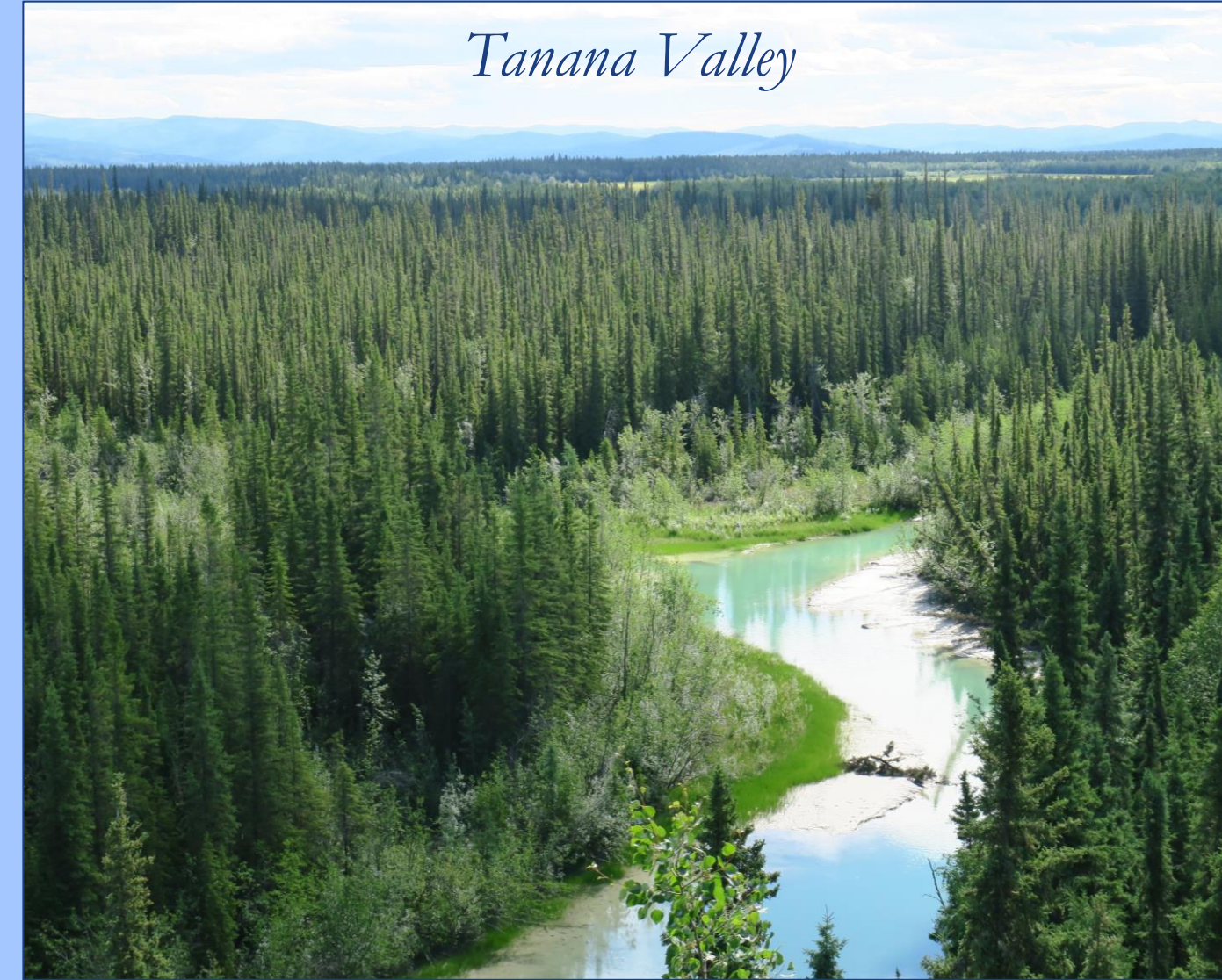


Human adaptability to Late Glacial Environments New Perspectives from Analysis of Procurement, Production, and Use of Stone Tools of Swan Point CZ4b, Alaska

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The Late Glacial in Beringia

The evidences of human occupation of subarctic and arctic zones increase at the end of the Last Glacial Maximum (23-19 ky cal. BP [1]) and coincide with the adoption of an innovative toolkit [2, 3]. This toolkit is characterised by the Yubetsu microblade pressure knapping which enables unprecedented standardisation of tools and a high productivity for each microcore. This technology widely spreads through Northeast Asia, and is recognised at Swan Point CZ4b in the Tanana Valley (central Alaska) ca. 14 ky cal BP [4, 5]. Through analysis of the functioning and production techniques, and raw material procurement, this poster aims at better understanding how this new technology contributed in the adaptability of prehistoric societies to the Late Glacial subarctic environments.

Swan Point CZ4b and the peopling of Alaska

- Earliest occupation of Alaska known so far [4]
- Lithic assemblage associated with the Siberian Dyuktai complex showing the circulation of technologies from Siberia to Alaska at a time when the land bridge between Asia and America was emerged
- Over 11500 pieces made of grayish green igneous rock, chert, rhyolite, chalcedony, basalt, and obsidian [4, 5, 6]

Methods

- Use-wear analysis (macro- and microscopic analysis of traces of use, manufacture, and alteration on 634 stone artefacts) + lithic technology + petroarchaeology
- Combining 3 methods allows restituting the life of tools from rock procurement to knapping, use, management, and finally discard of stone tools.

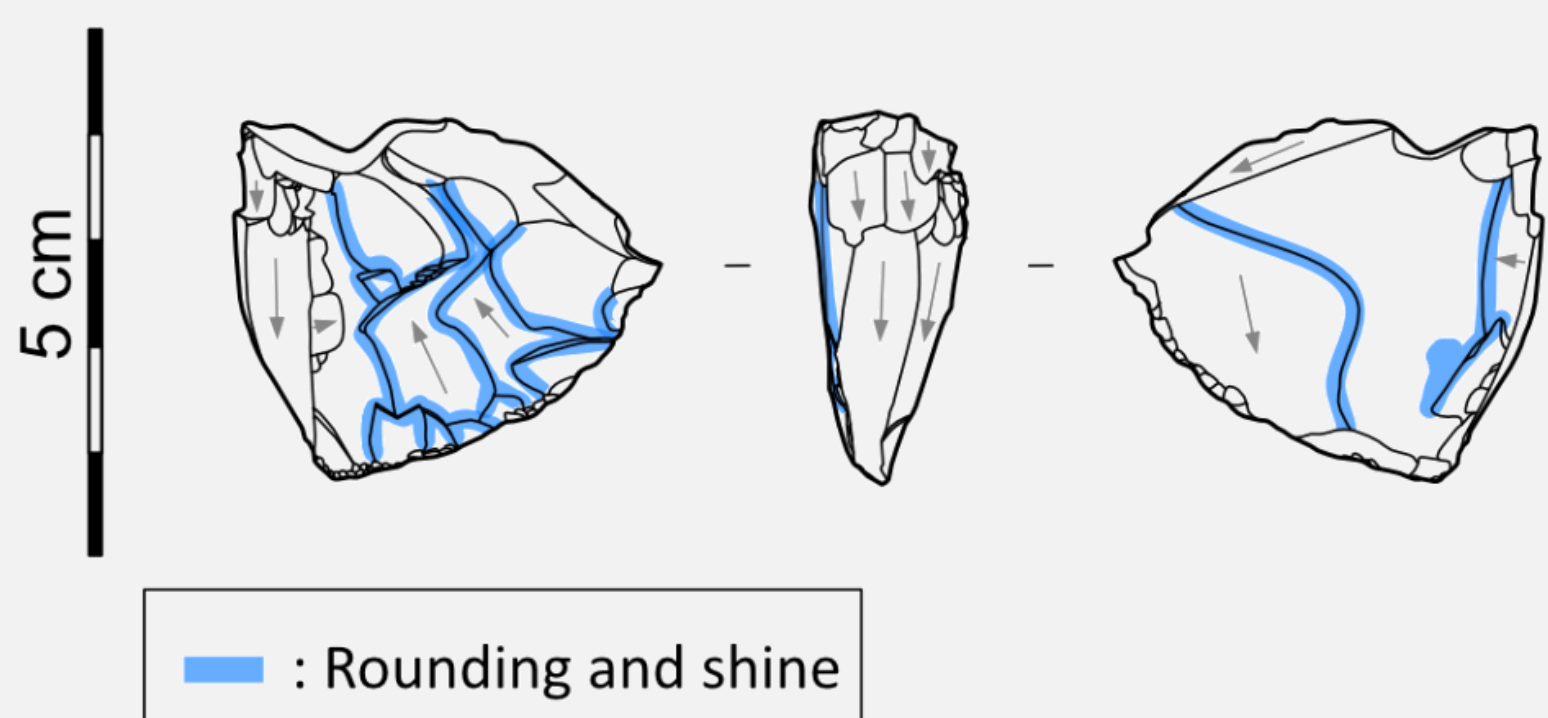
Strategies to anticipate future needs

Transport

- Occurs at different steps of the *chaîne opératoire*

Transported microcore

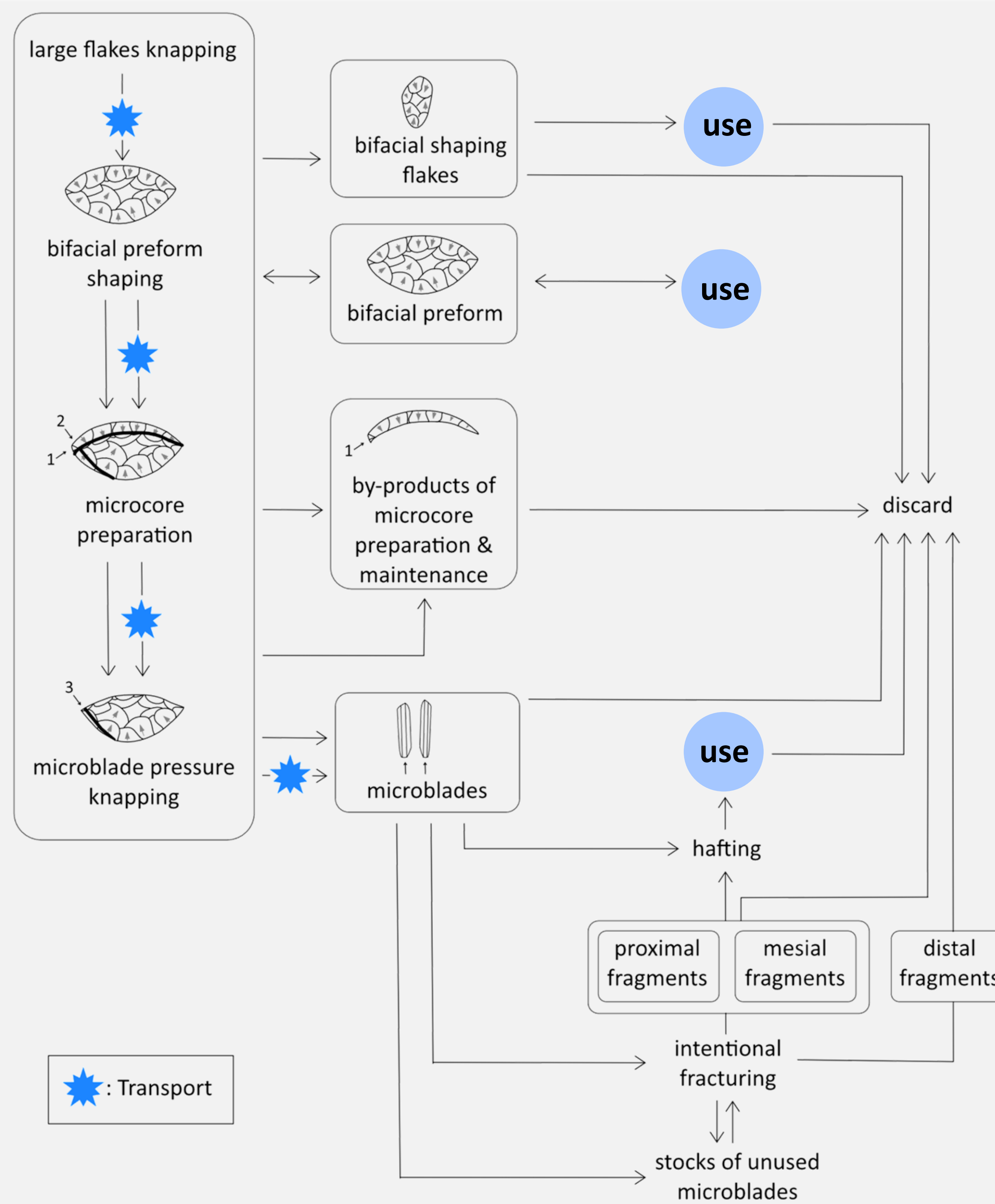
Steps: 1) bifacial preform shaping, 2) transport (rounding + shine), 3) microblade knapping.



Mobility patterns

- Transport may be related to long distance rock procurement or to the impossibility to access the rock sources for several months a year because of the thick snow cover
- Restitution of the *chaîne opératoire* reveals substantial segmentation in time and space of the microblade production process, and could be related with important mobility of human groups

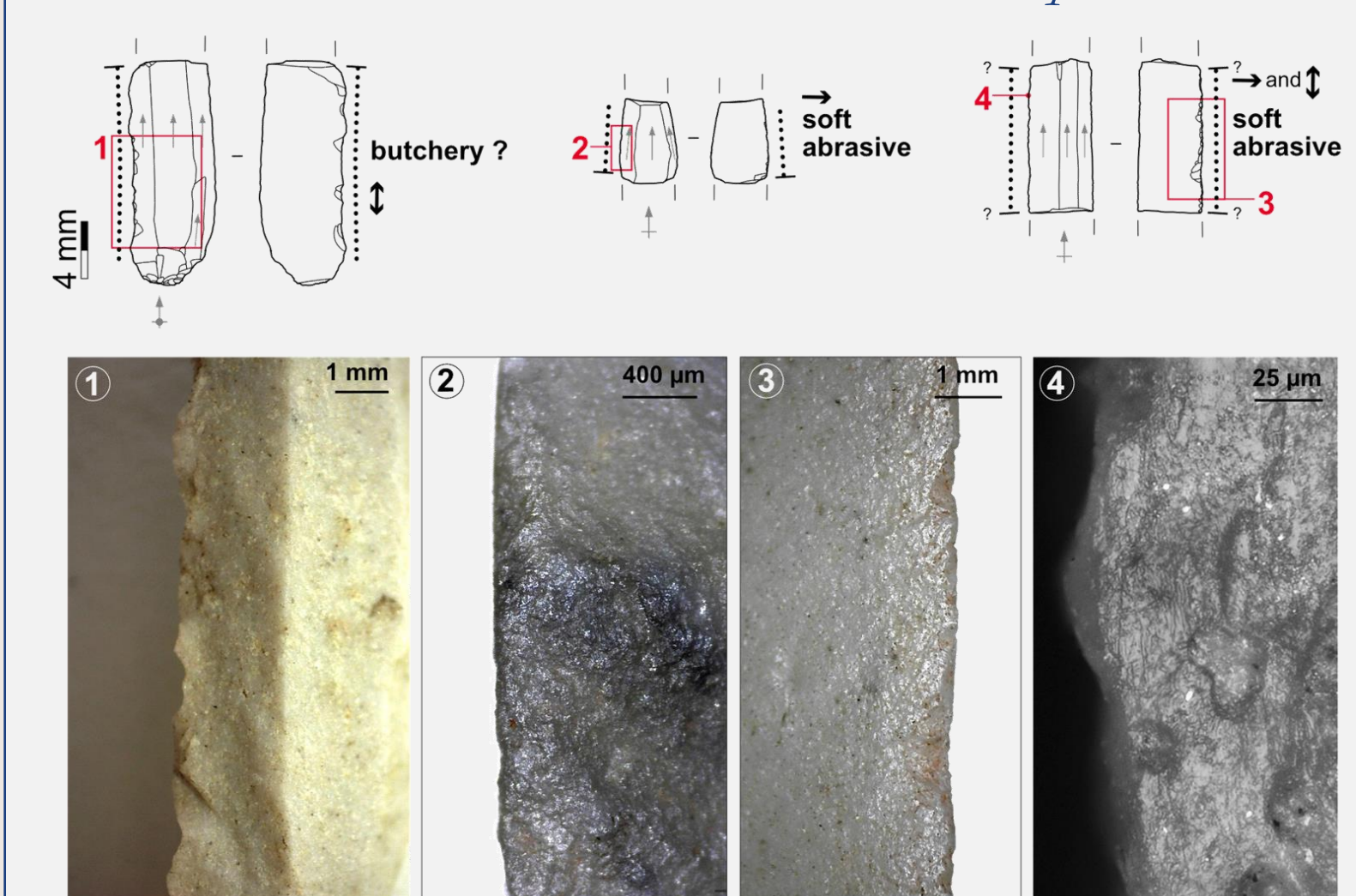
Chaîne opératoire of production and use of microblades



Microblades use

- Functional flexibility
- Few used microblades (14 %)
- Preferential use of mesial fragments

Microblades used to cut and scrape



Tools economy

- Contrary to tools on flake, microblades were generally not resharpened but replaced by new ones on the haft when damaged
- The low rate of used microblades suggests the constitution of reserves of unused inserts in anticipation of future needs for fresh tools
- Tools standardisation allows fast and easy maintenance of composite tools because every lithic insert is interchangeable

Synthesis

The Yubetsu microblade pressure knapping appears related to an economy based on the planification of needs. This new technological and cognitive ability to anticipate future needs is probably a key to understand the capacity of prehistoric societies to settle durably in Beringian subarctic environments at the end of the LGM and during the Late Glacial.

Techno-functional similarities can be noted between Swan Point CZ4b and Final Pleistocene contexts of Japan [7, 8], Korea [9], and Siberia [10, 11], where the high standardisation of microblades is not related to functional specialisation (microblades were used as knife inserts to cut or scrape hide, soft to semi-hard materials, abrasive or not, and for butchery, and possibly as projectile inserts). Further extensive analysis are needed to better understand if the strategies of planification evidenced at Swan Point CZ4b are common to the Dyuktai contexts of North-East Asia or if they represent an Alaskan specificity.

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