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Tema: Rogaland

Picking up the Pieces

Contextualizing Utilized Blade Fragments from Two Assemblages in Southwest Norway

This article centers on a discussion of blade fragments from two Late Mesolithic assemblages recovered during a recent excavation project in Rogaland, southwest Norway. Analysis undertaken during post excavation cataloging of lithic artefacts suggests some retouched and edge damaged pieces, represent minimally modified tools. The temporal context of the Sola finds offers an opportunity to reorientate research related to the northeast European/‘Post-Swiderian’ technological complex of which such tools were a central component. The studied fragments suggest that the two closely spaced areas may represent specialized, broadly contemporary activity. The results of this preliminary study highlight the latent interpretive potential of this relatively abundant yet somewhat intractable artefact class.



1. | Landscape setting (above) and post-excavation overview (below) of the hilltop activity areas at "Sola Sentrum". Photo/illustration: Krister Scheie Eilertsen/AM.

Introduction

West Norwegian lithic assemblages of Middle and Late Mesolithic date (8100–4000 cal. BC) are in part characterized by an abundance of very regular blades derived from single platform, conical cores. Technological overviews highlight the fragmented state of these blade assemblages (Bjerck, 1983, Bjerck, 1986), a phenomenon ascribed to the deliberate snapping of blades in order to produce blanks for

use as inserts in composite projectiles as well as a variety of other tools (Rankama and Kankaanpaa, 2018:158).

In the summer of 2017 pre-development excavations near Sola town center in north Rogaland investigated 4 discrete lithic scatters atop a small, rocky knoll (Fig. 1). Two of the activity areas, known as *A1* and *A3*, contained substantial, largely fragmented blade assemblages which we discuss and contextualize below.

Method

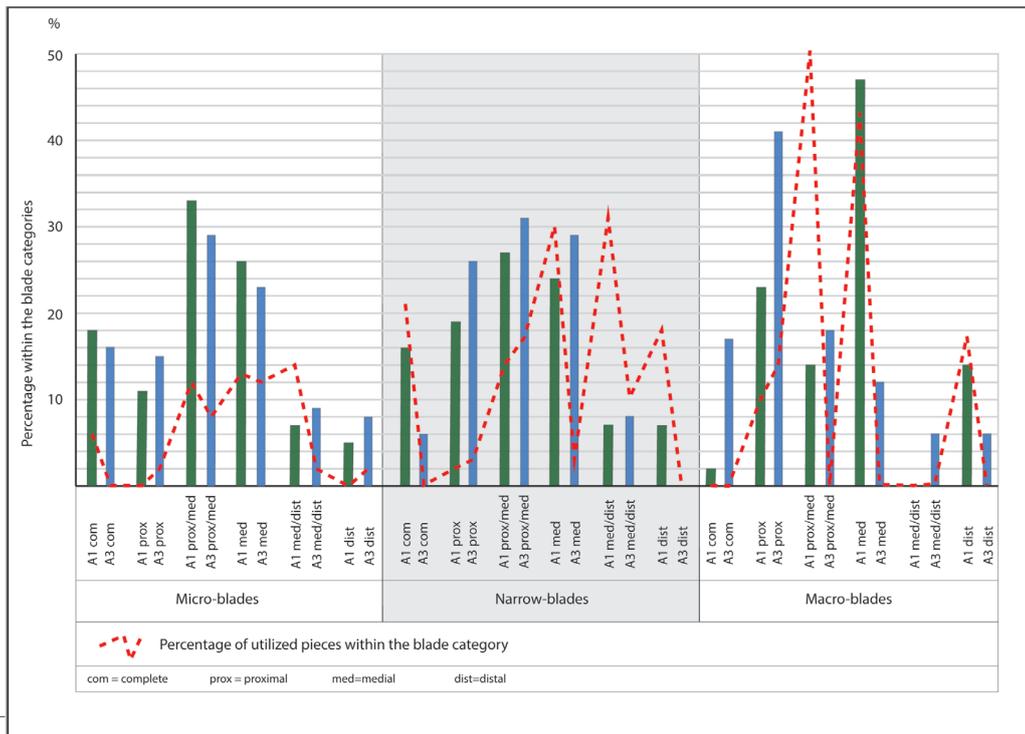
The data used in this study is based on the results of analysis undertaken during post-excavation cataloging of lithic finds. The methods and classification system used follows that generally employed within the Norwegian university museums (Ballin, 1996, Helsing et al., 1972). Within this framework the class *blade* is divided into three sub-classes based on width: micro-blades (≤ 8 mm), narrow-blades (> 8 to ≤ 12 mm) and macro-blades (> 12 mm).

The techniques employed during post-excavation analysis are necessarily limited with observations being made macroscopically (i.e. without the aid of magnification). Using this method, modification of blade edges has been categorized as representing either intentional retouch or in some cases, edge damage resulting from use. At the macroscopic level the latter is notoriously difficult to distinguish from scarring caused incidentally during manufacture or as a result of post depositional processes (Callanan, 2007:27–28, Knutsson et al., 1990:66). At Sola the potential for edge damage created as a result of erosion is assessed as marginal due to the topography of the small hilltop from which the finds originate; the authors nonetheless acknowledge the designation of use-wear as tentative.

Blade fragment tools from 'Sola Sentrum'

Location *A1* at Sola contained a total of 6,193 lithic artefacts within an area of 37.5 m². The slightly larger (50 m²) *A3* contained 10,124 pieces. Finds of three 'A-type' tanged arrowheads, along with a radiocarbon dating from a charred hazelnut fragment, testify to activity in the Early Neolithic at *A1*. However, the lack of other artefacts and raw materials characteristic of the period (e.g. cylindrical cores, rhyolite) suggests Neolithic activity at this location was of limited intensity. At *A3* a series of radiocarbon dates reveals that activity peaked during the first 800 years of the Late Mesolithic (ca. 6400–5600 cal. BC).

The vast majority of stone artefacts from the two studied areas (89% and 91%) can be classed as production waste. This includes ordinary flakes, uncategorizable debris, cores and core rejuvenation/preparation pieces. Aside from a small collection of axes (*trinnøks*), the most readily distinguishable Mesolithic artefacts are conical/sub-conical blade cores of which there are 12 unequivocal examples from



2. Comparative overview of blade assemblages showing fragmentation and utilization frequencies. Illustration: Krister Scheie Eilertsen/AM.

each area. In addition, several single platform and some bipolar cores are likely exhausted or re-worked conical cores.

The blade components from A1 and A3 make up 9% and 7% of their respective lithic assemblages. Technical analysis of the technique used in blade manufacture has not yet been undertaken but the regularity of the blades and their frequently small platform size (Damlien, 2016:147–149), along with the presence of conical cores on both sites, suggests most were created using this technology.

Within the overall blade assemblages recovered from the two closely situated areas we can see both differences and similarities (Fig. 2). At A1 there is a near equilibrium between micro-blades (50%) and narrow-blades (42%), while the A3 material is overwhelmingly dominated by micro-blades (80%). Macro-blades are present in small numbers at both areas (8% and 2%).

Complete blades are relatively uncommon at Sola accounting for just 14% (A3) and 15.5% (A1) of the combined blade material at each area. This high degree of fragmentation corresponds well with previous studies of conical core-based blade assemblages (Damlien, 2016:147–149). Within both the micro-blade and narrow-blade classes medial and proximal/medial fragments are most numerous. The small population of macro-blades from A1 and A3 show a different trend with medial fragments dominant at the former and proximal at the latter.



3.

Selection of conical cores and utilized narrow-blades from A1. Dashed line indicates edge modification.
Photo: Annette Græsli Øverlid/AM.



4.

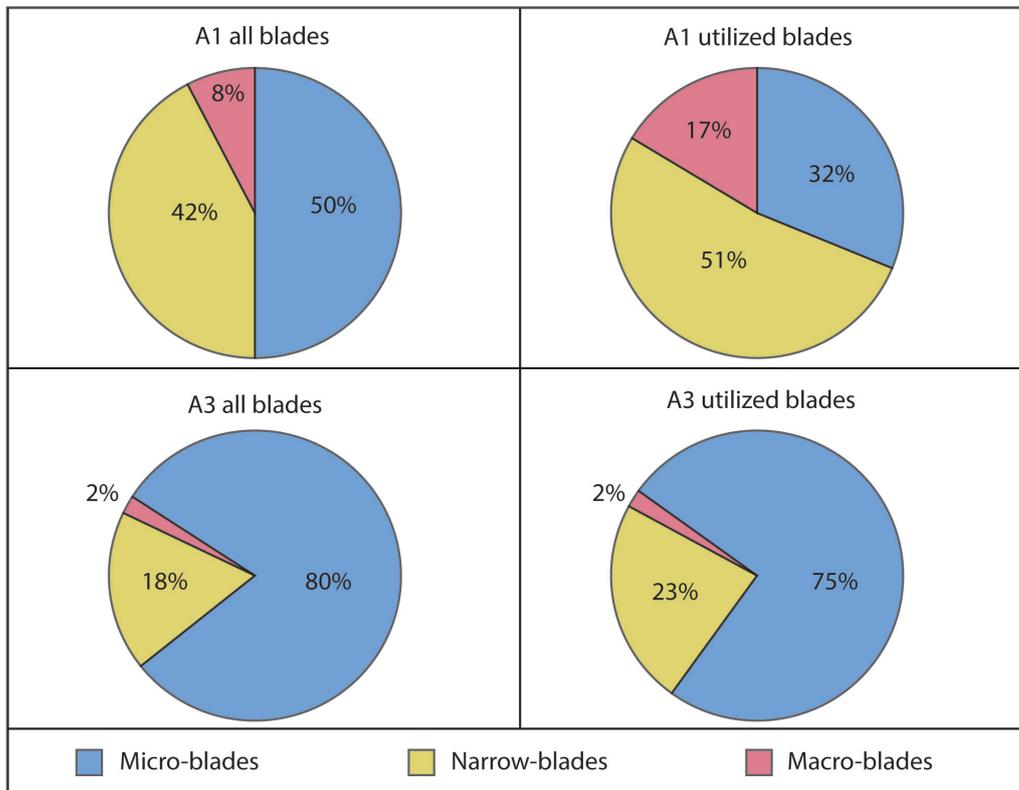
Selection of conical cores and utilized micro-blades from A3. Dashed line indicates edge modification.
Photo: Annette Græsli Øverlid/AM.

Retouched blade fragments and those with probable evidence of usage are discussed together here as 'utilized' pieces. At A1 utilized blade fragments comprise almost 13% of the entire blade assemblage, and 6% at A3. The majority of utilized pieces discussed in this study contain no evidence of intentional modification (retouch), but substantial scarring along portions of edges gives reason to tentatively interpret them as having been used. Edge damaged (used) pieces represent

Locality:			Total:	Use wear:	Retouch:	
A1	Micro-blades	Complete	50	2	1	
		Distal	14			
		Total 285	Medial	75	4	6
			Medial/distal	21	2	1
			Proximal	30		
			Proximal/medial	95	6	5
	Narrow-blades	Complete	38	7	1	
		Distal	17	2	1	
		Total 240	Medial	58	13	4
			Medial/distal	16	3	2
			Proximal	46	1	
			Proximal/medial	65	5	4
	Macro-blades	Complete	1			
		Distal	6		1	
		Total 44	Medial	21	6	3
			Medial/distal			
			Proximal	10	1	
			Proximal/medial	6	1	2
A3	Micro-blades	Complete	91			
		Distal	48	1		
		Total 579	Medial	136	13	3
			Medial/distal	51	1	
			Proximal	85	2	
			Proximal/medial	168	9	4
	Narrow-blades	Complete	8			
		Distal				
		Total 129	Medial	37		1
			Medial/distal	10	1	
			Proximal	33		1
			Proximal/medial	41	5	2
	Macro-blades	Complete	3			
		Distal	1			
		Total 17	Medial	2		
			Medial/distal	1		
			Proximal	7	1	
			Proximal/medial	3		

5. | Overview of the blade assemblages from A1 and A3. Illustration: Krister Scheie Eilertsen/AM.

approximately 60% of the utilized blade fragment assemblage at A1 and just over 75% at A3. There are some noteworthy differences between the two locations. Retouched and edge damaged pieces occur in similar numbers amongst the micro- and macro-blade categories at A1. The utilized narrow-blade category here



Blade frequency in relation to utilization at A1 and A3. Illustration: Krister Scheie Eilertsen/AM.

is on the other hand dominated 2:1 by fragments lacking deliberate modification. There is only one utilized macro-blade at A3, a piece with edge damage; at this location it is the narrow-blade category which contains roughly similar numbers of retouched and edge damaged pieces; the micro-blade class is heavily dominated by edge damaged fragments (Fig. 5).

There is a general correlation between frequency of blade type and utilization as well as fragment type frequency and utilization. Some interesting exceptions are observed at A1 where narrow-blades are the most commonly utilized blade class despite being less frequent than micro-blades (Fig 6). About one-third of medial/distal narrow-blade fragments show evidence of use though this category represents just 7% of the narrow-blade assemblage as a whole.

Discussion

The utilization of minimally modified blade fragments as tools, or as inserts in composite bone and antler implements, has been highlighted as part of a northeast European/'Post-Swiderian' technological package with roots in Russia and the Baltic (Damlien et al., 2018, Rankama and Kankaanpaa, 2018). The foundational element of this technology, distinctive conical cores from which blades were

detached using the pressure technique, is present in south Norway from around 8000 cal. BC (Damlien et al., 2018:111) and in southwestern Norway by at least the mid-eighth millennium BC (Damlien, 2016:391). In western Norway conical core-based blade technology was in use until the end of the Mesolithic period though there is some suggestion it was briefly supplanted by bipolar technology during the early Late Mesolithic before a resurgence in the latter portion of the period (Skjelstad, 2011a:229).

Conical core technology is largely directed towards producing blades of various size in order to snap into tool blanks. In spite of their central place in this distinctive lithic tradition the utilized blade fragments themselves have received relatively little attention. Apart from mentions in general overviews and recent studies of the origins of conical core technology, their occurrence and research potential has only occasionally been highlighted (Skjelstad, 2011a:231, Mjærum, 2012:29–33, Solheim, 2013:273, Reitan and Frøshaug Stokke, 2018:397, Mansrud, 2013:77–78, Eigeland et al., 2016:12, Mansrud and Kutschera, 2020:9). In most instances the artefacts are however mentioned in relation to the Middle Mesolithic period (for an exception see Skjelstad, 2011b:109–111). The finds from Sola provide an opportunity to consider the continuation of blade fragmentation and utilization practices into the Late Mesolithic period. At the well-dated area A3 we can see the utilization of minimally modified blade fragments first occurring at the Middle-Late Mesolithic transition. These tools continue to be manufactured and employed throughout the site's sporadic occupation over the next 800 years. Though less securely dated, the overall lithic assemblage at A1 indicates a Late Mesolithic date providing further evidence for the persistence of utilized blade fragments throughout the period.

In addition to functioning as inserts in composite projectiles, microscopic use-wear analysis studies have shown that blade segments were employed as burins, knives and planes in the working of hard organic materials (bone, antler and wood) as well as in the processing of plant materials (Karsten and Knarrström, 2003:64, Sjöström and Nilsson, 2009, Jensen and Petersen, 1985:45–46, Knutsson and Knutsson, 2013). Metrical sorting of blades can provide tentative insight into intra-site activities, as wider and longer blades tend to be created for use as knives and burins for the working of bone and wood (Knutsson and Knutsson, 2013). Bergsvik and David (Bergsvik and David, 2015) have argued that the production method for slotted points and fishhooks was a key element of the northeast European/Post-Swiderian technological package introduced into southern Norway at the start of the eighth millennium BC. Though the organic element of the material record is rarely preserved, given the demonstrated functions of utilized snapped blade fragments (Sjöström and Nilsson, 2009, Knutsson and Knutsson, 2013, Mansrud and Kutschera, 2020), their presence on Late Mesolithic sites can be used as a proxy for site activity, and subsistence strategies more generally.

The low analytical resolution of our designation 'use-wear' limits the insights into the types of activity reflected by the blade fragments. In the absence of micro-wear analysis, we can tentatively suggest that observed tendencies in utilized blade fragment width (e.g. the dominance of narrow-blades) at the poorly dated *A1* may be the result of varied activity over time. This trend may however reflect the suitability of narrow-blade fragments, in particular medial pieces, for working organic materials in the production of fishhooks and slotted bone points (Sjöström and Nilsson, 2009). At *A3* a dominance of used and unused micro-blade fragments, artefacts well-suited for use as inserts in composite projectiles, may point towards long term use of the site for re-tooling.

Jensen and Petersen's (Jensen and Petersen, 1985:45–46) extensive microwear study of a Late Mesolithic blade assemblage from Vænget Nord in Denmark found that more than 20% of pieces were utilized. Though our use-wear class for the Sola assemblages undoubtedly includes pieces damaged by post-depositional processes rather than usage, Jensen and Petersen's findings suggest that our figures of 13 and 6% blade utilization are unlikely to be over-estimations. As it stands with the current data the Sola evidence demonstrates that blade fragment tools are more (*A1*) or only slightly less common than formal tools in relation to the composition of the entire site assemblages (*A1*: utilized blade fragments = 1%, formal tools = 0.75%; *A3* = utilized blade fragments 0.4%, formal tools = 0.7%).

Concluding remarks

The study of blade fragment tools is impeded by their lack of, or minimalistic, modification (retouch) and the subtlety of utilization traces. Utilized blade fragments do not fit into traditional tool categories, instead they might (superficially) be viewed as the archetypal 'informal tool'; a class defined by Andrefsky (Andrefsky, 1998:xxiv) as: 'stone tools made in a casual manner with only minor design constraints. These tools are often called expediently made tools or tools made for the needs of the moment'.

Though requiring little effort to convert from blank to tool, the Late Mesolithic utilized blade fragments from Sola evidence the long-term embeddedness of a technology characterized by a production *process* rather than distinct type fossils. Blade fragments can be seen to be a persistent phenomenon, in many cases likely to make up more substantial proportions of lithic assemblages than the formal tools which are often assigned interpretive primacy. Further study of the Sola Sentrum assemblage and other recently excavated sites in Rogaland has much potential to add nuance to understandings of developments in technology and subsistence strategies over the course of the Mesolithic, each of which are linked to broader developments in society and the environment.

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