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RADIOCARBON CHRONOLOGY OF NEOLITHIC AND BRONZE AGE CULTURES IN YAKUTIA

Based on 92 radiocarbon dates (some unpublished) obtained from 30 sites subjected to dendrochronological calibration, previous chronologies of the Late Neolithic and Bronze Age cultures of Yakutia are revised and a new "calendar chronology" proposed. During the Bronze Age, two newly described cultures existed in addition to the Ust-Mil culture: Ulakhan Segelennyakh and Sugunnakh, the latter being a derivative of Ymyiakhtakh. In the 2nd millennium BC, the Ulakhan Segelennyakh culture became distributed throughout southern, southwestern, and southeastern Yakutia. The distinctive feature of this culture is perceived as being its ceramics which are decorated with punched nodes, stamp, and impressed designs. According to radiocarbon dating, the Sugunnakh culture existed in the transpolar regions of Yakutia from the 1st millennium BC at least until the first centuries AD. All the three Bronze Age cultures of Yakutia evidently originated from the Late Neolithic Ymyiakhtakh culture.

Keywords: *Yakutia, Neolithic, Bronze Age, radiocarbon, chronology, culture, ceramics.*

Introduction

Radiocarbon analysis remains the principal technique used in reconstructing chronological sequences in archaeological studies. It proved extremely informative in elaborating the chronology of key stratified sites in Yakutia. In the 1960s–1980s, when the first radiocarbon chronology of the region was suggested, the dates were adjusted using Godwin's correction and the Suess curve (Mochanov, 1969; Mochanov, Fedoseyeva, 1975: 47–49; Fedoseyeva, 1980: 212; and others). At present, radiocarbon dates are commonly converted to calendar time using calibration curves based on new dendrochronological data. The history and principles of calibration have been outlined in detail in many publications (see, e.g., (Kuzmin et al., 1998: 81–83; Borodovsky et al., 2003)). Special calibration software, elaborated at Groningen, Oxford, Belfast, etc., is widely used and commonly accessible. The difference in calibrating intervals generated by different programs is minor since the same calibration curves are used. For the purposes of this study Oxford OxCal 3.10 software was used. The objective of this article is to integrate and calibrate all available radiocarbon dates from Neolithic and Bronze Age sites in Yakutia. Late Pleistocene and Early Holocene chronology is not addressed here; the same is the case for Early Iron Age and medieval chronology (to be discussed in a separate publication). However, to assess the position of the cultures in question in a general sequence, the latest dates of Mesolithic Sumnagin sites and those of the earliest Early Iron Age are used.

History of study

The first periodization of Neolithic and Paleometal cultures in Yakutia was suggested by A.P. Okladnikov in the 1940s. His chronological scheme was based on typological comparisons of archaeological materials from Yakutia with those found in the Cis-Baikal

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Region (Okladnikov, 1955). However, it was only in the 1960s–1980s after multilayered archaeological sites had been discovered in the Aldan and Olekma basins, that the periodization and chronology of the archaeological cultures of Yakutia were elaborated on the basis of radiocarbon dating. At that time, the technique began to be widely used in archaeology. As a consequence, the chronological scheme for the development of archaeological cultures which had initially only been developed for the Aldan and Olekma regions was extrapolated to cover all Yakutia with some corrections added recently. Initially, the following chronological sequence for Neolithic and Paleometal cultures was proposed in the introduction to a collection of papers entitled *Yakutia and its Neighbors in Ancient Times* (Yakutiya…, 1975: 7) and in the paper by Y.A. Mochanov and S.A. Fedoseyeva (1975) published in the same book: Syalakh culture (Early Neolithic), 6200 ± 100 to 5000 ± 100 BP; Belkachi culture (Middle Neolithic), 5000 ± 100 to 3900 ± 100 BP; Ymyiakhtakh culture (Late Neolithic), 3900 ± 100 to 3100 ± 100 BP; Ust-Mil culture (Bronze Age), 3100 ± 100 to 2100 ± ± 100 BP; cultural complexes of the Early Iron Age, 2100 ± 100 to 500 ± 100 BP.

While initially based on the assumption ^{14}C half-life of 5568 years, these estimates were multiplied by 1.03 to adjust them to a half-life of 5730 years. The same chronology without this correction looks somewhat different (Ibid.: 46): Syalakh (Early Neolithic), 6000 ± 100 to 4900 ± 100 BP; Belkachi (Middle Neolithic), ± 4900 ± 100 to 3800 ± 100 BP; Ymyiakhtakh (Late Neolithic), 3800 ± 100 to 2900 ± 100 BP; Ust-Mil (Bronze Age), 2900 ± 100 to 2000 ± 100 BP; cultural complexes of the Early Iron Age, 2000 ± 100 to 500 ± 100 BP.

The authors mentioned above suggested comparing these dates with the "Suess curve" based on dendrochronological data (Ibid.: 48–49). In this case, the cultures (especially the first and the second) turned out to be a little older: Syalakh, 7000–5600 BP; Belkachi, 5600–4200 BP; Ymyiakhtakh, 4200–3300 BP; Ust-Mil, 3300–2100 BP; cultural complexes of the Early Iron Age, 2100–700 BP.

In the series of books entitled *Archaeological Monuments of Yakutia*, the following chronology was proposed (Mochanov et al., 1983: 13; 1991: 11): Syalakh (Early Neolithic), 6200 ± 100 to 5200 ± 100 BP; Belkachi (Middle Neolithic), 5200 ± 100 to 4100 ± 100 BP; Ymyiakhtakh (Late Neolithic), 4100 ± 100 to 3300 ± ± 100 BP; Ust-Mil (Bronze Age), 3300 ± 100 to 2400 ± ± 100 BP; cultural complexes of the Early Iron Age, 2400 ± 100 to 500 ± 100 BP.

This chronology was used in most works on Yakutian archaeology released in the late 20th century. In the last publications by Y.A. Mochanov and S.A. Fedoseyeva, it was slightly modified (Fedoseyeva, 1999: 58–59; Mochanov, Fedoseyeva, 2001: 32; 2002: 28): Syalakh (Neolithic, 6.5–5.2 ka BP); Belkachi (Neolithic, 5.2–4.1 ka BP); Ymyiakhtakh (the Neolithic to the Bronze Age transition, 4.1–3.3 ka BP); Ust-Mil (Bronze Age, 3.3–2.5 ka BP); complexes of the Early Iron Age (2.5–0.5 ka BP).

In this scheme, the Syalakh and Belkachi cultures are attributed to the Neolithic in general; the Ymyiakhtakh culture is correlated with the transitional period from the Neolithic to the Bronze Age; the lower boundary of the Syalakh culture is shifted to 6.5 ka BP, while that of the Early Iron Age complexes to 2.5 ka BP.

The discovery and excavations of the multilayered site of Ulakhan Segelennyakh on the Tokko River in the Olekma basin, Southern Yakutia, conducted in 1987–1997 (Fig. 1, *7*) were of paramount importance in the correction of the chronology of the Ymyiakhtakh culture and the Bronze and Iron Age cultures. Fifteen cultural layers were recorded at the site. Layers XV–VIII represent the Ymyiakhtakh culture; layer VII is correlated with the Bronze Age; and layers VI–II are attributable to the Early Iron Age and the medieval period. Twenty-eight radiocarbon dates have been generated, some of which have not yet been published. Based on new dates from Ulakhan Segelennyakh, the following chronological scheme for the Neolithic and Paleometal cultures of Yakutia has been proposed (Alekseyev, 1996a: 42, 49, 55, 70; 1996b: 18): Syalakh (Early Neolithic), 6200 ± 100 to 5200 ± 100 BP; Belkachi (Middle Neolithic), 5200 ± 100 to 4100 ± ± 100 BP; Ymyiakhtakh (Late Neolithic), 4200 ± 100 to 3500/3300 ± 100 BP; Ust-Mil (Bronze Age), 3500/3300 ± ± 100 to 2500 ± 100 BP; complexes of the Early Iron Age, 2500 ± 100 to 1500 ± 100 BP.

Data obtained from radiocarbon analyses and interpretations of archaeological materials from Ulakhan Segelennyakh make it possible to improve the chronology of the Bronze and Iron Age cultures in Yakutia. The former notion of the Early Iron Age has also been revised and the Early Medieval period (6th – 12th centuries when the Turkic groups infiltrated the region) is viewed as a distinct period (Alekseyev, 1996b: 28; Stepanov, 2003).

Results and discussion

Ninety-two radiocarbon dates were generated from samples taken from 30 archaeological sites in Yakutia and contiguous regions and were then subjected to analysis (Table): the two latest dates for the Sumnagin Mesolithic culture; 15 dates for the Syalakh Early Neolithic culture (including the date from Ust-Tokko I which determines the boundary between the Syalakh and Belkachi cultural layers); 10 dates for the Belkachi Middle Neolithic culture (including the date from Ust-Chuga II for the