Problems of flint utilizaton within Eastern Ireland

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There is an assumption that in the North East of Ireland there is an abundant supply of easily accessible flint which would have minimized problems of extraction and stone tool production for prehistoric man. Fig. 1a shows that cretaceous chalk with flint only outcrops in certain very specific areas and in fact it is usually covered by several hundred feet of basalt. Therefore, in an unaltered landscape and treating flint as the only source for the manufacture of stone tools, one would expect that the size of flint industries would diminsh in some form of linear relationship with distance from source and that the curation of the material (BINFORD 1977 & AMMERMAN et. al. 1978) or recycling aspect of the industry would increase. However two environmental factors upset such a simple model.

Factor I

Movement of ice sheets has only distributed erratic flint over a small portion of the island. The main ice sheets of the Midlandian (last glaciation) were continental lowland masses which (except in the case of local movement of (a) an ice dome in L. Neagh which may have carried flint some short distance south of the cretaceous outcrops and (b) ice in the Mourne/Foyle basin), did not usually contain significant quantities of flint erratics. However the Irish Sea ice would have carried erratics of flint down the Irish Sea basin and left quantities of flint on the eastern coast of Leinster (McCABE 1978).

Factor II

This is the presence of a series of carboniferous rocks which included an extensive series of chert outcrops in the northern end of the series. Other rocks including dolomitic limestone and mudstones could be worked. (In the central portion of Ireland these elements increase the more westerly the site until one approaches the west coast when higher percentages of flint again occur). (This factor is not considered in this study).

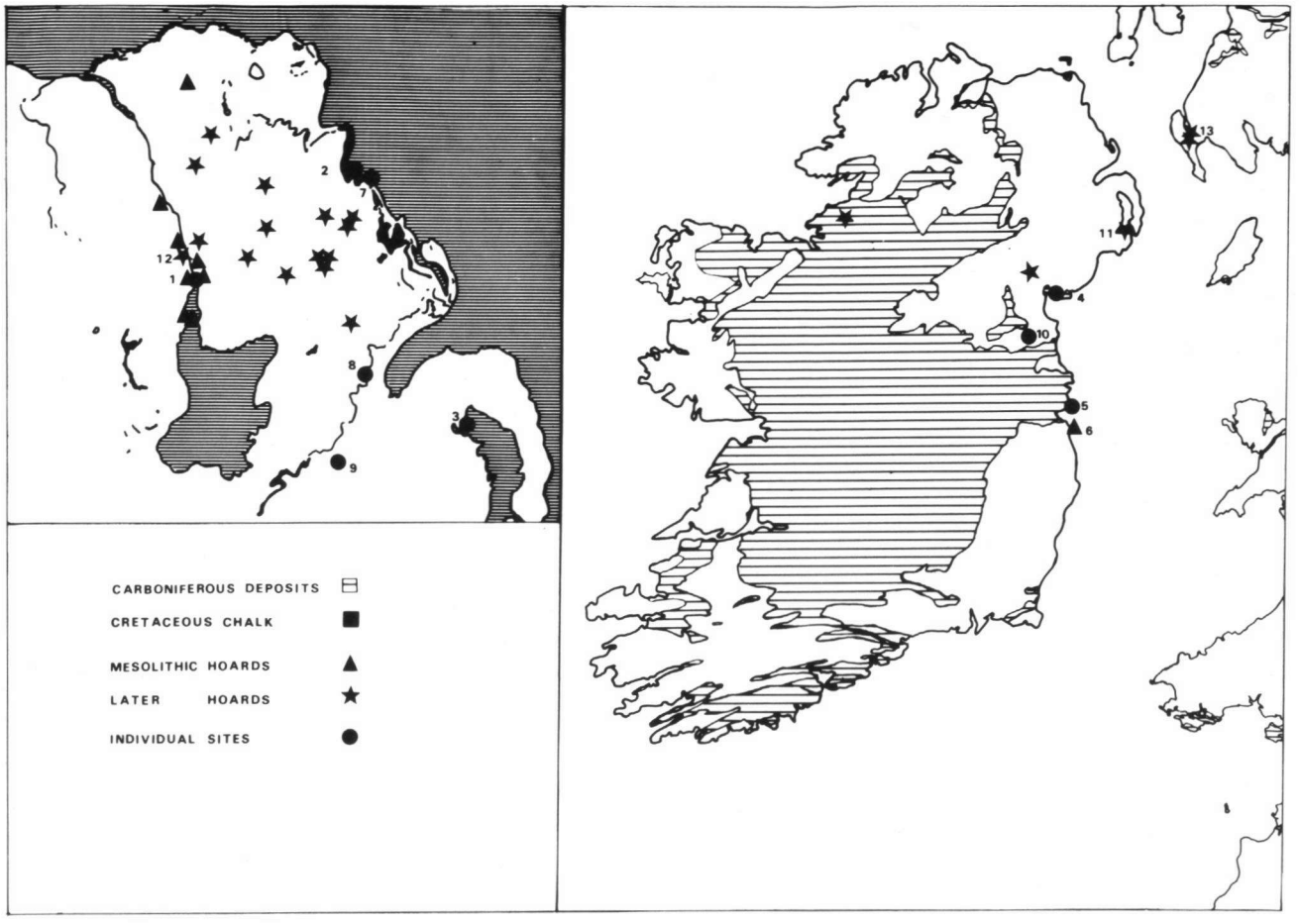
The two main aspects of the industries which are examined are (a) size of industry (b) percentage of retouched tools to residue (the term retouched tools is used so as to avoid the question of how large a percentage of the flakes were actually used). Unfortunately in certain areas it is difficult to produce exact figures because samples are too small or in the case of (b) because material from tombs has been included and it cannot be guaranteed that the proportion of residue to retouched tools is a product of the availability of material i.e. ritual could be involved. Another problem is that of partial excavation of sites. There could be a bias because of only excavating specialized areas within individual sites e.g. 3 out of 13 items from the Dalkey Island Hoard are retouched while the ratio from the midden was < %. However a selection of sites are included in Table I. Sites are only compared with those of a similar date as cultural differences alone would cause variations.

The utilization of flint by man can therefore be examined in two areas.

1. The North-East

Flint is lacking in the Bann Valley. Here it might be expected that the industries would be much lighter than those on the Antrim Coast where flint is abundantly available. In the later Mesolithic of Ireland there is a development which at least partially negates this tendency. As can be seen from Newferry site 3 (WOODMAN 1977) and Mesolithic material from the Bann Valley there was little evidence that flint was worked in the valley flood plain. (This is due to the transportation of large numbers of flint blades rather than nodules of flint). The best example of this is the L. Beg Hoard where 160 blades were found lying together in a cache. Many other caches of blades and implements are known from the Later Mesolithic (Fig. 1). One result is that industries from sites such as Newferry (3) (Table 1) do not differ significantly in size from those found in flint rich coastal areas - Carnlough site I. A contrast is that Rough Island, (MOVIUS 1940) the same distance from the chalk outcrops as Newferry 3, but outside the N.E. area, has a significantly lighter industry. A similar tendency can be seen in Later Prehistory (information on Neolithic hoards supplied by L.N.W. FLANAGAN) as there are numerous caches of finished and unfinished retouched tools known in this area which belong mostly, though not exclusively, to the Neolithic. These can be more than personal tool kits. One hoard, Killybeg, (WOODMAN 1966) contains 60+ unfinished hollow scrapers while a 2nd (Glenhead) contains 138 scrapers. The Neolithic hoards often contain flakes or implements with fresh cortex suggesting an organized movement of material from areas where flint was extracted from the chalk. (Deep mining of flint is unknown in Ireland).

The incidence of retouched tools on the inland sites is much higher hence the ratio of retouched tools to the residue at Newferry Site 3 as compared to Carnlough I. This does not allow for the fact that most of the blades found at Newferry Site 3 were imported and are therefore probably used without secondary retouch (WOODMAN 1978). We must conclude that settlement tended to be in areas where good flint was not immediately available and because of its total lack it was brought into areas of settlement either as blades, caches and implements (in the Later Mesolithic) or as finished and half finished implements (in the Neolithic).



So far it has proved exeptionally difficult to identify the source of flint. We know that flint was being exploited on the Antrim Coast but we cannot be sure that it was this material which was being used inland as stratigraphically similar cretaceous deposits are found to the west of known areas of settlement. There are no industrial sites known on the western chalk escarpment, probably simply because there has been insufficient work in this area. However WOODS (Pers. Comm.) has pointed out to me that a possible solution may lie in the fact that a fuller series of chalk deposits are to be found on the Antrim Coast. Therefore if it was possible through trace element analysis to identify the range of flint used against the known range to east and west then it might become apparent that one or other flint source has been used. The approach is of course fraught with many problems but it seems to be the only hope. If a source was identified then that information could be used to help estimate the size of the territories exploited by prehistoric man.

South Eastern Ulster and Leinster

Here flint is available in erratic form and the quality of the industries of both Later Mesolithic and Neolithic is much poorer. There is still some evidence for human transportation of significant quantities of flint. There is the Neolithic blade hoard from Ballyalton Court Cairn (EVANS 1934) which must have been made from imported flint as it has fresh cortex and there is a small hoard of Later Mesolithic blades and retouched tools from Dalkey Island Co. Dublin. In size this material has more in common with sites in the North Eastern coastal area than their local counterpart. Though not from this area but of interest are the two hoards of blades and flakes of (CALLENDAR 1917) fresh Irish flint in the Stranraer area in Scotland. (Inver and Bogside Hoards). (Here again the material is as heavy as that on the Antrim Coast). However, as noted above, material from Later Mesolithic sites is much lighter than that from sites in area I e.g. sites such as Rockmarshall, (MITCHELL 1949) Suton (MITCHELL 1972) and Rough Island (MOVIUS 1940). (Note that Sutton, the farthest south, is marginally the heaviest as it was probably more in direct line of the Ice Sheets). In later industries the impoverishment is also shown by the presence of scalar cores and by the differences in flake sizes, for example the difference between Townleyhall (EOGAN 1963) in Leinster and the factory site Mad Mans Window I on the Antrim Coast or even the Neolithic settlement at Squires Hill, Co. Antrim. Obiviously outside the north-eastern area human transportaton of flint is only a minor factor and the exploitation of erratic flint would appear to begin even within 10 kms of the chalk outcrops. Thus at Blaris in N. Down erratic flint is used and the result is a very light industry. The ratio of retouched tools to residue might increase from that in areas adjacent to flint. At Townleyhall (EOGAN 1963) and both Neolithic and Beaker sites at Knowth (EOGAN 1976) the ratio of retouched tools to residue is 10%. At a Neolithic habitation site near the chalk escarpment at Squires Hill the ratio is only 3%. However quality of flint and availability are not the same therefore some sites particularly those on the coast, where flint is more accessible on the beaches, have a much lower ratio. The incidence of retouched tools at some of the coastal Mesolithic sites is therefore very low - e.g. Rough Island and Rockmarshall - while the higher ratio at Sutton could be due to partial excavation. To the west of these sites chert becomes more important e.g. the Later Prehistoric site of Monknewton (SWEETMAN 1976) and the Mesolithic sites on the Inny River. In all periods the incidence of waste in local carboniferous chert is much higher than finished implements suggesting that finished flint implements were preferred to the local alternatives. The same would appear to be true in the West where at sites such as Bavan in Co. Donegal most of the implements were in flint while more than 20% of the waste was quartz (FLANAGAN 1966).

Conclusions

As can be seen from the comparisons of certain sites (Table I) size is not necessarily a good indicator of curation particularly in areas where no flint is available as human transportation of flint can be an important factor. The percentage of retouched tools would seem to be a better indication of curation of an assemblage. Certainly in the case of the later industries use of local erratic sources would appear to happen very close to the chalk deposits e.g. at Blaris. Also in the Lagan Valley a scatter of what would appear to be large blades from Later Mesolithic assemblages suggests that Later Mesolithic communities were not so opportunist in their choice of raw materials.

TABLE I

LATER MESOLITHIC

Fig. No.	Name	Mean Length (cm)	Mean Breadth (cm)	% of Retouched Tools
1	Newferry 3 (four)	6.99 ± 1.25	2.81 ± .73	20.0%
2	Carnlough Bay Farm Site I	6.79 ± 2.10	2.78 ± 1.86	< 1%
3	Rough Island	5.0 ± 1.27	3.08 ± 0.78	< 1%
4	Rockmarshall	4.67 ± 1.13	2.58 ± 0.91	2.0%
5	Sutton	5.41 ± 1.90	2.50 ± 0.89	17.0%
6	Dalkey Hoard	7.25 ± 0.97	3.50 ± 1.20	Not applicable

NEOLITHIC

7	Mad Mans Window Site I	7.32 ± 2.02	4.40 ± 1.62	1%
8	Squires Hill	5.95 ± 1.23	3.39 ± 1.16	2.0%
9	Blaris 102	4.28 ± 1.17	2.87 ± 1.14	12%
10	Townleyhall	4.21 ± 0.85	2.37 ± 1.13	10%
11	Ballyalton Hoard	6.73 ± 1.14	3.27 ± 0.77	Not applicable
12	Ballynease MacPeake Hoard	6.75 ± 1.23	3.29 ± 0.72	Not applicable
13	Inver Hoard	7.68 ± 1.48	4.81 ± 1.21	Not applicable

Test of significance of difference of mean using Student test

(1) Newferry Site 3 four and Carnlough Bay Farm: No significant difference.
(2) Carnlough Bay Farm and Rough Island: Significantly different at .1%
(3) Mad Mans Window I and Blaris 102: Signifcantly different at .1%

Finally the redistribution of flint artefacts by man, in particular in the North East, indicates that prehistoric settlement is usually not bounded by the localization of flint sources for the manufacture of their stone artefacts.

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