

**CHAPTER TEN**  
**Patterns of Subsistence Change During the Final Neolithic**  
**in the Primorye Region of the Russian Far East**  
**as Revealed by Fatty Acid Residue Analysis**  
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Global climatic instability dating to approximately 3700 years ago appears to correlate with the expansion of Northeast Asian 'Bronze Age' cultures and the introduction of core-periphery interaction spheres into the frontier areas of the Primorye Region of the Russian Far East. These processes appear to have led to the demise of long-standing traditions based on hunting-gathering-fishing and the introduction of new patterns of social organization and food production. The appearance of new stylistic patterns associated with the Margarita Culture on the northern littoral of the Sea of Japan seems to represent a transitional phase between Stone Age and Early Iron Age cultural expressions in the region. The degree to which the expansion of food procurement, in the form of millet and barley cultivation, as well as competing influences from northern pastoral societies, played a role in these processes is presently a matter of debate. The extremely poor preservation of organic materials in the archaeological record has hampered the exploration of these questions. In an attempt to gain a more direct understanding of subsistence practices and potential food production represented in deposits dating to this period of rapid culture change a total of 18 Neolithic and 48 Margarita Period ceramic sherds were subjected to fatty acid residue analysis. This procedure revealed a number of similarities and differences related to subsistence practices, as well as patterns of seasonality.

Starting in the 1950's, the field of anthropological archaeology strongly emphasized ecologically precepts in the formation of culture theory. These ideas placed heavy emphasis on biological models that address group behavior, such as optimal foraging theory (Jochim 1998; Smith and Winterhalder 1992). The methodology employed requires the empirical measurement of interaction between human populations and their environment. This especially applies to the analysis of subsistence practices and settlement strategies as adaptive mechanisms that account for processes of culture change (Sabloff and Ashmore 2001). In recent years, modifications to the principles of cultural ecology have incorporated concepts pertaining to human biological evolution that place greater emphasis on individual survival and reproductive fitness (Kelly 1995). This has come to be known as 'behavioral

ecology'. Under this theoretical paradigm, it is assumed that evolutionary stable states may modulate the rate of culture change only as long as stress between human populations and the environment remains at a relatively low level. In the face of catastrophic and destabilizing events, such as rapid and severe climatic oscillations or pandemic disease, the level of decision making shifts to that of individual agents who are motivated by more immediate goals, such as personal survival. A potential reward of such efforts may be the accumulation of personal wealth and power, thereby leading to enhanced reproductive success. Cultural ecology assumes that innovations will take place slowly and variability will be minimized. Behavioral ecology assumes that innovations will occur rapidly, especially under conditions of significant stress, and that cultures will change in a punctuated manner. While the scale of analysis provided by cultural ecology allows us to examine behavior at group level, a greater emphasis on personal agency provides enhanced insights into dynamic processes of change reflected in human behavior. Unfortunately, the fine-grained scale required for the empirical measurement of agency-based behavior is seldom available in the inherently coarse-grained scale of the archaeological record.

In spite of these considerations, the distinctions between cultural and behavioral ecology do provide the opportunity for heuristically useful analytical contrasts. Where archaeological deposits suggest limited variation and incremental processes of innovation over extended periods of time, it may be assumed that environmental stress remained at a relatively stable level. Where the archaeological record reflects increasing variability and significant innovations over relatively short periods of time, it may be assumed that environmental stresses were active, which resulted in agency-based processes (Maschner 2000). When addressing such concepts as cultural variability and rates of innovation, it must be recognized that archaeological interpretations remain largely contingent upon the scale of data collection and analysis. Initial efforts of investigation are by nature constrained to relatively coarse-grained data collection procedures and the descriptive formation of artifact typologies that may permit the analytic construction of archaeological cultures. As our knowledge of specific

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archaeological cultures accumulates it is possible to refine the scale of analysis and establish more rigorous analytic objectives.

Data recovery efforts in the Russian Far East initially concentrated on the construction of relatively coarse-grained historical-descriptive models and the definition of archaeological cultures (Olkadnikov 1964). As data has accumulated over the past 50 years, these models have gradually gained finer-grained resolution and begin to shed light on regional variability in the prehistoric record. As a result of these activities, the present level of data resolution has begun to permit the exploration of ecologically based theoretical perspectives. The idea of a Bronze Age invokes a number of very specific theoretical implications among Western archaeologists centering on the development of social complexity. Among the most commonly cited components of social complexity are domesticated plants and animals, surplus food production, storage facilities, the technological ability to fire materials at high temperatures, social stratification by work, gender or status, political, religious, and craft specialization, extensive exchange of raw materials and exotic goods, production of prestige goods, hierarchically organized village clusters, fortified structures and warfare (Barnes 1993; Shelach 1999). Any hypothesis pertaining to Bronze Age cultures should specifically test for the presence or absence of these items.

### The Bronze Age in the Primorye Region

Over the past 50 years more than a thousand archaeological sites have been discovered throughout the Primorye Region in the Russian Far East, which occupies the coastal area along the northern littoral of Sea of Japan (Figure 1). Examination of the artifact assemblages from surface collections and excavations has resulted in the definition of a number of archaeological cultures that have been assigned to the technological stages of Paleolithic, Early Neolithic, Late Neolithic, Bronze Age, and Early Iron Age.

As a result of the discovery of ground stone replicas of bronze spear points, ground stone daggers, occasional metal objects and associated plain-ware ceramic vessels found in archaeological contexts in Primorye in the 1960's, a Bronze Age component spanning the period between 4000 and 2700 years before present was proposed. During the decades that followed, many new sites have been discovered and excavated. These discoveries have resulted in the refinement of typological distinctions between these Bronze Age cultures that include the Senii Gai Culture of the interior Khanka Plain, the Lidovka Culture that arguably extended 800 km along the east coast and into the western interior along the southern flanks of the Sihote-

Alin Mountain Range, and the Margarita Culture along the coast of eastern Primorye.

From an ecological perspective, it is fairly evident that the Bronze Age Cultures of Primorye occupied fairly distinct zones, as did the previous Early and Late Neolithic periods. The Senii Gai Culture is situated in the foothills surrounding Khanka Lake and appears to be the most heavily influenced by the spread of developing complex societies of Northeast Asia. The east coast along the margin of the Sihote-Alin Mountains appears to be the nexus of the overlapping Margarita and Lidovka Cultures that shared a number of common traits. While they also shared some generalized chronological traits found in the interior, they appear to represent a distinctly separate course of development. In fact, Dyakov (1989, 210) argues that the Margarita Culture represents an early phase of the Lidovka Culture. However, an examination of available radiocarbon dates does not support this idea but reveals a pattern of cultural succession commencing with the Margarita Culture, followed by the Senii Gai Culture and finally the Lidovka Culture (Figure 2).

In fact, it appears that a gap of 400 years separates the Margarita Culture from the Lidovka Cultural, with an intervening period in which the Senii Gai Culture could develop and spread. This time period, commencing around 3700 years ago, coincides with the sudden onset of a severe cold period that was initially very humid but later became cold and dry before returning to warmer and wetter conditions approximately 3300 years ago (Besednov and Vostretsov 1997, 124; Vaganov 1998). This severely cold interval was of global proportions (Steig 1999), and appears to correspond to the last available date of the Late Neolithic Zaisanovka Culture on the south coast and the onset of the Margarita Culture on the east coast. It seems reasonable to assume that such a climatic anomaly resulted in significant ecological disruptions of marine and terrestrial animal and plant communities as well as the related subsistence practices of the people throughout the region. It has been suggested that these events coincided with the spread of the interaction sphere of the northern pastoral groups to the east coast and the displacement of Zaisanovka populations southward.

It is obvious that the classification 'Bronze Age' in the Primorye Region represents a generalized chronological period rather than a specific cultural manifestations. The division in three distinct cultures and the absence of this cultural expression on the south coast, reveals the presence of considerable variety in the form of ecological adaptations and subsistence practices. Furthermore, the interplay between indigenous populations and influences penetrating the region from the north and west appears highly dynamic and complex.