

Chapter 13

Blades and Microblades, Percussion and Pressure: Towards the Evolution of Lithic Technologies of the Stone Age Period, Russian Far East

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13.1 Introduction

The Final Paleolithic–Early Neolithic period (15000–6000 B.P.) in the Russian Far East is represented by a series of cultures with developed production of blades and microblades for various types of tools. Typological and experimental analysis suggests a *multi-linear model* for the evolution of these industries including local and external factors (raw material availability, adaptation to new climatic conditions, influence of economy, trade and exchange networks, etc.). Until recently, not much information was published in western languages about these archaeological materials. During the last 10 years, a new series of excavations throughout the region, including several joint projects (Russian-Japanese, Russian-Korean), new carbon dating and a series of publications and presentations in the international conferences have made it possible to attract a wide range of specialists to the collections and to discuss the structure of lithic industries (Table 13.1).

Thanks to recent archaeological research in the Russian Far East, we have a much more detailed picture and sequence of archaeological cultures than was the case during the initial stage of investigations in the 1960–1970s (Fig. 13.1).

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Table 13.1 Carbon dates on the Fareastern cultures

Region	Cultures or sites	Data (ybp)	Period, technology
<i>Middle Amur</i>	Selemjinskaya	22530 ± 320 (SNU03-365)	Late Paleolithic
		19350 ± 65 (SOAN-2619)	Wedge-shaped
		16460 ± 170 (SNU03-366)	microblade industry, blade percussion industry
	Gromatukhinskaya	13310 ± 110 (AA-20940)	Final Paleolithic – Early Neolithic
		13240 ± 85 (AA-20939)	
		12340 ± 60 (AA-36079)	Wedge-shaped
		11320 ± 150 (SNU02-002)	microblade industry, blade percussion industry, microprismatic industry
		9895 ± 50 (AA-36447)	
	Novopertovskaya	12720 ± 130 (AA-38103)	Early Neolithic
10400 ± 70 (AA-20938)		Pressure-blade industry	
9765 ± 70 (AA-20937)			
9740 ± 60 (AA-38109)			
<i>Lower Amur</i>	Osipovskaya	13260 ± 100 (AA-13392)	Wedge-shaped
		12960 ± 120 (LE-1781)	microblade industry, blade percussion industry
		12500 ± 60 (LLNL-102169)	
		10875 ± 90 (AA-13393)	
	Mariinskaya	9890 ± 230 (GaK-18981)	Early Neolithic
	8565 ± 65 (SOAN-4869)	Microprismatic industry	
<i>Maritime Region</i>	Ustinovka	6180 ± 60 (SOAN-4109)	
		15900 ± 120 (AA-36626)	Final Paleolithic
		15340 ± 90 (AA-36625)	Wedge-shaped
		15300 ± 140 (Ki-3502)	microblade industry, blade percussion industry
		15105 ± 100 (AA-9463)	
	11550 ± 240 (GEO-1412)		
	11750 ± 620 (SOAN-3538)		
Vetka	6010 ± 90 (SOAN-6146)	Neolithic	
	5860 ± 55 (SOAN-6306)	Pressure-blade industry	
	5830 ± 95 (SOAN-6145)		
<i>Sakhalin Island</i>	Ogon'ki	19320 ± 145 (AA-20864)	Late Paleolithic
		18920 ± 150 (AA-25434)	Wedge-shaped
		17860 ± 120 (AA-23137)	microblade industry, blade percussion industry
<i>Kamchatka Peninsula</i>	Ushki	14300 ± 200 (MAG-550)	Final Paleolithic
		13600 ± 250 (GIN-167)	Wedge-shaped
		10860 ± 400 (MAG-400)	microblade industry
		10360 ± 350 (MO-345)	
	Avacha	6180 ± 50 (GIN-8144a)	Neolithic
			Pressure-blade industry

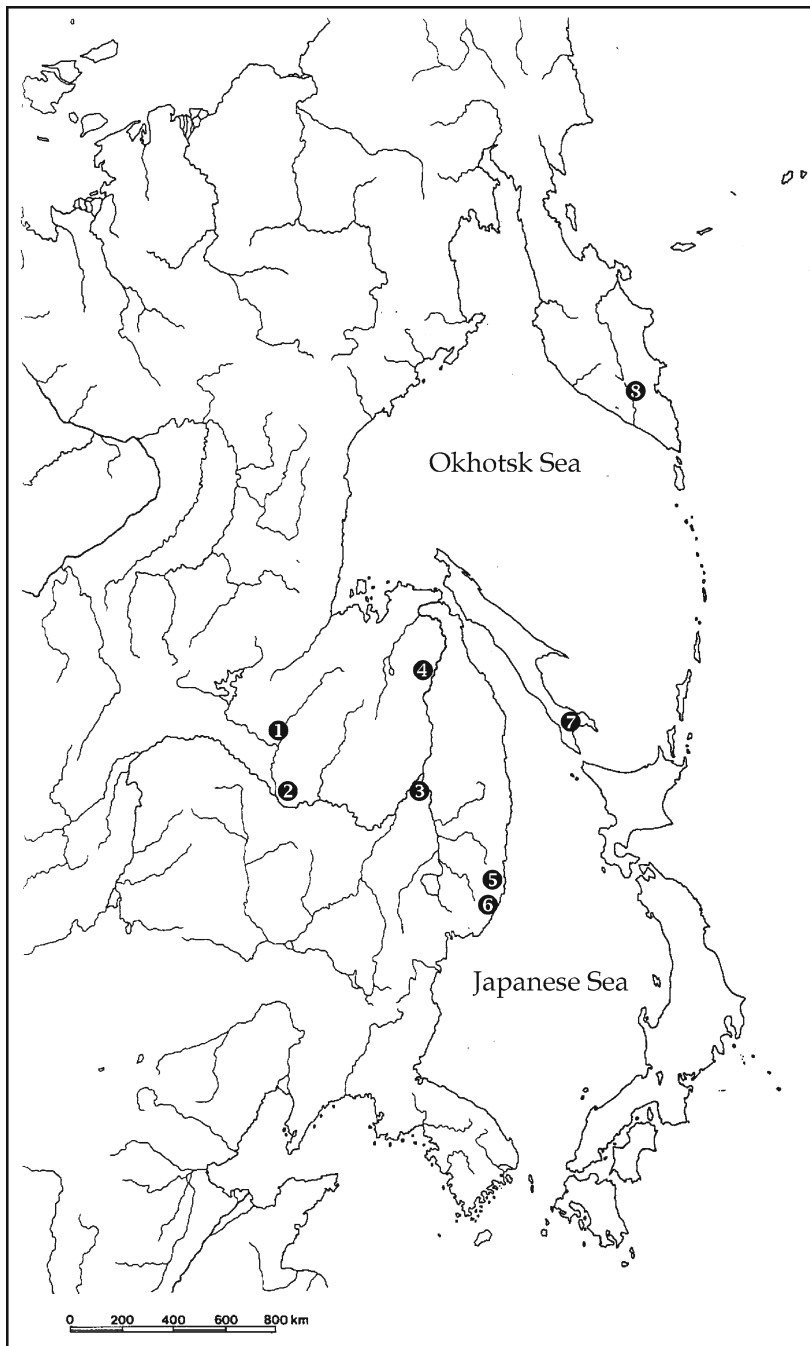


Fig. 13.1 Russian Far East. Cultures and sites locations. 1 *Selemja Culture*; 2 *Gromatukhinskaya and Novopetrovskaya Cultures*; 3 *Osipovskaya Culture*; 4 *Mariinskaya Culture*; 5 *Ustinovka Culture*; 6 *Vetka Culture*; 7 *Ogonki Sites*; 8 *Ushki Lake sites*

13.2 Geography and Chronology of Cultures

13.2.1 Middle Amur Region

Selemjinskaya Culture (24000–12000 B.P.) is the first culture with microblade technology known in the region. This culture was studied on a series of multilevel sites which can be interpreted as seasonal camps of forest hunters and fishers located on river banks. Microblade cores of wedge-shaped configuration, microblades and ski-spalls were found in great quantities and in a variety of raw materials starting from the lower horizons with an age of 24000–22000 B.P. up to the upper horizons (13000–12000 B.P.) (Derevianko et al. 2006). Microblade technology (pressure methods), along with the flake technology (direct percussion of pebble cores), provided the economy with all types of blanks for tools. Interestingly, these Selemja craftsmen never developed a blade technique with prismatic or sub-prismatic blade cores. The Terminal Pleistocene–Early Holocene continuation of this tradition is represented in the *Gromatukhinskaya Culture* (13000–4000 B.P.) (Okladnikov and Derevianko 1977). The sites of this culture are of the same economic orientation but include the earliest evidence of pottery which is dated to about 14000–13000 B.P. Looking at the lithic materials, we see that the wedge-shaped microcores were replaced by conical cores around 9000 B.P. It looks like the local inhabitants moved from one type of portable device to another one using the same principles of pressure techniques and the same raw material base (Fig. 13.2).

A different technology existed in the Middle Amur during the same period in the form of the so-called *Novopetrovskaya Culture*. Several sites with subterranean dwellings, pottery shreds, and rich lithic materials were excavated on the Amur River tributaries in the transitional type of landscape between forest and open plains (Derevianko 1970; Derevianko et al. 2005). Using fine-grained flinty tuff and chert, the people of this culture produced big blade cores and regular prismatic blades. Some of the blanks are about 12–15 cm long and, after additional edge retouching, were modified into points, burins, scrapers and knives. Unfortunately, we do not have any remains of devices or clamps used by Novopetrovka flintmakers but technologically, such blades are of the highest quality and skills. It should be mentioned that while working with pressure blade techniques, these people never tried to explore wedge-shaped or other versions of microblade technique. The origin of *Novopetrovskaya Culture* is also problematic and may be tentatively linked with the territory of Northern China (Figs. 13.3, 13.4).

13.2.2 Lower Amur Region

The Middle Amur region is one of the possible centres of origin for the impulse of migrations of ancient tribes to the Lower Amur territory. This can be shown with the

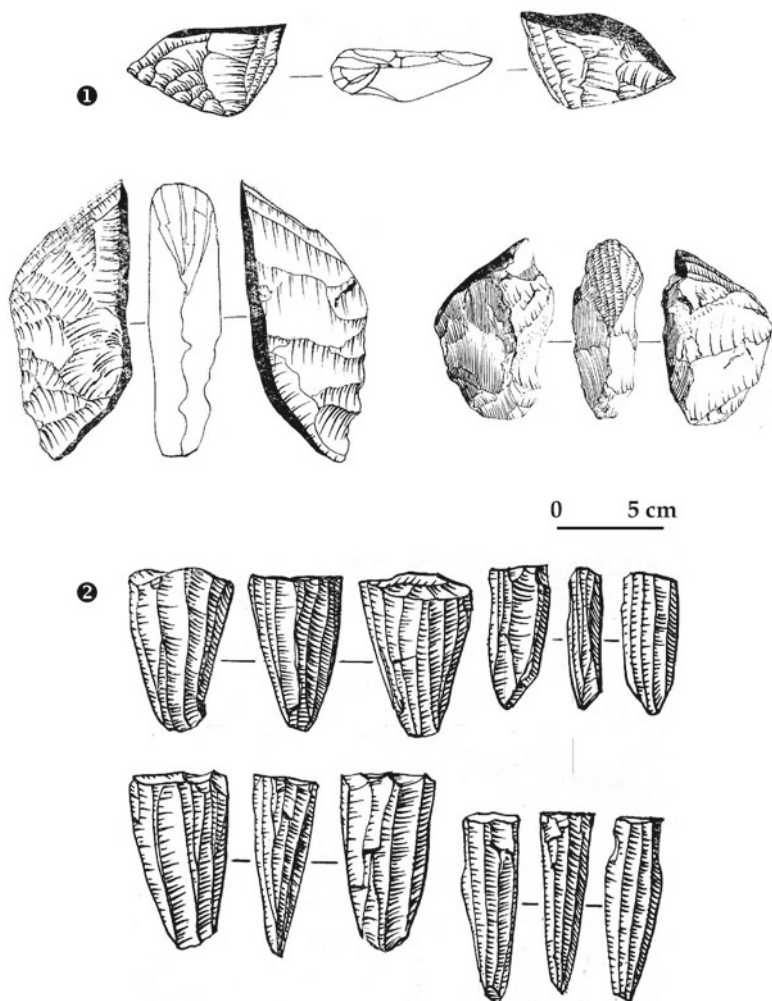


Fig. 13.2 *Gromatukhinskaya Culture*. 1 Final Paleolithic industry; 2 Early Holocene industry (By Okladnikov and Derevianko 1977)

materials of the *Osipovskaya Culture* (about 30 sites around the city of Khabarovsk), which are technologically and chronologically very close to *Gromatukhinskaya Culture*. The lithic industry includes two types of cores: big ones for flakes and elongated flakes, and wedge-shaped microcores. The culture as a whole is also very similar, having seasonal camps with fishing activities and also hunting and gathering in a forest zone. After 10000–9500 B.P., the lithic industry was transformed following another scenario: wedge-shaped microcore techniques disappeared, and

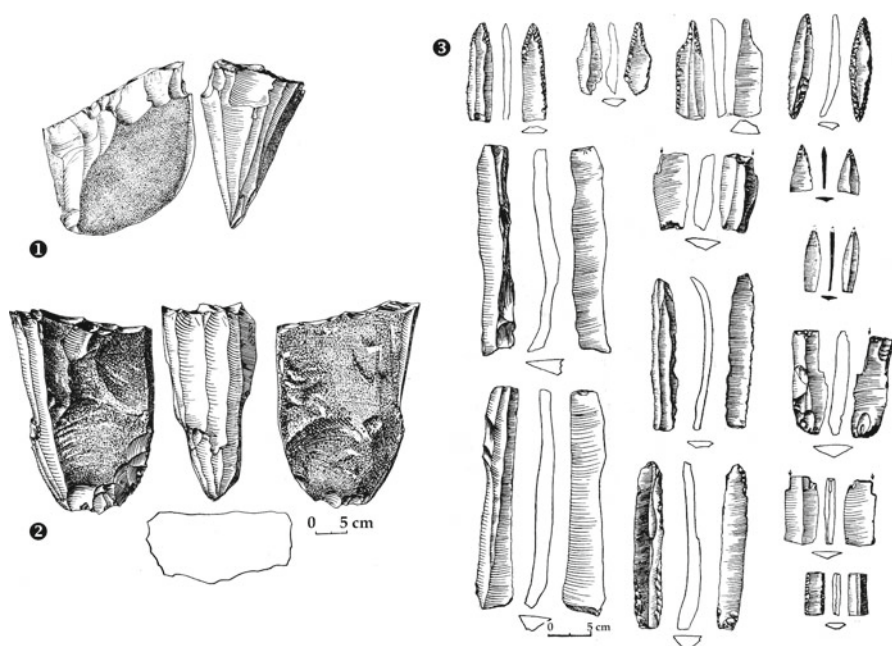


Fig. 13.3 *Novopetrovskaya Culture*. 1 Cores; 2 Blades (By Derevianko 1970)



Fig. 13.4 *Novopetrovskaya Culture*. 1 Cores; 2 Tools on blades (By Derevianko et al. 2005)

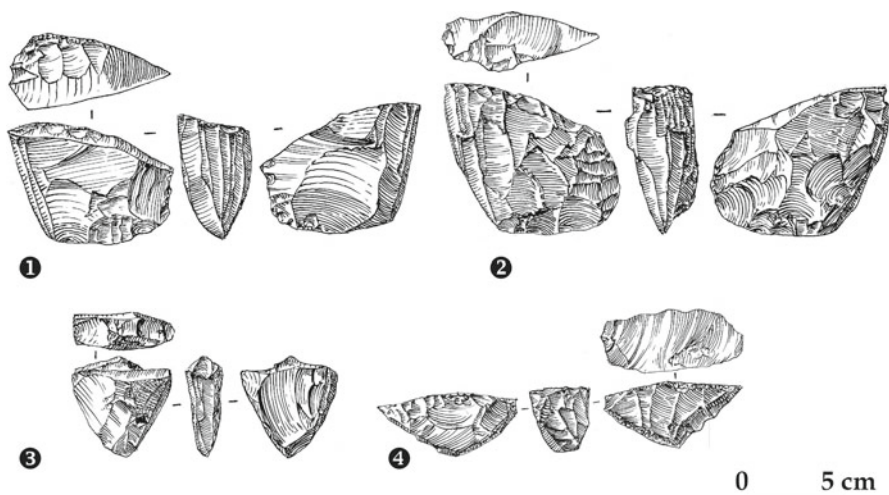


Fig. 13.5 *Osipovskaya Culture*. 1–4 Microblade cores (By Derevianko et al. 2006)



Fig. 13.6 *Mariinskaya Culture*. Microconical and microprismatic cores (By National Research Institute of Cultural Heritage 2006)

there are just slight traces of microconical, microprismatic and bullet-shaped cores such as those in the Middle Amur region (Fig. 13.5).

Only during a brief period from 8500 to 8000 B.P. do we see rare evidence of excellent pressure blade techniques in some parts of the Lower Amur Region; for example we see evidence of excellent pressure blade technique with the recently located *Mariinskaya Culture*. The first materials were found on Suchu Island along with distinctive pottery and the possible remains of dwelling constructions (National Research Institute of Cultural Heritage 2006) (Fig. 13.6).

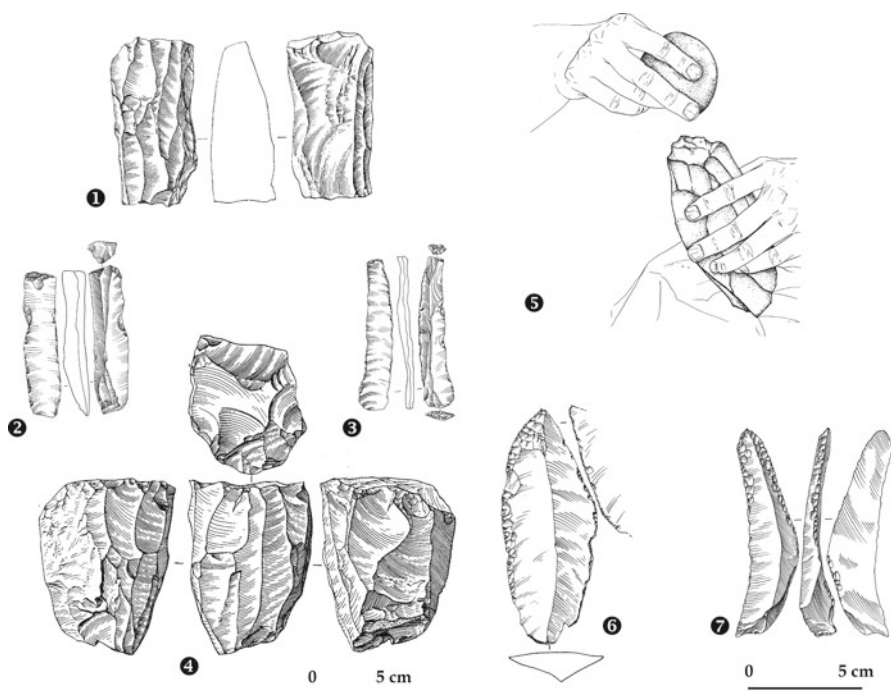


Fig. 13.7 *Ustinovka Culture*. 1, 4 Blade cores; 2, 3, 6, 7 Blades; 5 Technique of direct percussion (By Krypianko and Tabarev 2001)

13.2.3 Maritime Region

In the Maritime Region (Primorye), blade and microblade techniques are presented in the archaeological complexes starting at 16000–15000 B.P. and are connected with the *Ustinovka Culture* (Derevianko and Tabarev 2006; Kononenko et al. 1995; Tabarev 1994, 2003; Tabarev et al. 1999 Vasilievsky and Gladyshev 1989). These sites are located both in the coastal zone (mostly in the Zerkal'naya River basin) and in the continental parts of the region. In the Zerkal'naya River basin, the lithic industry demonstrates a high level of direct percussion blade technology. Based on the rich local raw material sources (flinty tuff), direct percussion blade technology was the dominant technology for at least 5,000 years, and only during the change from Pleistocene to Holocene did it eventually dwindle and disappear. Microblade technology (wedge-shaped version) was a minor part of the local industry, and it existed in several modifications (on bifacial blanks or on unifacial blanks). Cores, microblades and tools from exotic materials, for example obsidian, are extremely rare and appeared in the coastal zone no earlier than 11000–11500 B.P. (Fig. 13.7).

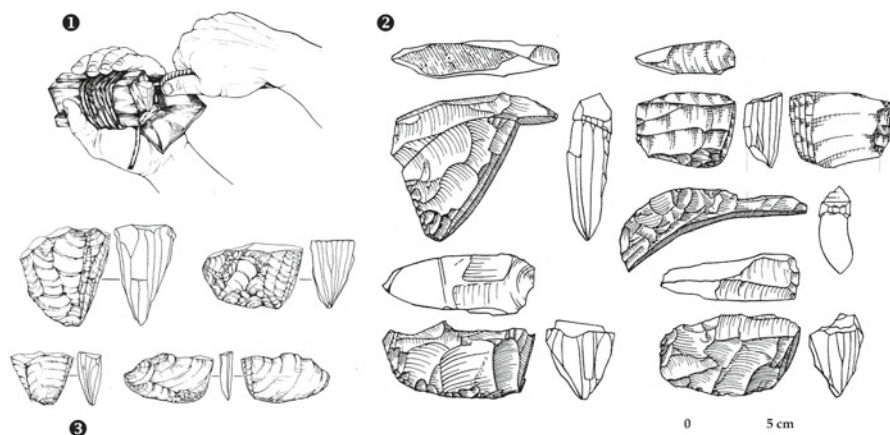


Fig. 13.8 Ustinovka culture. 2–3 Microblade cores (*wedge-shaped*) and 1 Portable device for microblades production by pressure (By Krypianko and Tabarev 2001)

In contrast, the lithic industry of the inland part of the Maritime Region demonstrates a higher percentage of microblade cores and microblades. Several local sources of volcanic glass and exchange with the territories of Korea and China (Gillam and Tabarev 2004) provided people with high-quality material for various types of microblade cores and tools. Thanks to the presence of obsidian during the final stage of the *Ustinovka Culture* (10500–9000 B.P.), wedge-shaped technology in the continental part switched to microconical, but the period of its existence was very short, and we do not see any evidence of microconical cores after this time. The Neolithic period is associated only with a simple flake technology (Figs. 13.8, 13.9).

Up until recently, it seemed that microblade technology and pressure blade technology as a whole did not exist in the Maritime Region after the Final Pleistocene. Recent excavations, however, on the Vetka site and Ustinovka-8 sites between 2004 and 2006, along with some separate finds in the coastal zone (Krypianko 2006; Popov and Tabarev 2008), have demonstrated that pressure blade technology was successfully used by people during the 8000–5000 B.P. interval (*Vetka Culture*). This technology has no roots in the previous Paleolithic cultures in the coastal and inland zones and may have originated in the adjacent territories, possibly the Lower Amur Region (Fig. 13.10).

13.2.4 Sakhalin Island

Evidence from the Final Paleolithic and Early Neolithic cultures of Sakhalin Island has strongly confirmed the influence and implication of raw materials in the development

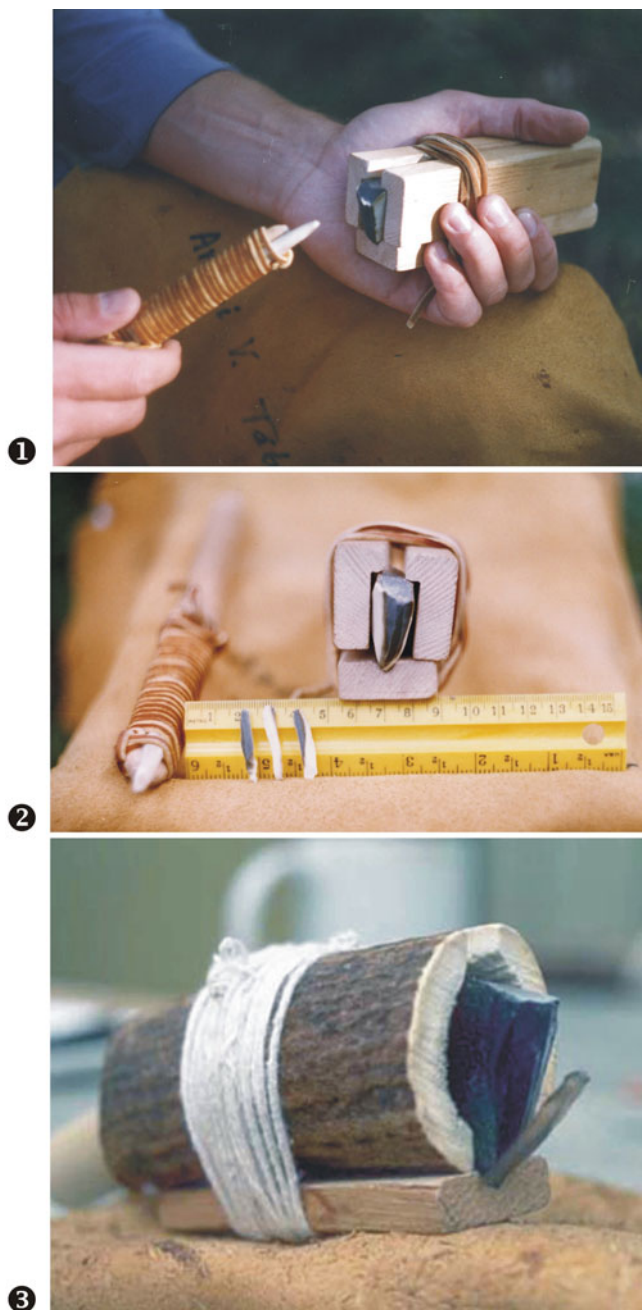


Fig. 13.9 Experimental production of microblades in portable devices 1–2 From hard wood and 3 Antler (Photos by Andrei V. Tabarev)

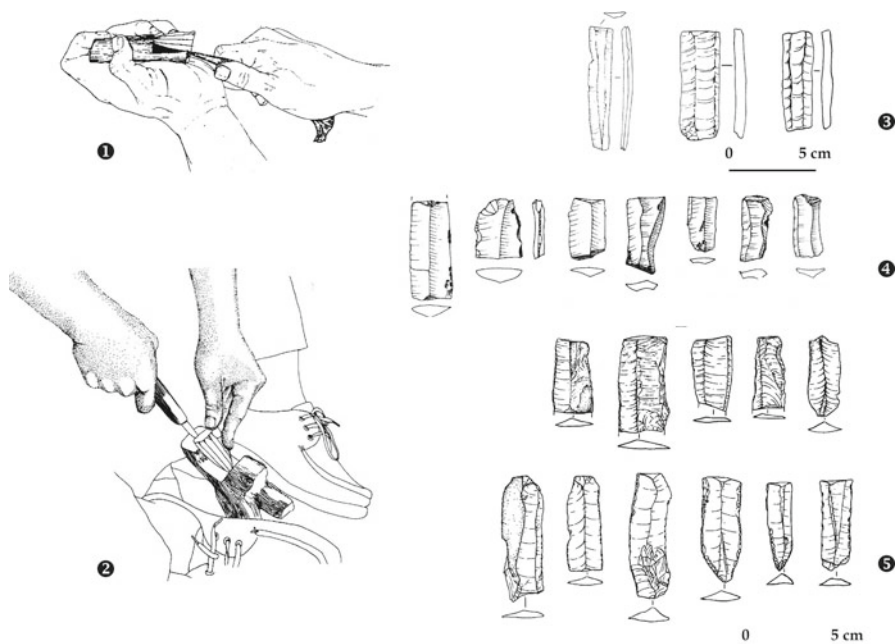


Fig. 13.10 3–5 Early Holocene blades and 1–2 Possible methods of pressure techniques (By Krypianko and Tabarev 2001)

of lithic technologies. Extensive contact with the northern part of Hokkaido Island since the Upper Paleolithic times was demonstrated on the basis of the obsidian artefacts found there. Obsidian was regularly transported from the sources and used in blade and microblade production, with very similar designs to the distinctive types of cores found in Japan (Vasilevsky 2006). The transition from wedge-shaped microcores to conical cores associated Pleistocene–Holocene border and the Early Holocene from 10500 to 8000 B.P. (Sokol and Ogonki Sites) (Vasilevsky and Shubina 2006) (Figs. 13.11, 13.12).

13.2.5 Kamchatka Peninsula

The first traces of microblade production (series of microblades) on the Kamchatka Peninsula are known from the earliest level (Level VII, 13000–12000 B.P.) of the famous Ushki Lake sites (Dikov 1977). Microblade cores with a wedge-shaped modification appear in the next level and may be dated from as early as 12000 to 11000 B.P. The following stages (Neolithic period) of this tradition are connected with microconical technology, which was developed from previous traditions of flintknapping.

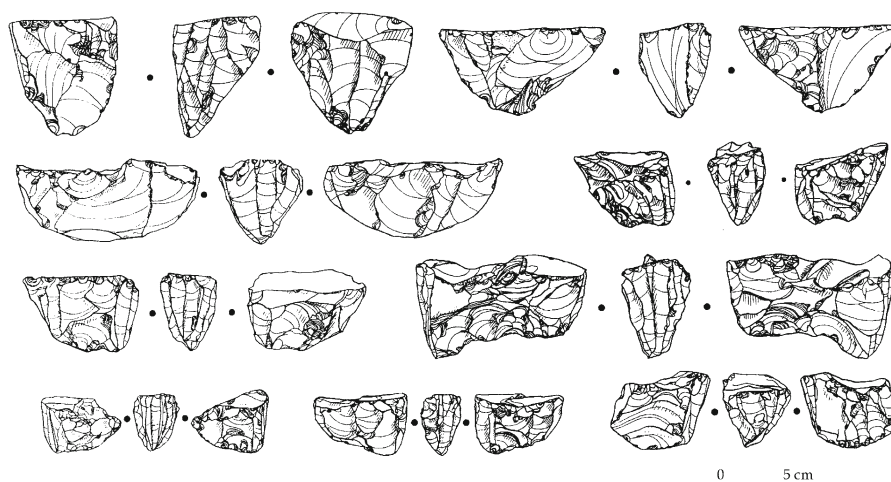


Fig. 13.11 Sakhalin Island. 1–9 Obsidian microblade cores (*wedge-shaped*) (By Vasilivsky 2006)

According to N.N. Dikov, microconical and microprismatic cores were found in Level IV, which was roughly dated to between 6000 and 4000 B.P. (Fig. 13.13).

Other types of blade technologies were not well documented before the very end of twentieth century. A number of big prismatic blades made from local obsidian and flint were found on the surface, in disturbed contexts and in local museum collections. Thanks to new field research conducted by archaeologists in 2000–2001, several sites with very interesting materials were found on the coastal zone in the southern part of the Kamchatka Peninsula (Lebedintsev 2006).

The Avacha localities are of significant interest because archaeological materials are represented by a great number of obsidian blade cores and prismatic blades which were used as knives and scrapers, with or without additional retouch. The preliminary chronology of the sites (7000–6000 B.P.) is based on typology and was confirmed by the carbon dating (6180 ± 50 B.P. – GIN-8144a). These new materials open a very interesting perspective to research into the origin of early blade industries in the Northern Pacific including the Anangula blade site on the Aleutian Islands (Fig. 13.14).

13.3 Technological and Experimental Interpretations

Even this preliminary picture of the microblade and blade industries from five regions of the Russian Far East (Middle Amur Region, Lower Amur Region, Maritime Region, Sakhalin Island and Kamchatka Peninsula) demonstrates that we have several models of technological evolution during the Terminal Pleistocene to Early Holocene period. Wedge-shaped microblade technology seems to be the basic

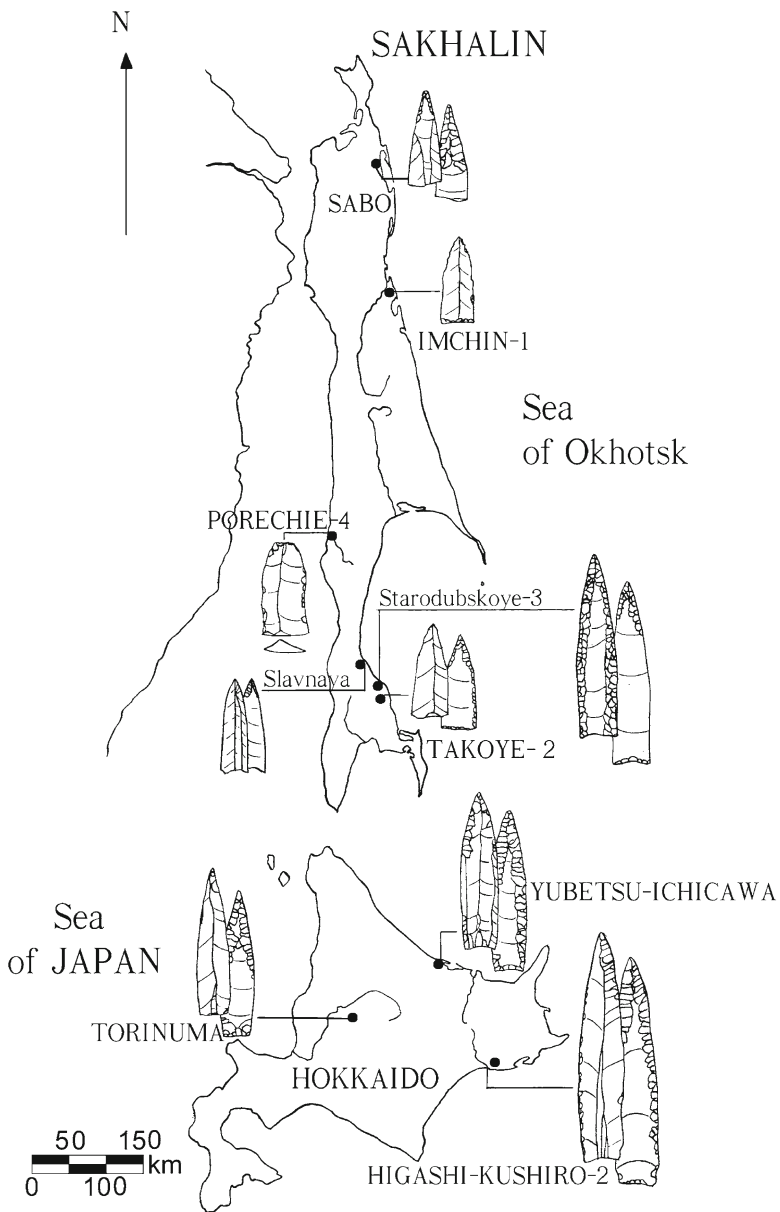


Fig. 13.12 Sakhalin and Hokkaido Islands in Early Holocene. Sites with tools on blades (By Vasilevsky and Shubina 2006)

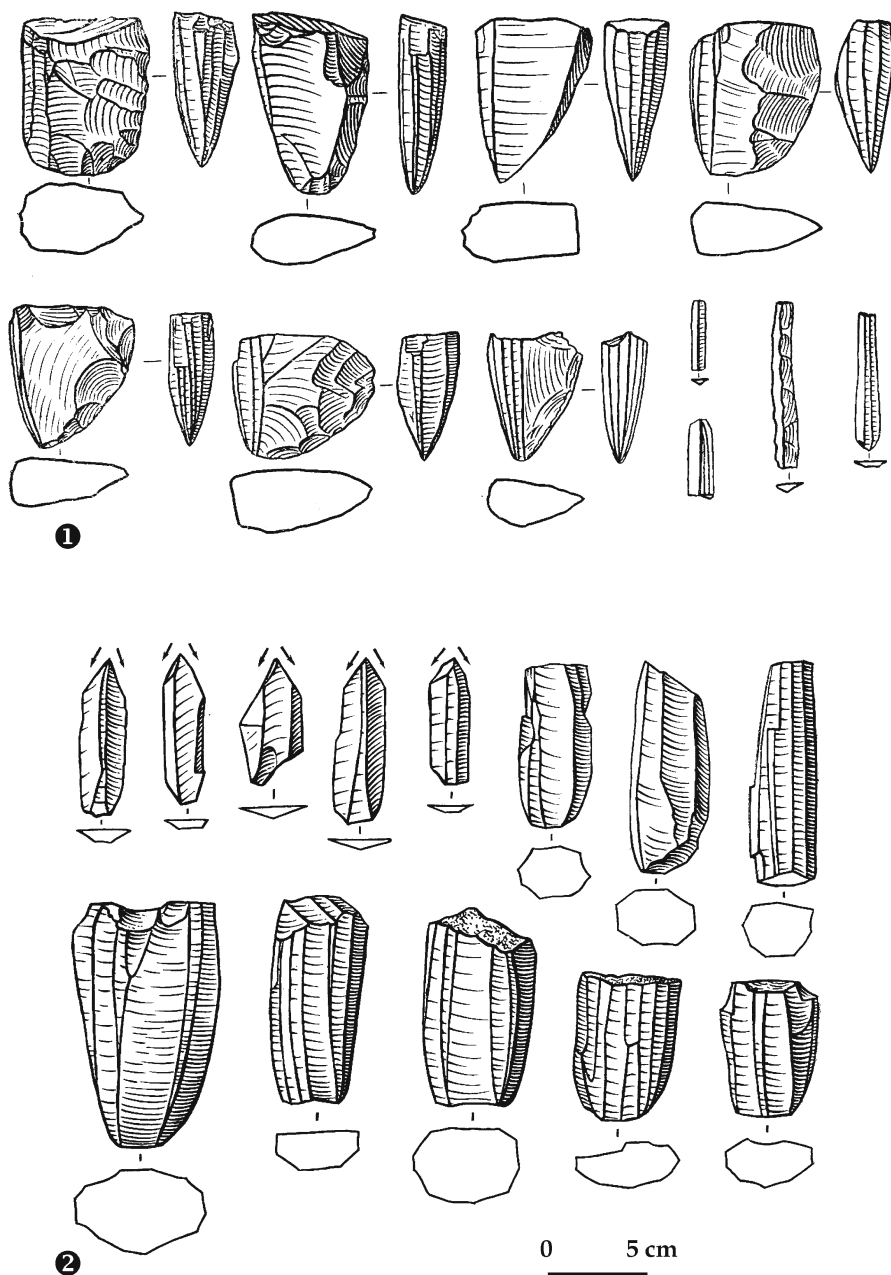


Fig. 13.13 Kamchatka Peninsula. Ushki Lake sites. 1 Final Paleolithic microblade industry; 2 Early Neolithic microprismatic industry (By Dikov 1977)

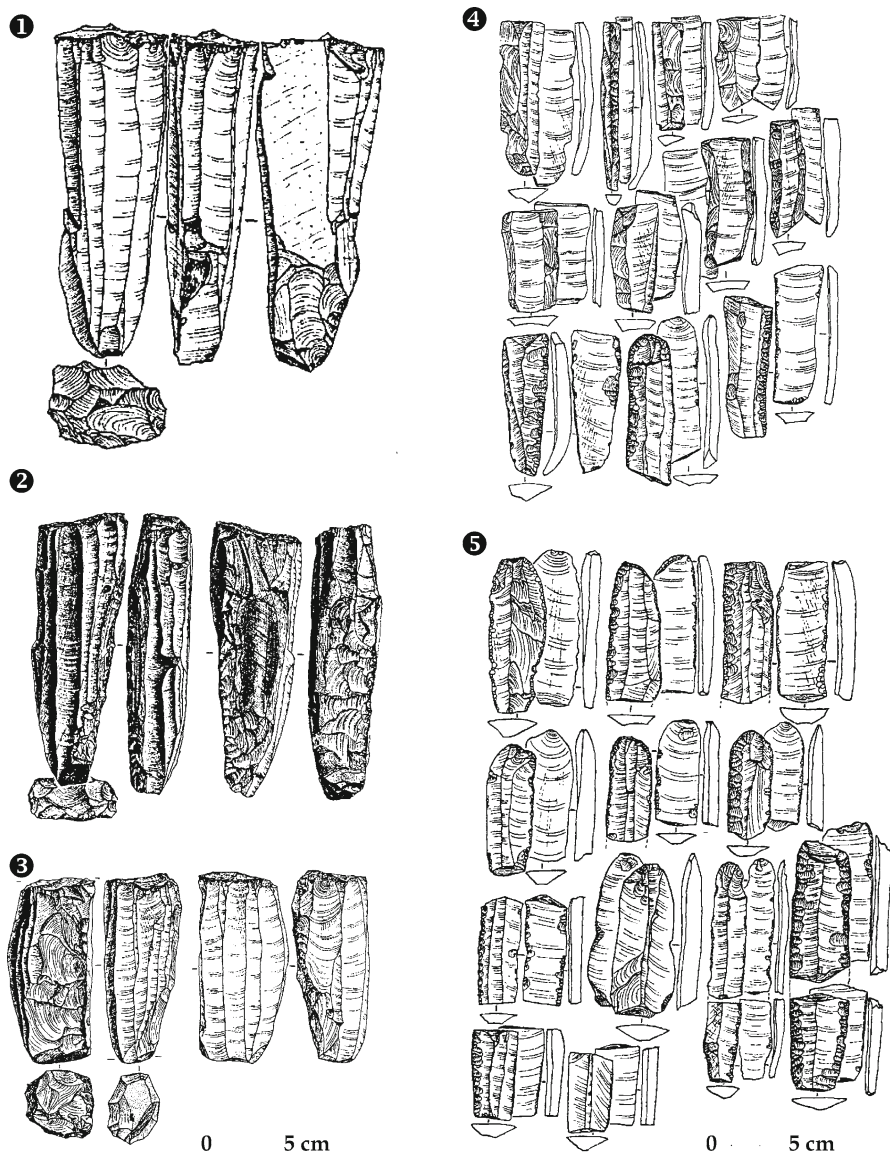


Fig. 13.14 Kamchatka Peninsula. 1–3 Neolithic blade cores from obsidian and 4–5 Tools on blades (By Lebedintsev 2006)

cultural component for all the regions in spite of raw material resource base and ecological factors. In some regions (Maritime Region, Sakhalin Island), it developed along with the big prismatic blade technique, while in other regions (Middle Amur Region, Lower Amur Region), it developed along with flake percussion and amorphous cores. So far, detailed experimental works have been carried out only for the wedge-shaped microblade technique (pressure method) and the blade core technique (direct and indirect percussion) (Tabarev 1997). After having conducted these experiments, we strongly suggest that microblade technique was connected with a wide range of portable compact devices where cores were tightly attached and flaked or reduced with short or long pressure flakers.

The Pleistocene to Holocene transition in the Far East was accompanied by the changes in lithic industries (Krypianko and Tabarev 2001; Tabarev 2008, 2001). In some cases (Middle Amur Region, Sakhalin Island, Kamchatka Peninsula), micro-prismatic and microcore techniques appeared out of a previous wedge-shaped tradition, whereas in other territories, this transition was more complicated and depended on external influences (Middle Amur Region, Maritime Region) or independent local innovations (Lower Amur Region). We also think that the transition to micro-prismatic cores represents the transition to other types of devices and principles of pressure. Unfortunately, we still have no evidence of such devices in an archaeological context and need to conduct further experimental works with the local raw materials. This is also very useful for an understanding of the economic significance of blades and microblades in ancient cultures.

Traditionally, blade technologies for the Paleolithic period are interpreted in terms of hunting activities. Since Final Pleistocene times, Far Eastern cultures were oriented towards seasonal salmon fishing, and the role of this activity increased dramatically in the Early Holocene. This had a strong effect on all aspects of life, including technology, art and rituals (Tabarev 2006). Our preliminary conclusions about the disappearance of blade and microblade industries and the leading role of biface technologies in the cultures of salmon fishers should be corrected. Blades and microblades were in use for a long period of time and satisfied the needs of fishing communities.

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