Figure 4a. Star Carr Formal Tools Technological Attributes Analyses Summary

Tool Type	Flint Type			Summary of Selected Data	
	Translucent	Wolds	Drift		
Scrapers (overall)	9%	36%	55%	• Almost 1/3 of all scrapers are exaptively used- through burinations: see scraper-burins. • Tool blanks: flakes & blades, but also overshots and core rejuvenation pieces used as blanks reflects economising strategies. • The high percentage of reduction for scrapers suggests economising behaviour. This in turn may infer pressure on resources. • The high percentage of cortical drift flint possibly infers ad hoc use?	
End scrapers	• The variation in end scraper size in all materials (right) seems to be consistently low with a small standard error. Although the small translucent flint sample may have skewed the results. • The standard errors are broadly acceptable- which suggests the results are safe. • The similar sizes for all materials suggest a formal mental design. It is interesting then that some pieces that were then used flexibly – equipotentialy- and burinated! • The makers were clearly selecting the larger more 'usable pieces' as blanks for burins.				
side scrapers	• 4.5% of translucent flint side scrapers are burinated- see scraper burins.				
end & side scrapers	• These may be exaptive: if either a) an end scraper was retouched to become a side scraper or vice versa, b) it was originally made as one and remade into the other, or c) the retouch on one margin has been misinterpreted!				
Awls	8%	45%	7%	• Most of the wolds and drift flint tool blanks are non-cortical (see Baird 1995 for types) representing the mid to later stages of reduction. • Whereas more of the translucent flint tools are cortical suggesting economising behaviours. • Flake & blade blanks were used almost equally. • Where two ends are retouched (e.g. wolds 3 out of 49, and drift 2 of 52), this infers equipotentiality. • Burinations here are retooling or equipotentiality#.	
Microliths	15%	37%	48%	• There is no immediately obvious equipotential use evident from these results. • Most are obliquely truncated Microliths (oblique left microliths accounting for 53% of translucent, 27% wolds and 36% drift flint.). Other types also present including: triangles, and trapezes in smaller numbers. • The size for all materials generally consistent: *circa* L 25mm, w 9.5mm, D 1.75mm • Most are non cortical (see right).	

% scrapers	*Translucent*	*Wolds*	*Drift*
Cortex	56%	17%	47%
Non Cortical	44%	83%	53%
*scraper burins	≈32%	≈37%	32%

Tool/Mean	*Length*	*Width*	*Depth*
end scrapers	35.75mm	22.8mm	7.56mm
end scraper burins	46.88mm	22.36mm	7.91mm

% end scrapers	*Translucent*	*Wolds*	*Drift*
* end scraper burins	25%	≈33%	≈30%

% side scrapers	*Translucent*	*Wolds*	*Drift*
*side scraper burins	≈5%	≈2%	≈3%

% end & side scrapers	*Translucent*	*Wolds*	*Drift*
*side & end scraper burins	2%	2%	1>%

% Awls	Translucent	Wolds	Drift
#Burinated awls	11%	4%	6%

% Microliths	*Translucent*	*Wolds*	*Drift*
Cortex	97%	0%	93%
Non Cortical	3%	100%	7%

Figure 4b. Star Carr Formal Tools Technological Attributes Analyses Summary

Tool Type	Flint Type			Summary of Selected Data	
	Translucent	Wolds	Drift		
Burins	11%	34%	55%	• This data includes the scraper-burins and awl burins. • 51% of burins are equipotential (i.e. tools chosen as a blank for burination). Most of these (55%) are burinated-end scrapers, 44% of Awls & other exaptive-burin types 1>%. • 49% of burins are a on a 'clean' unused blank. • The high proportion of cortex suggests economising strategies. • The cortex groups represented suggest that translucent blanks were struck from the mid to later stages of reduction. Whereas wolds- later. • Burins were predominantly made on blades. • Of burins proper & other burinated tools: 67% have one facet, and 32% have multiple facets. This could represent retooling or exaptive tool use. • It is thus striking the amount of exaptive tool use if we combine multiple facets with the exaptive tools by blank choice (e.g. scraper-burin): (see right). • The location of retouch differs between the exaptive and non-exaptive burins. For example: on scraper-burins the burinations are on retouch and rarely on natural edges (which lends weight to the exaptive interpretation). • On single proper burins the burination facets are generally on natural edges and some retouched. • Generally burin size (all categories) is consistent: Length 45-7mm, Width 22mm and depth 9-9mm. Although as a rule wolds burins are marginally larger.	

% Burins	*Translucent*	*Wolds*	*Drift*
Cortex	42%	19%	58%
Non Cortical	58%	81%	42%

% Burins	*Translucent*	*Wolds*	*Drift*
*Scraper-Burins	39%	57%	47%
*Awl-Burins	≈3%	2%	2%
Equipotential by blank choice	42%	58%	49%
Burins (non-equipotential)	58%	42%	51%

% Burins	*Translucent*	*Wolds*	*Drift*
Burins (non-equipotential)	28%	23%	30%
Total Equipotential Burins‡	72%	77%	70%

Total Exaptive/Equipotential Tools	• 17% of Formal Tools at Star Carr = Exaptive/Equipotential.	• 83% of Formal Tools at Star Carr = Non-Exaptive/Non-Equipotential.

Note: The technological attributes analysis that is summarised in this table was undertaken just on the formal tools (Preston 1999). Thus the results are only tentative. A full reanalysis of Clark's (1954) assemblage is needed, as comparisons of the non-formal tools, debitage and cores would be particularly useful.

*Symbols: * = Equipotential. # = equipotential or retooling depending on the morphology. ‡ includes Exaptive pieces by: blank choice alone, multiple burinations alone & both multiple facets on a reused tool (exaptive by blank choice)*