

On The Early Pottery-Making of Southern Far East

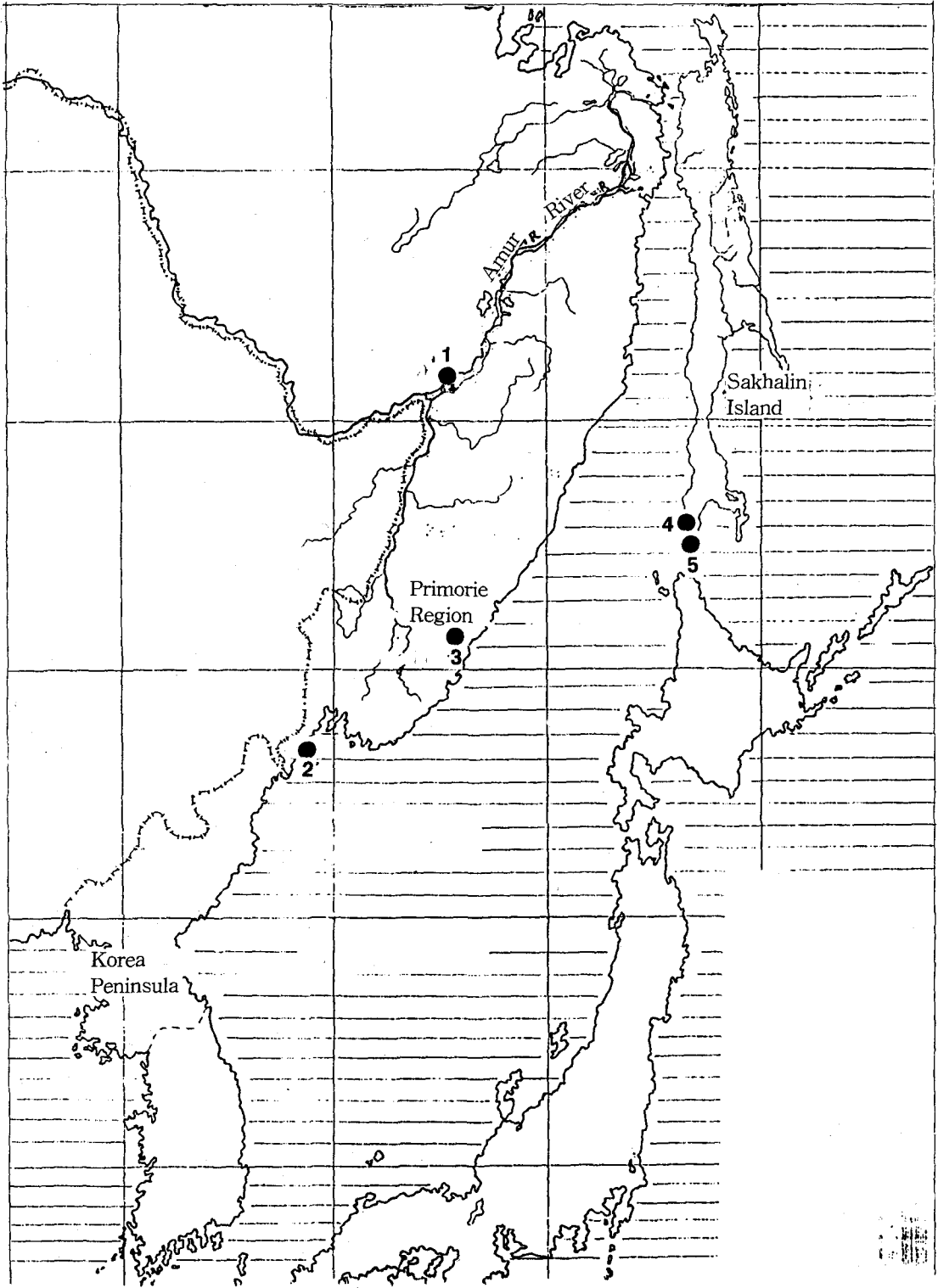
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INTRODUCTION. Archaeological investigations executed during last twenty years in different regions of the world have influenced significantly the ideas on the chronology, geography and forms of the appearance of ceramics—first artificial material created by ancient man. Today the most early experiences of work with clay are dated by Upper Paleolithic. For example, the clay burned figurines were found on Eastern European site Dolni Vestonice dated by 26000 B.P.(Vandiver, 1991), the fragments of ceramic items were discovered on the site Kostenki dated by 23000 B.P.(Праслов, 1991).

Most early evidences of usage of the clay for pottery-making are dated by 12000–10000 B.P. and connected with ancient sites of Japan and Northern China(Chang, 1986 ; Serizawa, 1976). The findings of primitive pottery with mesolithic or late paleolithic stone artifacts in these sites stimulate the efforts to work out the problem of appearance of the pottery on the territory of southern Far East. This territory includes the region of Lower Amur river basin, Sakhalin island, Primorie region(see map 1).

Main purpose of this paper is to order the archaeological data concerning to this problem. The two approaches to ordering of early ceramic assemblages are used. First is systematization based on the technological and morphological characteristics of the pottery.

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〈Map. 1〉 Lower Amur river basin, Sakhalin island, Primorie region

Culture-Archaeological Systematization of Early Ceramic Assemblages

Region of Lower Amur river basin. The most ancient pottery from this region was found in well-known site on the cliff Gasya not far from Khabarovsk city. Radiocarbon date of the layer with archaic ceramics- 12960 ± 120 B.P. The stone artifacts are typical for mesolithic industry. Pottery assemblage is represented by small quantity of fragments(Деревянко, Медведев, 1993).

Sakhalin island. The findings of earliest pottery are connected with the sites of Yuzhno-Sakhalinskaya archaeological culture. They have age about 7-6 mil. B.P. by C^{14} . The stone industry is characterized by composition of neolithic and archaic mesolithic technological traditions. Pottery assemblages are represented by the series of fragments and several complete vessels(Шубин, Шубина, 1984 ; Шубин, Шубина, Горбунов, 1982 ; Голубев, Жушиховская, 1987).

Primorie region. The earliest pottery assemblages are connected with two neolithic sites. One of them-cave site Chertovy Vorota in north-eastern Primorie region-is dated by the middle of 7 mil. B.C. according to C^{14} analyses. The stone artifacts are typical for neolithic industry. The ceramic assemblage includes the complete vessels and lot of fragments. This site belongs to Rudninskaya archaeological culture which had close contacts with neolithic Kondonskaya culture of Lower Amur basin(Неолит юга Дальнего Востока, 1991).

Second site is Boisman 1 in southern Primorie region. This site with shell middens is located on the seaboard and dated by 7-beg. 5 mil. B.C. according to preliminary data. The earliest cultural horizon that is most interesting for this paper is dated by 7 mil. B.P. The pottery assemblage is represented by numerous fragments and only few complete vessels. The cultural traditions of the site Boisman 1 are similar to the traditions of north-eastern Korean neolithic sites such as Sophokhan(Son Kuk Taeh, 1986).

Techno-Morphological Systematization of Early Ceramic Assemblages

Main principle of this systematization is the evaluation of ancient man's skill in the processing and shaping of the clay raw material. The characteristics of pottery are of special value for this systematization. Two of them concern the transferring of the raw clay into artificial material-ceramics. The initial and final stages of technological process are most important : the preparing of clay paste and thermal processing of it resulted in ceramics. From this point of view the ceramic paste content and the firing temperature are interesting for us. Third characteristic is level of development of pottery morphological structure. It is connected with the mastering of main working properties of clay-plasticity and mould-making. According to these characteristics it is possible to distinguish three techno-morphological levels of pottery-making among noted above ceramic assemblages.



Fig. 1. The fragment of plant-tempered pottery from site Kuznetso vo-4, Yuzhno-Sakhalinskaya culture.

First level is represented by ceramics of site Gasya¹⁾ and Yuzhnosakhalinskaya culture. The ceramic paste contains two components-clay and rough plant temper(Fig 1). The visual observation of pottery from Gasya shown that the long fibers of grass were used as temper. The ancient potters of Sakhalin used the different plants-the sedge, the burdock and others²⁾-for tempering clay.

1) I executed the visual studying of Gasya pottery in the Institute of Archaeology and Ethnography in Novosibirsk.

2) According to the results of binocular analysis of pottery.

The archaeological data from different regions of the world evident that plant-tempered ceramic pastes were used at most ancient stages of pottery manufacturing. For example, the similar type of ceramic paste was used in earliest pottery-making of Central and Northern America (Reichel-Dolmatoff, 1971 ; Griffin, 1965), Middle Asia (Саїко, 1982), Japanese islands (Kitizawa, 1990, 1991).

The firing temperature of Gasya and Yuzhno-Sakhalinskaya culture's pottery was very low. The organic plant matter in some sherds was not destroyed dry fire completely. As it is known the temperature of organic matter destruction is about 400°C (Shepard, 1965). The analyses of colour transformation of refired archaeological sherds have shown that the firing temperature of Yuzhno-Sakhalinskaya culture's pottery varied from 400° to 500°C.

The level of pottery shape's development was primitive. The vessels from Gasya and Yuzhno-Sakhalinskaya culture have simplest unrestricted structure with wide mouth (orifice), direct walls and flat bottom. It is interesting that the ceramic vessels of Yuzhno-Sakhalinskaya culture have rectangular horizontal plan of body and bottom. Really they are the ceramic boxes formed from clay strips and rags (Fig 2-1).

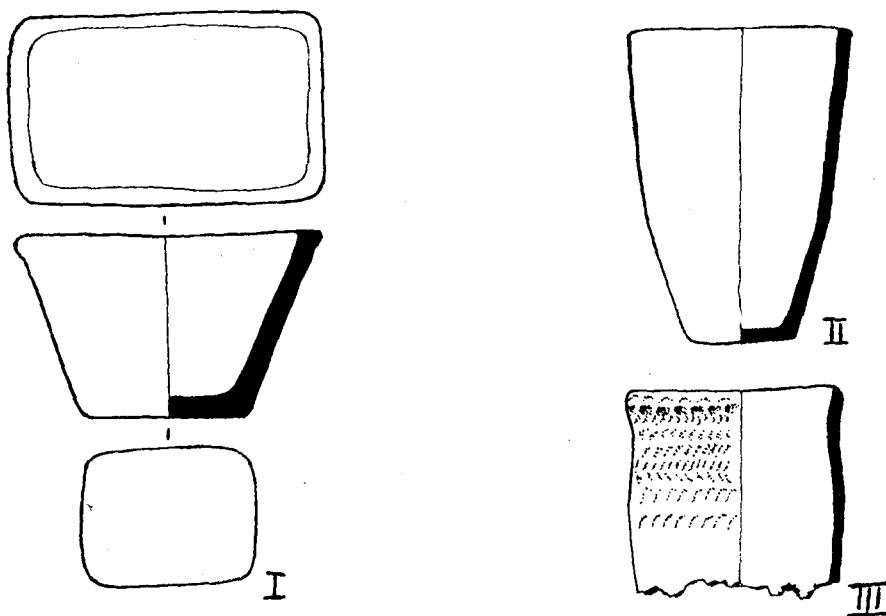


Fig. 2. The pottery types from Yuzhno-Sakhalinskaya culture's sites(1), site Boisman-1(II, III).

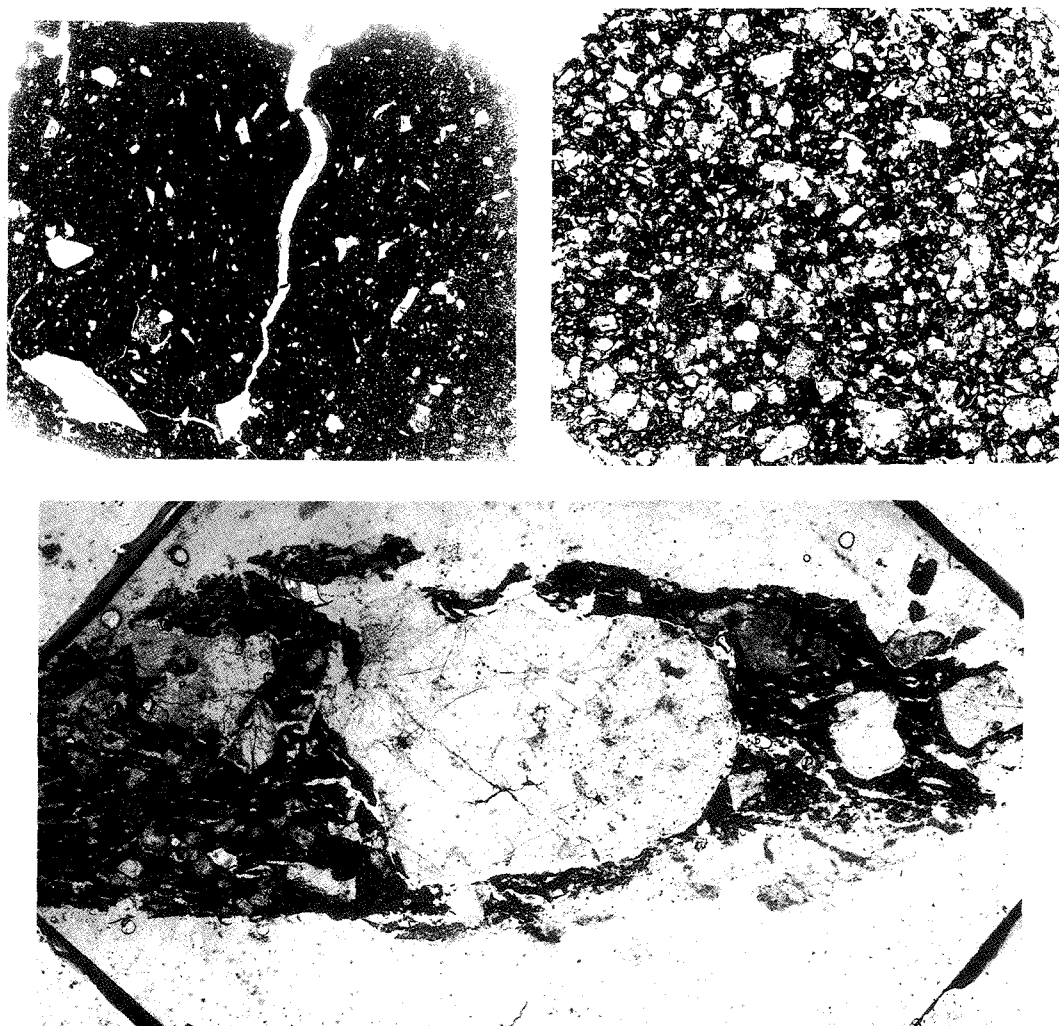


Fig. 3-a, b, c. The thin sections of ceramics from site Boisman-1.
Ceramic pastes prepared from raw clays with natural non-plastic inclusions. Enlarged $\times 9$.

The ceramic vessels with rectangular horizontal plan occur in archaeological sites very seldom and mostly are connected with earliest stages of pottery-making. Such shapes are known from early neolithic sites of Northern America (Griffin, 1965), from ancient sites of Japan. The last have some resemblance with Yuzhno-Sakhalinskaya pottery.³⁾

All noted characteristics correspond to earliest stages of ceramic-manufacturing

3) The oral information of Prof. Hiroshi Kajiwara.

development. They are similar to techno-morphological characteristics of most archaic pottery assemblages from different regions of the world.

Second level is represented by pottery of the site Boisman 1. The ceramic paste was prepared from local raw clays. The different clays were used—relatively clear, with small amount of non-plastic inclusions and sandy, with big amount of mineral grains of various size. The preparation of clay paste was careless that resulted in irregular texture and uneven distribution of natural non-plastic inclusions(Fig. 3).

Small amount of ceramic sherds has the temper of crushed shells(Fig. 4). Probably the appearance of this kind of temper was determined by local ecology : the abundance of different sea molluses that were the important food resource could initiate the idea to use the shells as admixture to ceramic paste. It was a “potter’s experiment”.

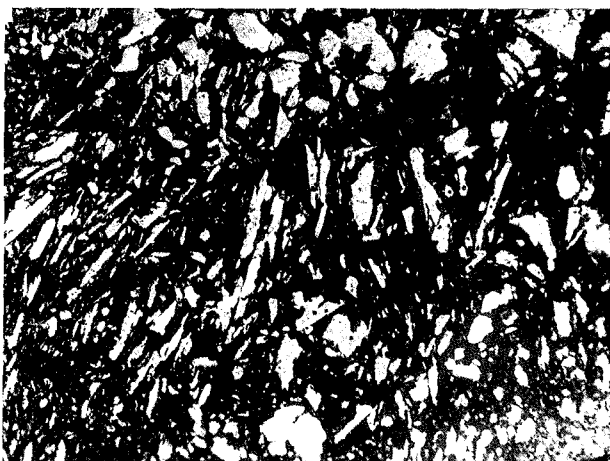


Fig. 4. The thin section of ceramics from site Boisman-1. Ceramic paste with shell temper. Enlarged $\times 9$.

The co-existence of different ceramic paste types if it has not the functional or cultural determination is interpreted as the indicator of the stage of technological search and choice of acceptable ceramic paste receipt. This situation occurred in early pottery-making of certain regions of the world(Vandiver, 1987).

The firing temperature of Boisman’s pottery is a little bit higher than one of pottery from site Gasya and sites of Yuzhno-Sakhalinskaya

culture. It was about 550-600°C.

Main shape model in pottery-making of site Boisman 1 had simplest unrestricted structure without morphological distinguishing of orifice part, with direct walls of slightly prolonged contour, flat bottom. In the same time small amount of samples shows the tendency to structural distinguishing of orifice part(Fig. 2-II, III)

Third level is represented by the pottery from cave site Chertovy Vorota. The ceramic paste has relatively constant composition : clay with artificial mineral temper of granite and granodiorite grains(Fig. 5). The plastic fraction composes 50-60% of the

paste. The middle size range and temper's grains is 1-2 mm. The techniques of crushing(grinding) and sieving were used for preparing the mineral temper. The ceramics of Chertovy Vorota is most early regional example of stable ceramic paste technology based on the usage of mineral temper. This technology existed in pottery-making of Primorie region's ancient cultures from Neolithic to Medieval period (Жушиховская, Залищак, 1986).

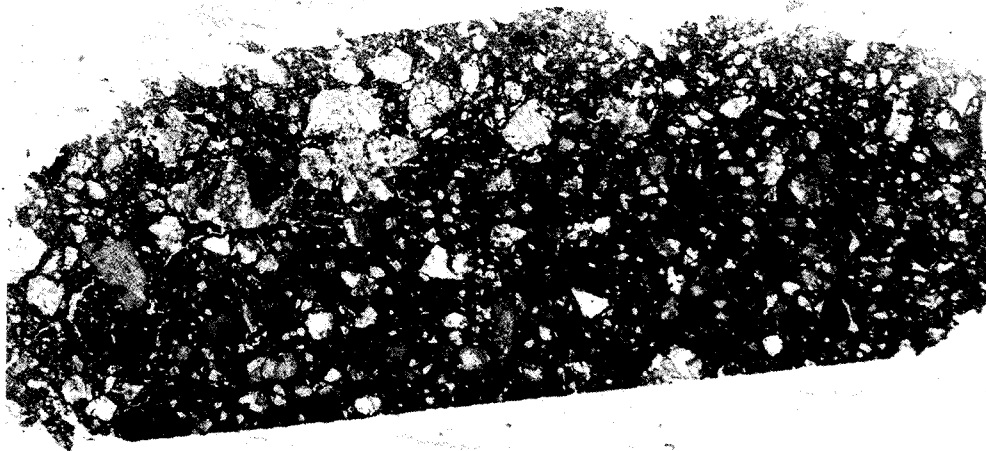


Fig. 5. The thin section of ceramics from site Chertovy Vorota.
Ceramic paste with artificial mineral temper. Enlarged $\times 9$.

The firing temperature was 600-650°C.

The pottery from Chertovy Vorota is characterized by most developed morphology in comparison with the pottery from Gasya, Yuzhno-Sakhalinskaya culture's sites, Boisman 1. Three types of vessel shapes are distinguished in ceramic assemblage of Chertovy Vorota : 1 - unrestricted, without structural distinguishing of the orifice part, 2 - restricted, with clear structural distinguishing of the orifice part, 3 - intermediate between unrestricted and restricted shapes with slightly outlined structural distinguishing of the orifice part (Fig. 6). Type 2 represents the most early example of restricted vessel with distinguishing of the orifice part in Primorie region.

DISCUSSION. The correlation of the results of two systematization have led to following suggestions and conclusions.

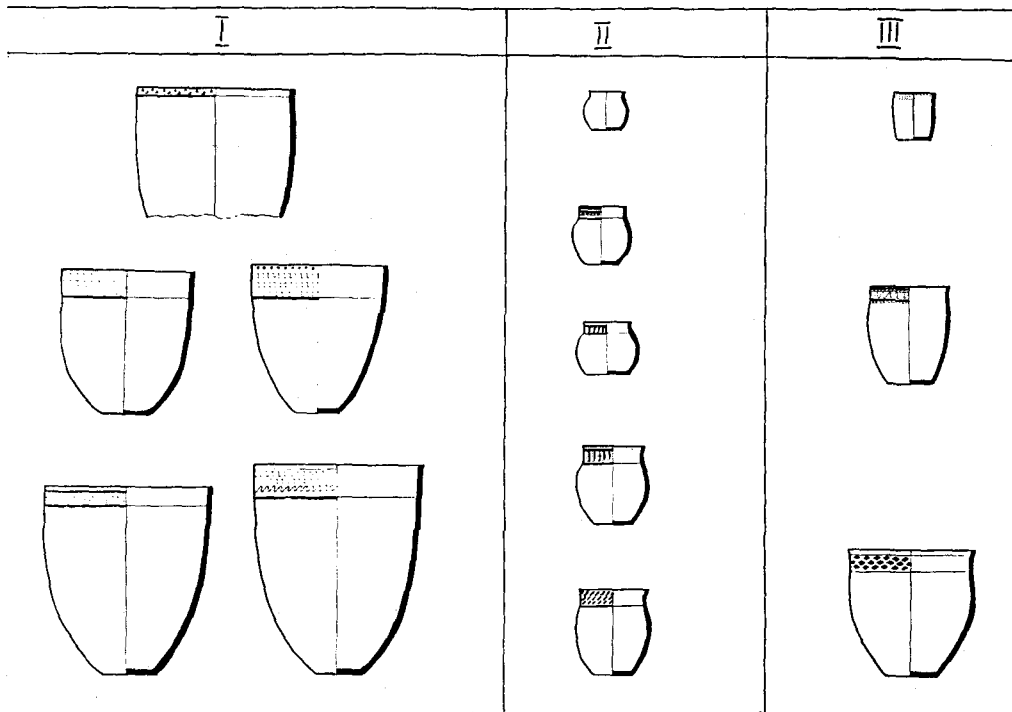


Fig. 6. The pottery types from site Chertovy Vorota. I-type 1, unrestricted form, II-type 2, restricted form, III-type 3, intermediate between unrestricted and restricted form.

1. It is important to note that the grouping of ceramic assemblages by their culture-chronological context does not correspond to the grouping by their techno-morphological characteristics. On the first glance we have paradoxical situation : the ceramic assemblages from Gasya and Yuzhno-Sakhalinskaya culture's sites having significance chronological gap belong to the same technomorphological level, but ceramic assemblages of Yuzhno-Sakhalinskaya culture, Boisman 1 and Chertovy Vorota which are relatively synchronic belong to different techno-morphological levels.

One can propose two explanation for this situation. First : modern chronological scale for Stone age's cultures and sites of southern Far East is uncorrect and needs some correction according to data of techno-morphological systematization of the pottery. But this explanation does not seem to be serious and objective because the chronological scale of archaeological sites is based on their complex cultural context, connections with Stone age's sites of Far East and Siberia, radiocarbon dating.

Second explanation is more logical and realistic : the uncorresponding between the

two groupings of ceramic assemblages reflects the unevenness of pottery-making development on the territory of southern Far East.

2. The pottery assemblages from the sites Chertovy Vorota and Boisman 1 located in different parts of same region demonstrate this unevenness. The technology and morphology of pottery from the site Chertovy Vorota are more developed in comparison with pottery from contemporary site Boisman 1.

It is necessary to note that the pottery from Chertovy Vorota is more perfect than the pottery not only from Boisman 1 but from the more late sites also. For example, the ceramic vessels from site Valentin-peresheek dated by 3 mil. B.C. and located in Eastern Primorie are characterized by undeveloped structure and rough technology in comparison with ceramics from Chertovy Vorota (Валентин-перешеек-поселок древних рудокопов, 1987).

We could find the explanation of this situation if we remembered about close connections between cultural traditions of site Chertovy Vorota and neolithic sites of Lower Amur basin (Неолитюга Дальнего Востока, 1991). The pottery of Chertovy Vorota despite its relatively early age - middle of 5 mil. B.C. - represents not earliest techno-morphological stage of pottery-making. This pottery is result of long-timed evolution of ceramic manufacturing. If we'll suggest that the initial phase of this evolution is marked by Gasya pottery dated by 11 mil. B.C. then developed character of Chertovy Vorota's pottery will be understood. One can suppose that Lower Amur river basin was the region of most early appearance and development of pottery-making in southern Far East.

Amur-the biggest Far Eastern river-was the water road for the peoples from prehistoric times. In this area different groups of ancient population co-existed, mixed, assimilated that formed the social conditions for the initiating new ideas and new activities.

There were the ecological conditions for early appearance of pottery-making in Amur basin. This area is riched by potter's clays of high quality. The many clay sources located at Amur banks were available for ancient peoples.

3. It is possible to make some suggestion on the reasons of appearance of pottery and pottery-making in transitional period between Pleistocene and Holocene. According to F. Ikawa-Smith and Ch. Serizawa the main reason of the invention of pottery was abrupt ecological changes after last glacial period and total warming of climate. The

changes in ecology provoked the changes in ancient man's diet and the ways of food preparation. In particular the active development of plant gathering determined the need in special containers for thermal processing of plant food (Ikawa-Smith, 1976 ; Serizawa, 1976).

I am jointing to this opinion and would like to widen the spectra of ecological factors which stimulated the early appearance of pottery. Probably one of these factors was the total warming of climate on the border between Pleistocene and Holocene. The raising of average year temperature and humidity, prolongation of warm season, processes of soil melting increased abruptly the ancient man's chances to observe the main physics properties of clay - plasticity in wet condition and hardness in dry condition. Only one step separated this passive observation from active usage of raw clay material.

4. The ways of development of earliest pottery-making in southern Primorie region are not clear now. Really the pottery from site Boisman 1 belongs to early but not initial stage of pottery-making. Its techno-morphological level corresponds to intermediate position between pottery-making of Gasya and Yuzhno-Sakhalinskaya culture and pottery-making of Chertovy Vorota. Taking into account that site Boisman 1 is periphery of cultural area including the neolithic sites of northern and north-eastern Korea one can suppose the the origins of southern Primorie region's pottery-making were located on Korean peninsula territory.

5. The techno-morphological characteristics of pottery from Yuzhno-Sakhalinskaya culture's sites reflect the falling behind of Sakhalin neolithic pottery-making in comparison with the pottery-making of Synchronic continental Far Eastern cultures. This cultural falling behind is fixed in stone industry also.

The traditions of Yuzhno-Sakhalinskaya culture's pottery have some similarities in early ceramic assemblages of Japan : plant tempered ceramic paste, rectangular plan of vessel shape, simple applique design on the walls. Probably Yuzhno-Sakhalinskaya culture's pottery represents the northern periphery of early Japanese pottery-making.

There is significant chronological difference between the pottery of Yuzhno-Sakhalinskaya culture and early pottery from Japan dated by 12,5-8,5 mil. B.P. (Kitizawa, 1990, 1991 ; Serizawa, 1976). May be this gap will be decreased by findings more ancient pottery assemblages on Sakhalin island. But may be it will not occur. The degree of preservation of archaic pottery is very low. According to the investigations of K. Reid the organic-tempered, porous, low-temperated pottery is been destroyed while

been in the soil in the regions of middle latitudes. The desintegration of ceramics is the result of alternating processes of freezing and melting of soil water in pores of the sherd(Reid, 1984). One can suppose that the main reason of rare occurrence of archaic pottery in southern Far East located in middle latitude area is its bad preservation.

CONCLUSIONS. There are the results of systematization of pottery assemblages which are interesting for working out the problem of early pottery-making of southern Far East. Two positions are most important. First - the Lower Amur basin is distinguished as a region of earliest appearance of pottery and pottery-making. Second - the pottery-making developed unevenly in different regions of southern Far East. This conclusion has some value for understanding ways of development and formation of traditions of ancient Far Eastern pottery-making during following culture-historical periods.

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【 REFERENCES 】

- Chang Kwan-chin. 1986. *The Archaeology of Ancient China*. New Haven, Ct., 71-106.
- Griffin J.B. 1965. Ceramic Complexity and Cultural Development : The Eastern United States as a Case Study *Ceramics and Man*. Chicago, 104-113.
- Ikawa-Smith F. 1976. On Ceramic technology in East Asia. *Current Anthropology* 17.
- Kitizawa M. 1991. The Report on the Excavations of Site Yatie *Bulletin of Historical museum*, Obikhiro city. (Japanese).
- Kitizawa M. 1991. The Data of the Excavations of Site Akatsuki *Bulletin of Historical Museum*, Obikhiro city. (Japanese).
- Reichel-Dolmatoff G. 1971. Early Pottery from Colombia. *Archaeology*. No. 4, Vol.24. 338-345.
- Reid K. 1984. Fire and Ice : New Evidences for the Production and Preservation of Late Archaic Fiber-Tempered Pottery in the Middle-Latitude Lowlands *American Antiquity*. No. 1, Vol.79.
- Serizawa Ch. 1976. The Stone Age of Japan *Asian Perspectives*. No. 1, Vol.XIX.
- Shepard A.O. 1965. *Ceramics for the Archaeologist*. Washington.
- Son Kuk Taeh. 1986. *Neolithic of Korea*. Pyongyang, (Korean).
- Vandiver P.B. 1987 Sequential Slab Construction : Conservative Southwest Asiatic Ceramic Tradition, ca.7000-3000 B.C. *Paleorient*. No. 2, Vol, 13. 9-35.
- Vandiver P.B. 1991. The Origins of Ceramics : Figurine Manufacture at Dolni Vestonice, ca 26,000 B.P. *Studio Potter*. No. 1, Vol.20. 4-9.

Валентин-перешеек-поселок древних рудокопов. М., 1987.

Голубев В.А., Жутиховская И.С. Неолитическая культура Южного Сахалина в свете анализа керамических комплексов // Вопросы археологии Дальнего Востока СССР. Владивосток, 1987.

Дервянко А.П., Медведев В.Е. Исследования поселения Гася. Новосибирск, 1993.

Жутиховская И.С., Залищак Б.Л. Петрографический метод в изучении древней керамики Приморья // Методы естественных наук в изучении древних производств на Дальнем Востоке СССР. Владивосток, 1986.

Неолит юга Дальнего Востока. Н., 1991.

Праслоз Н.Д. О керамике эпохи палеолита // Древние культуры и археологические изыскания. Санкт-Петербург, 1991.

Сайко Э.В. Техника и технология керамического производства Средней Азии в историческом развитии. М., 1982

Шубин В.О., Шубина О.А. Новые радиоуглеродные датировки по археологическим памятникам Сахалинской области. Южно-Сахалинск, 1984.

Шубин В.О., Шубина О.А., Горбунов С.В. Неолитическая культура на Южном Сахалине. Южно-Сахалинск, 1982.