7-8). This transition happened at different times in the two countries – in Britain slightly before 1800 (Skertchley 1879), and in France slightly before 1700 (Emy 1978). French gunflints from the Swedish shipwreck *Drottningen af Sverige* (1745) provides a *terminus ante quem* for this process. For unknown reasons, the Danes produced gunflints based on individual flakes throughout the post-medieval period (Hess 1968), despite the fact that adoption of the new blade-based approach might have allowed them to become self-sufficient.

Figs 7-8. Typical British (from the Royal Armoury, Kathmandu, Nepal) and French (collected by an amateur in Ohio, USA) blade-based gunflints ('blacks' and 'blondes') (photos: Beverley Ballin Smith).



Figs 7 and 8 show typical British (post 1800) and French (post 1700) blade-based gunflints. The British pieces are generally elongated and rectangular, whereas the French ones are broader, with rounded heels, and occasionally trapezoidal outlines. The colour difference is also notable, with the former being in so-called 'black' flint and the latter in 'blonde' (honey-coloured) flint.

Fig. 9. Blade-based gunflints from the Polish Modlin Fortress, near Warsaw (photo: Beverley Ballin Smith).



In his paper, Hess (1968) mentions a number of sources for the pieces imported into Denmark, one being ‘Siebenbürgen’. This geographical name is usually associated with Transylvania (Romania) and it borders onto southern Poland and Ukraine. It is quite likely that the gunflints referred to were imported from the productive flintmines of Ukraine (Galicia, Podolia and Volhynia), which were, at different times, on Polish, Austro-Hungarian and Russian hands. The later (blade-based) forms from this area would probably have looked like the ones in Fig. 9, which date to the Napoleonic Era (bought on Ebay by the author). Their shapes are generally like French gunflints, whereas their colours are like the British ones. Note the elongated trapezoidal piece, No. 4, which is a distinctly East European type.

Fig. 10. Lightly abraded gunflints from an unknown Danish or Norwegian ship, collected on the beach near Tversted, northern Jutland. Notice the modification of the pieces’ leading edges, which is very akin to prehistoric scraper-edge retouch (courtesy of Johann Müller).



PREHISTORIC AND POST-MEDIEVAL FLINT

As mentioned above, most divers and archaeologists dealing with submarine lithics would have encountered prehistoric flint, and the question is how to distinguish between those and gunflints. Blade-based pieces are relatively straight forward to deal with, as the blades segmented to produce the gunflints were considerably thicker than most prehistoric blades. British gunflints, for example, are frequently based on blades around or more than 10mm thick. Flake-based

pieces, like the Danish ones with their ventral and dorsal faces, may be more difficult to deal with, and as their leading-edge retouch is on the dorsal face, they frequently look very much like prehistoric scrapers (Fig. 10).

However, the difficulties are most pronounced when the researcher deals with individual pieces. If a diver or marine archaeologist has recovered a more substantial assemblage of gunflints from a ship, these pieces will usually conform to certain size and morphological standards, particularly if they were produced for military use, guided by the military's strict quality controls. A collection of for example small scrapers from a submerged single-occupation site would usually vary considerably in terms of shapes and sizes. The author has in his private collection a 75-piece sample of gunflints from the frigate the *Invincible*, and despite the fact that these military issue pieces were produced on flakes, they are highly standardized and almost identical.

CONTACT ME

It is my hope that the present paper will result in divers and marine archaeologists from Denmark contacting me with information on gunflints recovered from shipwrecks in Danish waters. This information will then be fed into my research on Danish gunflints as well as my general research into European gunflints outside the British and French empires.

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