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HYPOTHESES ON THE ORIGIN OF FARMING COMMUNITY IN ARMENIA: A VIEW FROM THE BIRTH OF YAYOI CULTURE IN JAPAN

Keywords: Armenia, Aratashen-Shulaveri-Shomutepe, Neolithic, Mesolithic, Early Holocene, origin of agriculture, Jōmon, Yayoi, Mumun

Introduction

The invention of agriculture by humans is one of the most significant events that influenced entire human societies and provided the basis of the modern world. As is well known, agriculture originated independently in different areas of the world. In Eurasia, agriculture first appeared in two centers, namely Near East and China. Among the crops domesticated in these areas, wheat in the Near East and rice in China are important grains that became the staple food and significantly changed the lifestyle of ancient people. Archaeological records show that the agriculture of these grains was diffused from the centers to surrounding areas, in some cases gradually, in other cases rapidly. Diffusion of agriculture is an interesting topic in human history. Numerous studies, of not only archaeology but also anthropology, linguistics, thermatology, etc., have tried to uncover this process in various areas around the world.

In the Near East, the earliest plant domestication is considered to have arisen in the middle Euphrates basin and Jordan valley in the

Neolithic era (ca. 9th millennium cal BC), although other regions might remain candidates. Moreover, archaeological evidence shows that early agricultural communities in the southern Caucasus appeared around 6000 cal BC, known as the "Aratashen-Shulaveri-Shomutepe" culture. The southern Caucasus is located in the northern end of the Near East and includes territories of the Republic of Armenia. Three sites in Armenia, Aratashen, Aknashen, and Masis Blur, belong to the "Aratashen-Shulaveri-Shomutepe" culture (Fig.1).[1] The starting date of this culture indicates that agricultural communities in southern Caucasus emerged later than those in other regions in the Near East where they had already appeared around 8000-7000 cal BC. How did the "Aratashen-Shulaveri-Shomutepe" culture appear in 6000 cal BC? What was the relationship between this culture and the precedent local culture? Unfortunately, it is premature to draw any conclusions on these questions owing to the scarcity of archaeological evidence from the period preceding the "Aratashen-Shulaveri-Shomutepe" culture, which makes it difficult to understand the early adoption of agriculture in the southern Caucasus (Fig. 2). To resolve this issue, Armenian-Japanese joint teams have investigated the southern foothills of Mt. Aragats since 2013. Currently, we are focusing on the excavations at Lernagog-1 in the Armavir province, which could provide an important perspective on the transition from hunting-gathering to agro-pastoral subsistence in Armenia. Furthermore, additional excavations at Lernagog-1 and intensive archeological works throughout the Republic of Armenia are required to thoroughly understand the transition. Until now, Lernagog is the only site that is chronologically closest to the "Aratashen-Shulaveri-Shomutepe" culture sites (Fig. 1)[2], but it is nearly 1,000 years away (Fig. 2). The sites of the transitional

[1] Chtaigner C., Badalyan R. and Arimura M., *The Neolithic of Caucasus*, Oxford Handbooks Online, 2014, pp. 1-34.

[2] Arimura M., Petrosyan A., Arakelyan D., Nahapetyan S. and Gasparyan B., *A Preliminary Report on the 2015 and 2017 Field Seasons at the Lernagog-1 Site in Armenia*, Aramazd 12(1), 2018, pp. 1-18.

period to the "Aratashen-Shulaveri-Shomutepe" culture, ca. 6500-6000 cal BC, are largely missing.

The spread of rice agriculture from the Asian continent, associated with other cultural elements, to Japanese islands could be a curious case for the diffusion of agriculture since there is rich scientific data accumulated by archaeological excavations. In this paper, we will roughly review the current state of research on the adoption of agriculture in the Japanese archipelago with the intention of providing some insights for future research in Armenia.

Transition to the Yayoi agricultural communities in the Japanese islands

There is extensive research on the origin of the agricultural community known as the Yayoi culture in the Japanese archipelago. Recent studies have reviewed the research well[3]. The Jōmon period, which preceded the Yayoi period, began around 13,000 cal BC and is marked by the start of pottery use. Archaeological excavations have exposed that the Jōmon people generally produced rich material artifacts and the structural features, such as pit dwellings/houses, storage pits, and graves, indicated that they lived a sedentary lifestyle. They subsisted chiefly on hunting, fishing, and gathering, but also partly on the cultivation of plants such as Azuki and Soys. Jōmon culture lasted for over 10,000 years up to the introduction of agriculture.

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[3] 下條信行 監修『*列島初期稲作の担い手は誰か*』東京：すいれん舎, 2014 (Shimojou N. (ed.), *Who were the Early Rice Farmers in the Japanese Archipelago?* Tokyo: Suirensha, 2014); 端野晋平『*初期稲作文化と渡来人 - そのルーツを探る*—』東京：すいれん舎, 2018 (Hashino S., *Early Rice Cultivation Culture and the Migrants. Exploring Their Roots*, Tokyo: Suirensha, 2018); De Boer E., Yang M.A., Kawagoe A. and Barnes G.L. *Japan Considered from the Hypothesis of Farmer/ Language Spread*, Evolutionary Human Sciences, 2, c.13, 2020, pp. 1-20.

The agricultural transition in Japan happened during the first half of the first millennium BC. The period after the introduction of agriculture is called the Yayoi period, which lasted until around 250 AD. The appearance of agriculture in Japanese literature coincided with the beginning of Yayoi culture. The Yayoi culture first appeared in North Kyushu and gradually spread to other islands of Japan (Fig. 3). In general, the transition to agricultural society in Japan is thought to have been driven by migrants from the Korean peninsula — the migrants from the Mumun culture arrived adaption of North Kyushu, as proved by various artifactual evidence as well as skeletal remains that are different from those of the Jōmon people. Several researchers have attributed the cultural transformation from Jōmon to Yayoi to the arrival of large numbers of Mumun migrants. However, archaeological evidence indicates that the Jōmon culture underwent a cultural transformation by selectively adapting some elements of the Mumun culture (see below).

(1) Migrants from the Korean peninsula and new cultural elements

Agricultural communities appeared for the first time in the Korean peninsula during the Mumun period (Korean Bronze Age: 1500-300 BC). While the wet-rice agriculture in the Mumun culture attracts attention in relation to the Yayoi culture, various plants other than rice were also cultivated in this culture, such as millets. Recent studies have pointed out that dry field agriculture was more important than wet-rice agriculture in the Mumun culture.[4]

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[4] 裵眞晟「*韓半島南部における初期農耕文化の動態*」下條信行 監修『*列島初期稲作の担い手は誰か*』東京：すいれん舎 (Bae J., *Dynamics of the Early Farming Culture in the Southern Korean Peninsula*, In: Shimojou, N. (ed.), 2014, pp. 49-77); Choy K., Yun H.Y., Lee J., Fuller B.T. and Shin K.-H. *Direct Isotopic Evidence for Human Millet Consumption in the Middle Mumun Period: Implication and Importance of Millets in Early Agriculture on the Korean Peninsula*, Journal of Archaeological Science 129, 2021, pp. 105372.

Estimates of the number of migrants vary widely, depending on the position of the researcher. However, since few colonial sites occupied by the Mumun people have been found in North Kyushu as well as on other islands, it is unlikely that large numbers of migrants landed in North Kyushu all at once. Instead, it is common to find local Jōmon sites with some archaeological remains of the Mumun culture. Judging from the archaeological records, the first influence of the Mumun culture could be traced back to the Kurokawa type pottery phase (Final Jōmon, Fig. 4). It is likely that Mumun migration was most active during the following phase of Yūsu type pottery (Final Jōmon or Initial Yayoi, 900/800-800/700: terms and dating are different among researchers, Fig. 4) since more artifacts of Mumun culture belonging to this period can be found at North Kyushu sites. Several researchers have suggested that the cause for Mumun migration to North Kyusyu was the cooler climatic conditions.[5]

The Mumun people brought the following to Jōmon society in North Kyushu: wet-rice agriculture and its associated tool-kits such as stone reaping knives and wooden hoes, new house type, dolmen, and new pottery type. This wide variety of archaeological records indicates that the new cultural elements involved various parts of society, including subsistence and production technology, habitation, and ideology, suggesting that the Mumun cultural package had arrived. However, it should be noted that the Jōmon culture was not replaced by the Mumun culture but gradually transformed into the Yayoi culture by selectively accepting cultural elements of the Mumun culture (see below).

(2) The birth of the Yayoi culture

The transition from Jōmon to Yayoi culture has been deeply examined by studies on artifacts. Pottery, an artifact that reflects the

[5] Hashino S. op. cit.; Miyamoto K. *The Spread of Rice Agriculture during the Yayoi Period: From the Shandong Peninsula to the Japanese Archipelago via the Korean Peninsula*, Japanese Journal of Archaeology 6, 2019, pp. 109-124.

origin, customs, and traditions of the pottery makers, might represent this transition well. Fig. 5 is the typical pottery assemblage of the Yūsu type (I) pottery phase[6] (Final Jōmon or initial Yayoi period). According to the detailed study by Misaka[7], the pottery assemblage of this phase composed of three groups: Jōmon, Mumun, and transformed styles. The most abundant Jōmon style traditional and local pottery group descended from the precedent Kurokawa type pottery. The Mumun style reflects the tradition of Mumun pottery in the Korean peninsula but it is localized in North Kyushu. The third group, transformed style, comprises the pottery vessels that were newly created, probably inspired from the other two styles. It is important to note that the boundaries between the three groups are blurred. Such pottery assemblage could suggest the following points:

(1) The majority of the pottery assemblage was Jōmon style, probably made by the Jōmon people. They continued to make pottery similar to that of the previous period (Kurokawa type pottery).

(2) Mumun style potteries were lesser in number, probably made by the Mumun migrants living in the Jōmon village. Their pottery was also influenced by the local Jōmon style.

(3) It is unclear whether the makers of transformed pottery are Jōmon people, Mumun migrants, or admixed people, but the transformed pottery represents the admixture of Jōmon and Mumun cultures. This indicates the birth of the new Yayoi culture.

As archaeological studies of artifacts in time series from Jōmon to Yayoi period have shown, the change in material culture between the two periods was not rapid but gradual. Fig. 6 shows a conceptual diagram of the birth of Yayoi culture.[8] In Phase 1 (ca. 1000-900/800 cal BC: Kurokawa type pottery phase), a few Mumun cultural

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[6] Misaka K., *Chapter 4, The Process of the Beginning of the Yayoi Period: View from the Pottery*. In: Shimojou, N. (ed.), 2014, Fig. 11.

[7] Ibid.

[8] Hashino S., op. cit.

elements appeared in Jōmon villages. This might be interpreted either as an increase in cultural exchange between North Kyushu and the Korean peninsula or as the arrival of a certain number of migrants from the peninsula. In either case, the entire Jōmon culture had not been significantly transformed until this period. It is in Phase 2 (ca. 900/800-800/700 cal BC: Yūsu type pottery phase) that the largest number of migrants arrived at North Kyushu. The Mumun migrants brought new cultural elements, and through this influence the Jōmon culture transformed into the Yayoi culture. Admixture of Jōmon and Mumun culture (i.e., appearance of admixed people) started in Phase 2 and completed by Phase 3. The Yayoi culture can be distinguished from the Jōmon and Mumun cultures. It is an agricultural culture that was established independently in the archipelago.

Hypotheses for future consideration regarding the origin of agricultural communities in Armenia

As mentioned above, owing to the lack of archaeological evidence, it is too early to draw conclusions about the origins of early agricultural communities in Armenia. It is imperative to discover and investigate more sites belonging to the 7th millennium cal BC in order to fill the gap between the Lernagog and "Aratashen-Shulaveri-Shomutepe" sites (Fig. 2). However, the case of the Japanese islands described above could provide some guidance for future research.

"Aratashen-Shulaveri-Shomutepe" sites produced a lot of new cultural elements that were not observed before in the southern Caucasus, such as pottery, large blade industry, stone polished axes, architecture made of pisés (rammed earth) or mud-bricks, domesticated plants and animals, mace heads, clay figurines, and bone tools. These cultural components represent the typical Neolithic "package" of the Near East. However, the Armenian Mesolithic (Early Holocene) sites such as Lernagog and Kmlo show no signs of farming practice and their material culture generally comprises obsidian blades

and animal bones. Theses archaeological components represent materials typically left by hunter-gatherers. Additionally, the site location shows a significant difference between the two groups (Fig. 1). The Mesolithic (Early Holocene) sites are located in the mountainous area, while the sites of "Aratashen-Shulaveri-Shomutepe" culture are located in the alluvial plain in the Ararat Valley where farming could have been possible. Such large difference in the archaeological record between the two sites gives the impression that "Aratashen-Shulaveri-Shomutepe" did not develop independently from the local Mesolithic hunter-gatherers without outer influence. However, it should be noted that the vast time period of 7th millennium cal BC, a crucial time to understand the birth of the "Aratashen-Shulaveri-Shomutepe" culture, is archaeologically still empty.

Although the archaeological evidence at hand is insufficient, two hypotheses on the origin of the "Aratashen-Shulaveri-Shomutepe" culture could be presented by referring to the case of the Japanese islands. First, the culture was established by the migration of foreign farmers, implying that cultural replacement occurred from Mesolithic to Neolithic in the southern Caucasus. Second, the "Aratashen-Shulaveri-Shomutepe" culture was an admixture of indigenous Mesolithic and foreign farmers' cultures, possibly driven by adapting new cultural elements through contacts between the local population and foreign farmers from the surrounding region or/and by accepting a small number of agricultural migrants. In either hypothesis, the following points should be examined in further investigations.

(1) Foreign farmers

To whatever extent foreign farmers were involved in the establishment of the "Aratashen-Shulaveri-Shomutepe" culture, it is necessary to find out from which region they came. Only a comparison of the culture of the foreign farmers' native land with that of "Aratashen-Shulaveri-Shomutepe" will reveal who played a main role in establishing the latter culture.

(2) Succession of local culture

In the case of Yayoi culture which is interpreted as the acculturation of Jōmon culture through Mumun migration, certain cultural elements of the Jōmon culture such as the morpho-technology of the pottery are inherited in the Yayoi culture. Therefore, in the case of acculturation of a local culture with an outer culture, the new culture might include elements of the past local culture. As for the "Aratashen-Shulaveri-Shomutepe" culture, can some cultural elements inherited from the previous Mesolithic culture be identified? If this culture was derived from the local Mesolithic culture, then some succession of the local culture should be recognizable.

Conclusion

The transition to agricultural society is a key issue in prehistoric archaeology. As for the territories of Armenia, we do not have enough evidence yet to be able to answer the question. To gain some insights to the Armenian case, this paper compared it with the case of Japanese archipelago where the migration of the Mumun people to North Kyushu and the admixture of Jōmon and Mumun cultures resulted in the birth of the new Yayoi farming culture. Similarly, considering the presence of cultural elements of the Neolithic package in the "Aratashen-Shulaveri-Shomutepe" culture in Armenia, like the Mumun migration to Japanese islands in the Final Jōmon period, the involvement of foreign farmers outside the southern Caucasus in the establishment of the "Aratashen-Shulaveri-Shomutepe" culture is undeniable. How did foreign farmers and local hunter-gatherers interact in Armenia? Future research on archaeological sites belonging to the 7th millennium BC in Armenia will answer this question and provide an interesting case of the transition to farming communities in prehistory.

Fig. 1

Locations of archaeological sites in Armenia mentioned in the text.

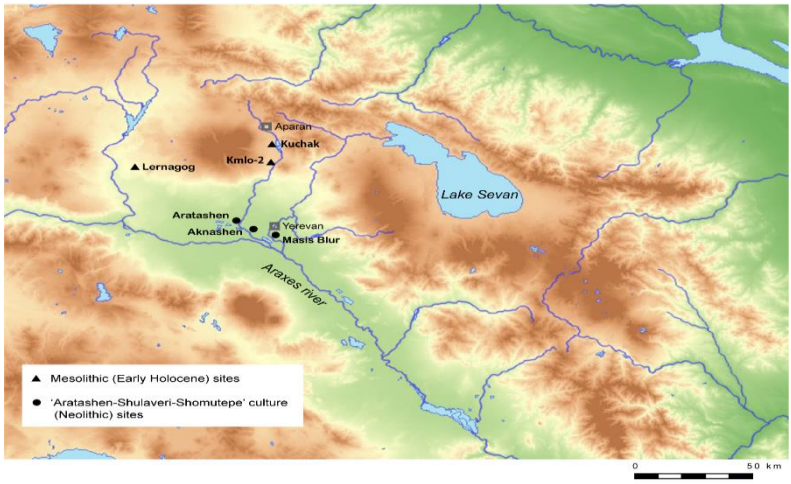
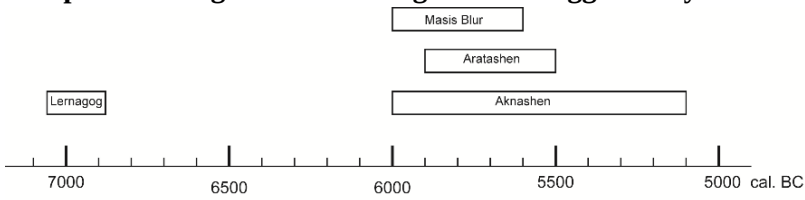


Fig. 2

Occupational length of archaeological sites suggested by C14 dates



Badalyan et al. 2007, Badalyan et al. 2010

Source: Badalyan R., Lombard P., Chataigner C. and Pavel A., *The Neolithic and Chalcolithic Phases in the Ararat Plain (Armenia): The View from Aratashen*. In: Sagona, A. (ed.), A View from the Highlands. Archaeological Studies in Honour of Charles Burney, Herent: Peeters, 2004, pp. 399-420; Badalyan R., Harutyunyan A., Chataigner C. and Hovsepyan R., *The Settlement of Aknashen-*

Khatunarkh, a Neolithic Site in the Ararat Plain (Armenia): Excavation Results 2004-2009. TÜBA-AR 13, 2010, pp. 185-218; Hayrapetyan A., Martirosyan-Olshansky K., Areshian G.E. and Avetisyan P., *Preliminary Results of the 2012 Excavations at the Late Neolithic Settlement of Masis Blur*. In: Gasparyan, B. and Arimura, M. (eds.), Stone Age of Armenia, Kanazawa: Kanazawa University, 2014, pp. 177-190; Arimura M., Petrosyan A., Arakelyan D., Nahapetyan S. and Gasparyan B., *A Preliminary Report on the 2015 and 2017 Field Seasons at the Lernagog-1 Site in Armenia*, Aramazd 12(1), 2018, pp. 1-18).

Fig. 3
Migration from the Korean peninsula to North Kyushu

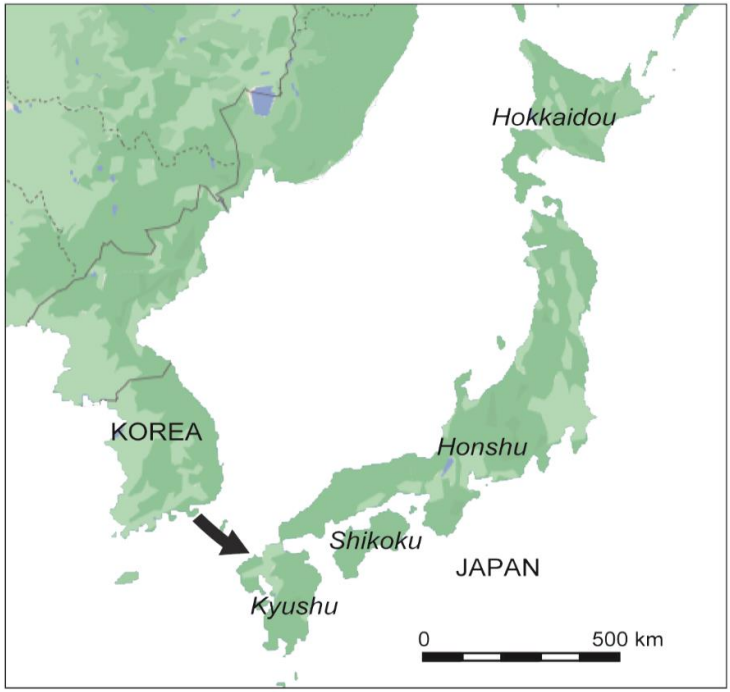
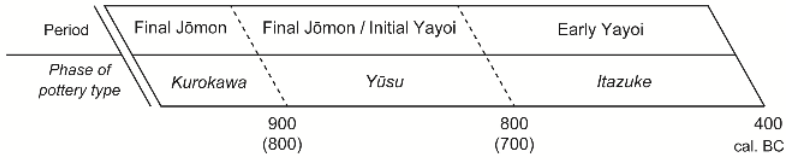
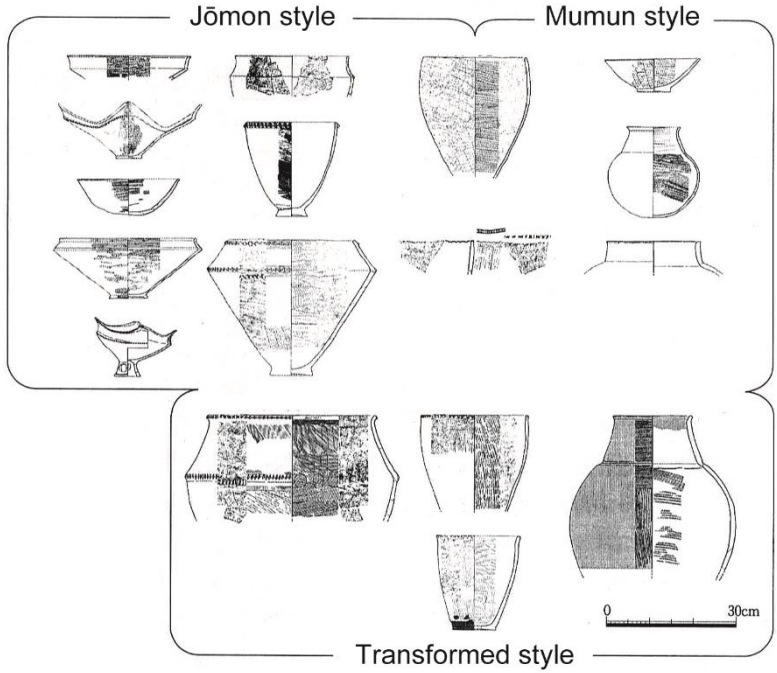


Fig.4
Chronological chart showing the transition between Jōmon and Yayoi periods



Source: 藤尾慎一郎「*総論 縄文から弥生へ・弥生前史*」『*弥生時代の考古学 2 - 弥生文化誕生*』東京：同成社, 2009, pp. 3-16 (Fujio S., Introduction: Transition from Jōmon to Yayoi. In: Matsuki, T., Fujio, S. and Shitara, H. (eds.), *The Birth of Yayoi Culture*, Tokyo: Doseishya, 2009, pp. 3-16); 下條信行 監修『列島初期稲作の担い手は誰か』東京：すいれん舎, 2014 (Shimojou N. (ed.), *Who were the Early Rice Farmers in the Japanese Archipelago*? Tokyo: Suirensha, 2014)

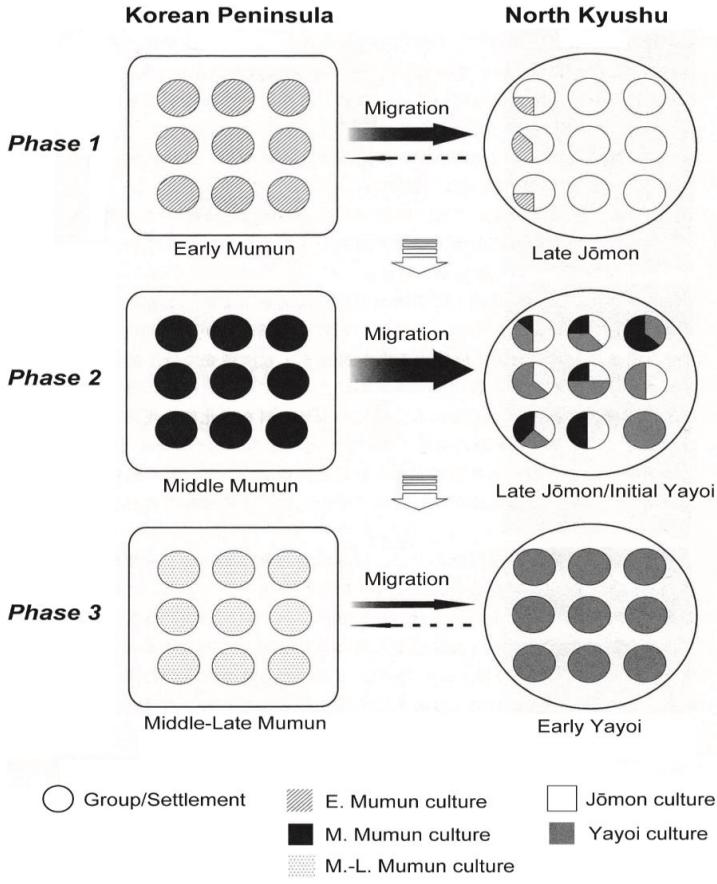
Fig. 5
Three styles in the pottery assemblage of the phase of Yūsu type (I) pottery



Source: Misaka K., Chapter 4: *The Process of the Beginning of the Yayoi Period: View from the Pottery*, Shimojou, N. (ed.), 2014, Fig. 11.

Fig.6

Process for the Transition from Jōmon to Yayoi Culture



Source: 三阪一徳「*土器からみた弥生時代開始過程*」下條信行 監修『列島初期稲作の担い手は誰か』東京：すいれん舎, 2014, Fig. 11 (Fig. 8-3 in Hashino S., *Early Rice Cultivation Culture and the Migrants. Exploring Their Roots*, Tokyo: Suirensha, 2018).

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ՎԱՐԿԱԾ ՀԱՅԱՍՏԱՆՈՒՄ ԳՅՈՒՂԱՏՆՏԵՍԱԿԱՆ ՀԱՄԱՅՆՔԻ ԾԱԳՄԱՆ ՄԱՍԻՆ. ՀԱՅԱՑՔ ՃԱՊՈՆԻԱՅՈՒՄ ՅԱՅՈՒ ՄՇԱԿՈՒՅԹԻ ԾԱԳՄԱՆ ՏԵՍԱՆԿՅՈՒՆԻՑ

ԱՄՓՈՓՈՒՄ

Հիմնաբառեր՝ Հայաստան, Արատաշեն-Շուլավերի-Շոմուտեպե, Նոր քարե դար (Նեոլիթյան), Միջին քարե դար (Մեոլիթյան), Վաղ հոլոցեն, գյուղատնտեսության ծագումը, Ջոմոն, Յայոի, Մումուն

Գյուղատնտեսությունն ամենանշանակալից գյուտերից է, որը խորապես փոխել է նախապատմական մարդության հասարակությունը: Այն առաջացել է աշխարհի մի քանի կենտրոններում, մասնավորապես՝ Մերձավոր Արևելքում ցորենի և գարու մշակությամբ: Մերձավոր Արևելքում կատարված հնագիտական պեղումները ցույց են տվել, որ վաղ գյուղատնտեսական համայնքները հայտնվել են նեոլիթյան դարաշրջանում մ.թ.ա. 9-րդ հազարամյակում: Հարավային Կովկասում, ներառյալ Հայաստանի Հանրապետության տարածքներում, այսպես կոչված՝ «Առատաշեն-Շուլավերի-Շոմուտեփե» մշակույթը ծագել է մ.թ.ա. 6000 թվականին: Սակայն Հարա-

վային Կովկասում գյուղատնտեսական հասարակության անցման ժամանակաշրջանը հստակ չի տարորոշված՝ տարածքում հնագիտական պեղումների սակավության պատճառով: Այս խնդիրը լուծելու համար հեղինակը հայ-ճապոնական համատեղ հետազոտական խմբի հետ միասին 2013 թ. ուսումնասիրել է «Առատաշեն-Շուլավերի-Շոմուտեփե» մշակույթին նախորդող ժամանակաշրջանի հնագիտական վայրերը: Ներկայումս վերոնշյալ հետազոտական խումբը կենտրոնանում է Արմավիրի Լեռնագոգ հնավայրի պեղումների վրա, որոնք թվագրվում են մ.թ.ա 7000–6800 թվականը: Հայաստանում գյուղատնտեսական հասարակության առաջացման գործընթացը լիովին հասկանալու համար պահանջվում են ինտենսիվ հնագիտական աշխատանքներ: Հեղինակը, անդրադառնալով ճապոնական կղզիներում Յայոյի մշակույթի առաջացման հիմնախնդրին, այս հոդվածում նպատակ ունի ուղեցույցներ տալ Հայաստանում հետագա հնագիտական հետազոտությունների համար:

Գյուղատնտեսության տարածումը ճապոնական կղզիներում և դրա հարմարեցումը նախագյուղատնտեսական համայնքներին, ինչպես նաև հնագիտական արձանագրությունների բազմաթիվ փոփոխությունները, հետաքրքիր նախադեպ է համաշխարհային պատմության մեջ: Ճապոնիայում անցկացված երկարատև հնագիտական ուսումնասիրությունները ցույց են տվել, որ բրնձի գյուղատնտեսությունն առաջին անգամ Ճապոնիա է ներմուծվել Կորեական թերակղզուց Մումուն կոչվող գաղթականների կողմից: Այնուհետև գաղթականները խառնվեցին Ջոմոն կոչվող տեղաբնիկների հետ՝ առաջացնելով խառը գյուղատնտեսական համայնքներ: Այս խառը

բնակչությունը վճռորոշ դեր խաղաց նոր «Յայոյի» մշակույթի ստեղծման գործընթացում: Նյութական մշակույթի վերաբերյալ ինտենսիվ հնագիտական ուսումնասիրությունները ցույց են տվել, որ Ջոմոնի մշակույթն աստիճանաբար վերածվել է Յայոյի մշակույթի՝ ընտրողաբար ընդունելով Մումունի մշակութային տարրերը:

Համեմատելով ճապոնական կղզիների նախապատմության օրինակները՝ այս հոդվածը փորձում է ներկայացնել վարկածներ Հայաստանի Հանրապետության տարածքում գյուղատնտեսական համայնքների ծագման վերաբերյալ՝ հետագա հնագիտական ուսումնասիրությունները խթանելու նպատակով: