

Coastal Plain Exploration Process of Inhabitants in Post-Hoabinhian Period in Vietnam

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Abstract: Hundreds of sites of the post-Hoabinhian Middle Neolithic period have been discovered in Vietnam, dating from 7,000 to 4,000 BP. These sites are scattered throughout a variety of topographic regions in Vietnam: the northern mountainous region, Central Highlands, and the coastal plains. This research examines the coastal plain exploration process of the following communities: the Cai Beo culture (Quang Ninh Province and Hai Phong City), Trang An landscape complex (Ninh Binh Province), the Da But culture (Thanh Hoa and Ninh Binh Provinces), and the Quynh Van culture (Nghe An and Ha Tinh Provinces). In so doing it clarifies human adaptation to changes in the ecological environment in each region, the cultural achievements of inhabitant groups in these localities, and the position of communities in the coastal plains in the formulation and development of Vietnam's prehistoric marine culture.

Keywords: Post-Hoabinhian period, Middle Neolithic, Cai Beo culture, Da But culture, Quynh Van culture.

Subject classification: Archaeology

1. Introduction

Hoabinhian is an archeological term, referring to a system of sites which are clearly located in the limestone mountains of Hoa Binh, Ninh Binh, Thanh Hoa Provinces and neighbouring ones, with stable characteristics in terms of monuments and sites, dating from 20,000 to 7,000 BP. The first Hoabinhian sites were discovered in Hoa Binh Province in 1926 by M. Colani (Colani, M., 1927). From 1926 to 1989, 145 Hoabinhian sites were found in Vietnam (Hoang Xuan Chinh (ed), 1989). From 1990 up until now, 21 new sites have been unearthed in the northeastern mountainous region (Trinh Nang Chung, 2020) and in the mountainous area of Nghe An Province (Nguyen Khac Su & Phan Thanh Toan, 2016). These discoveries increased the total number of Hoabinhian sites in Vietnam to 182. Some Hoabinhian-like sites have also been recorded in other Southeast Asian countries and South China.

In recent decades, a wide range of post-Hoabinhian Middle Neolithic sites have been unearthed in Vietnam, with a proven relationship of origin to the Hoabinhian, scattered throughout the northern mountainous region, Central Highlands, and the coastal plains. This paper focuses on presenting the exploration of coastal plains and islands by their inhabitants during the Middle Neolithic period in Vietnam through documenting the following cultures: the Cai Beo, Da But, Quynh Van cultures, and the Trang An landscape complex. It also examines people's adaptation at the time to the ecological environment of each region, their cultural achievements in these areas, and determines the position of the inhabitants of the coastal plains and islands in the formulation and development of Vietnam's prehistoric marine culture.

2. Cai Beo culture inhabitants in the northeastern coastal region of Vietnam

The group of Hoabinhian inhabitants who resided in the northeastern coastal region of Vietnam currently encompasses 12 sites of the Soi Nhu site group, Soi Nhu Cave being the most well-known (Ha Huu Nga & Nguyen Van Hao, 1999, p.57; Vu The Long, 2003). In the Early Neolithic era, this inhabitant group dates from 25,000 to 12,000 years, corresponding to the pre-Hoabinhian period. Typically, inhabitants in Soi Nhu Cave, dated $12,460 \pm 60$ BP, $15,560 \pm 180$ BP; in Ong Bay Rockshelter $16,630 \pm 120$ BP, and in Ang Ma Cave $25,510 \pm 220$ BP. All the cultural findings in these caves are the remains of terrestrial animals, and stone tools which mostly stemmed from the Hoabinhian including blade-sharpened axes and tools made of limestone. In the period from 12,000 to 7,000 BP, the living area of the Soi Nhu inhabitants had expanded but it remained along the edge of the mainland despite the increasing proximity of the rise in the sea level called Flandrian elevation.

After 7,000 BP, the sea began to rise, submerging some low-lying northeastern coastal areas. The inhabitants at this time extended their residential space, but some remained living in caves, such as Eo Bua, Ba Thom, Ha Giet, Dong Dang, Dong Cau (Ha Lung) and Tien Ong (Duc) caves, while others occupied coastal plains such as Thoi Gieng (lower layer), shelf seas such as Cai Beo (lower layer) and Ao Coi, or tidal flats such as Hon Ngo - Nui Hua.

These sites formed an archaeological culture, named the Cai Beo culture, dating from 7,000 to 4,000 BP in the Middle Neolithic period. Notably, Ha Lung Cave dates from $6,480 \pm 40$ BP and Cai Beo (lower layer) from $6,475 \pm 170$ BP (Nguyen Khac Su, 2009, p.246).

In order to adapt to their new surroundings, the Cai Beo people made and used tools such as points, triangular axes, oval axes, discoidal implements, shouldered axe for edge-ground polished, squid shell-shaped completely polished axes (Figure 1 a-d), along with percussion stones, anvil stones, pestles, grinding tables, and pebbles with round holes like Hoabinhian artefacts (Figure 1e). In particular, clay, sand-mixed, thick-walled, and hand-shaped pottery items are also evident during this period (Figure 1g). After 5,000 BP, thin-walled pottery made of a sand-clay mixture bearing different decorations such as knitted patterns, coarse cord-marked patterns, crushed patterns, and printed patterns appeared.

Figure 1: Cai Beo Culture Stone Tools



a. Tip-sharpened stones



b. Discoid tools



c. Fully sharpened squid-shell-shaped axes



d. Fully sharpened squid-shell-shaped axes



e. Pebbles with round holes



g. Sand-clay mixed pottery pot

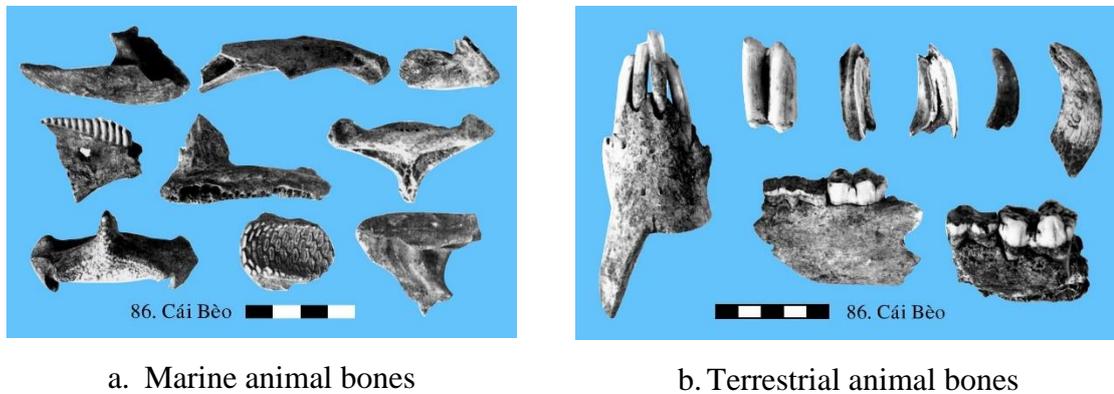
Notes: a, b, c, e, g. Lower layer of Cai Beo site; d. Hon Ngo site.

Source: Nguyen Khac Su (2009), *Cai Beo Prehistoric Site, Cat Ba Island*, Social Sciences Publishing House, Hanoi, pp.308, 313, 326.

The Cai Beo people developed ways to exploit marine resources. Over 90% of the animal bones found here belonged to marine animals, such as dolphins, catfish, pomadasys hasta, arias leiotetocephalus, stingrays, sharks, a number of unidentified species of fish (Figure 2), crabs, squid, sea turtles, mussels, scallops, and sea oysters. Over 200kg of fish bones were found in the Cai Beo site; the vertebrae of one fish unearthed even measured up to 10cm in diameter (Nguyen Khac Su (ed.), 2005, p.313). In addition, the bones of some terrestrial

animal such as deer, elk, goat, and wild boar were excavated. The Cai Beo cultural sites show that the Cai Beo people quickly adapted to changes in the marine environment, mastered marine exploitation activities, and established the prehistoric marine culture in the country's Northeast.

Figure 2: Sea Fish Bones and Animal Bones in Cai Beo (Hai Phong)



Source: Nguyen Khac Su (2009), *Cai Beo Prehistoric Site, Cat Ba Island*, Social Sciences Publishing House, Hanoi, p.322.

Some skeletal remains of the Cai Beo people show characteristics of the *Australo-Melanesien* ethnic. Such elements were unearthed in this region such as *Australo-Melanesien* in Ang Giua Cave and *Australo-Negritoid* in Soi Nhu Cave (Nguyen Lan Cuong, 1983, pp.25-30; Nguyen Lan Cuong & Nguyen Quang Quyen, 1968, pp.12-14). The above anthropological and archaeological documentations suggest that inhabitants of the Cai Beo culture descended from inhabitants of the Hoabinhian. Many archaeological papers testify to the development path from the Cai Beo to the Ha Long cultures (Ha Huu Nga & Nguyen Van Hao, 1999). In short, the existence of a prehistoric coastal plain exploration route from the Hoabinhian through the Cai Beo to the Ha Long cultures along the northeastern coast is beyond dispute.

3. Trang An inhabitants in the southwestern region of the Red River Delta

Another direction of coastal plain occupation and exploration taken by post-Hoabinhian inhabitants was to the southwest of the Red River Delta to the region of the Trang An landscape complex, Ninh Binh Province. This is home to 25 prehistoric archaeological sites, of which nine have been excavated, namely Trong, Boi, Moi, Thung Binh 1, Thung Binh 3 and Thung Binh 4 caves, and Ong Hay, Vang, and Oc Rockshelters. The sites are scattered over an area covering 6,000ha in the core zone of Trang An heritage site, a lowland and swampy region with an average elevation of 2m above sea level.

The prehistoric inhabitants here, dating from 30,000 to 4,000 BP, witnessed fluctuations in the natural environment, shifting from the continental environment (30,000 to 7,000 BP) to a marine one (7,000 to 4,000 BP). They then returned to the mainland after 4,000 years due to the impact of the rise and fall of sea levels in the Middle Holocene period. Cultural sites before the rising waters are Ong Hay Rockshelter $27,750 \pm 100$ BP, $9,535 \pm 30$ BP; Trong Cave $24,438 \pm 93$ BP, Boi Cave $12,447 \pm 72$ BP, $10,620 \pm 64$, Moi Cave (lower layer) $12,640 \pm 35$ BP, $9,555 \pm 30$ BP, and Thung Binh 1 $12,880 \pm 420$ BP, $12,980 \pm 390$ BP (Nguyen Khac Su, 2016, pp.64-73).

The inhabitants of this period made tools mainly from dolomite limestone (Figure 3) which they used to hunt terrestrial animals such as buffalo, gaur, deer, roe deer, pigs, badgers, bears, leopards, monkeys, porcupines, birds, tortoises, and freshwater fish. They also caught mountain and stream snails, *Lanceolaria fruhstorferis*, clams, and freshwater mussels. Cultural remains, which are mainly mollusc shells compacted into layers ranging from 2m to over 3m thick in the caves, indicate man's temporary and seasonal habitation at the time was linked to the mollusc breeding season.

The inhabitants of this period had not yet exploited the marine resources although, through their trading activities, they were aware of the seawater products. In the layers dating back to 9,000 BP in the Boi and the Trong caves, small, thick, bright white shells of the *Netritia undata* species were found that had been perforated with a bead-like thread, and round clam shells pierced strap holes (1-6 of Figures 4).

At a later stage, jewellery was made from the shells of *Neritina pulligera* and *Cypraea* with beautiful shaped mouths, punctured at the back and dyed with ochre to make jewellery beads (7-11 of Figure 4).

During the rise in sea level, the ancient inhabitants of Trang An landscape complex continued to live here, typically in the Moi Cave (upper layer) dating from $8,550 \pm 30$ to $4,705 \pm 25$ BP, Oc Rockshelter from $8,790 \pm 210$ BP to $5,120 \pm 315$ BP, and the Vang Rockshelter from $8,720 \pm 235$ to $5,130 \pm 310$ BP.

Figure 3: Stone Tools in Trang An



Source: Nguyen Khac Su (2012), Archaeology of Trang An Cave - Outstanding Cultural and Historical Values, *Vietnam Archaeology*, No. 5.

Inhabitants of this period began to exploit what the sea had to offer. They collected molluscs such as *Geloina coaxans*, estuarine oysters, undata sp snails, black-spotted tritons, yellow-rimmed snails, apple snails, blood cockles, *Cyclina sinensis*, asiatic hard clams, and caught sea fish. However, they continued, as normal, hunting terrestrial animals such as deer, boar, monkeys, hedgehogs, and turtles.

Figure 4: Jewelry (1-11), Tools (12-15) Made of Mollusk Shells



Source: Nguyen Khac Su (2012), *Archaeology of Trang An Cave - Outstanding Cultural and Historical Values, Vietnam Archaeology*, No. 5.

Due to the marine environment, Trang An complex no longer had a source of pebbles from rivers and streams. Therefore, it was important to produce tools made from limestone, which the people exchanged with the traders for andesite to make blade-sharpened axes, sandstone-ground tables; they made use of large-sized oyster shells and *Geloina coaxans* shells to make knives, scrapers and pickaxes, and they used asiatic hard clam and cowrie shells to create jewellery, and in particular they produced pottery. The earliest pottery remains found in layer 6A of the Moi Cave dates from 7,381 to 7,186 years BC; the pottery recovered from the Vang Rockshelter dates from 8,720 ± 235 BP, and that found in the Oc Rockshelter from 8,410 ± 295 BP. The pottery is a clay type, unrefined and filled with gravel. The pottery was hand-made and fired at low temperatures to shape it into products such as the brown or greyish brown round bottomed vase with a vertical mouth, flat mouth lip, the 8mm to 12mm thick edge and the outer surface marked with deep fault grooves 5mm to 8mm in width. The creation of pottery in this area may have been associated with the need for freshwater storage and microbiological processing of marine products (Nguyen Khac Su, 2012, p.27).

After 5,000 years when the sea level fell, the continental characteristics of Trang An complex gradually returned. It took 4,000 years for this region to basically revert to a continental environment. During this period, people were less interested in living in caves and moved to occupy outside spaces, and they practised fixed agricultural activities in the low plains of today's Nho Quan and Gia Vien Districts. In exploring the marine environment, the ancient inhabitants of Trang An complex gradually adapted to the changed environment from the mainland to the sea and back to the mainland, They made new types of tools. They soon developed grinding techniques and pottery, and deployed mixed

economic activities to exploit the resources of the limestone forests surrounded by the sea and picturesque areas, thereby creating a unique cultural nuance of the Trang An landscape.

4. Da But inhabitants of the coastal plains of Ninh Binh and Thanh Hoa Provinces

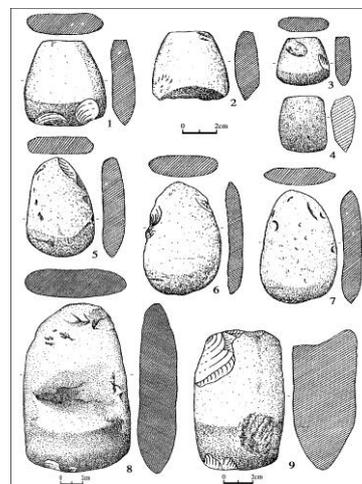
The inhabitants of this region are proud to have 10 sites belonging to the Da But culture, of which five are located in Vinh Loc District (Thanh Hoa Province). Specifically, the ages of the following are: the Da But site $6,430 \pm 60$ BP, $6,390 \pm 60$ BP, $6,095 \pm 60$ BP and $5,710 \pm 60$ BP; the Ban Thuy site $5,860 \pm 95$ BP; the Con Co Ngua site $5,520 \pm 95$ BP, $5,140 \pm 95$ BP and $5,560 \pm 95$ BP; and the Lang Cong and Con Trung sites $4,790 \pm 50$ BP (Bui Vinh, 2007).

They also inherited five sites located in Tam Diep City and Yen Mo District (Ninh Binh Province), which are the Sao Cave dating back to $9,170 \pm 105$ BP and $8,740 \pm 85$ BP, Co Cave, Mo Cave, Oc Cave and Dong Vuon over 4,000 BP (Nguyen Khac Su & Nguyen Xuan Ngoc, 2004, pp.24-38).

When the Thanh Hoa plains were first occupied, and when the sea had not yet encroached upon this region, the inhabitants of the Da But culture hunted animals, collected river clams and made clam dunes from their shells, as well as carrying out cultivation and domestication. In the period of 5,500 to 5,000 BP, most of the Vinh Loc plain lowlands were under water. The inhabitants of Lang Thuy and Con Co Ngua at this time exploited the sea, collected marine molluscs, and dumped waste into high mounds. Some people ventured further afield to explore the coastal plains, settling in Con Trung (Hau Loc District, Thanh Hoa Province), or the Sao, Co, Oc and Mo caves (Tam Diep City, Ninh Binh Province).

While the Da But inhabitants were exploring the coastal plains, they quickly developed tool-making techniques, from crudely flaked pebble tools to edge-polished ones, and completely polished implements such as oval and quadrangular axes. They also invented new tools such as hoes, chisels, saws, awls, centre-perforated stones and weights added to fishing nets with stones bearing grooves for stringing, and they used animal bones, horns, and mollusc shells to make chisels, awls, sewing needles, and cutters.

Figure 5: Stone Tools in Da But Site



Source: Bui Vinh (2007), *Prehistoric Culture Journey of Vietnam*, Social Sciences Publishing House, Hanoi.

Through this process, Da But became one of the earliest pottery centres in Vietnam. Da But pottery culture has remained mostly unchanged for thousands of years (Figure 5). The Da But people would still hunt animals such as deer, buffalo, pigs, dogs, chevrotains, cats, mink, and porcupines, and they collected animals from rivers, streams, swamps, and freshwater such as clams, mussels, snails, venus clams, lanceolaria fruhstorferi, crabs, fish, *trionychid* turtles and tortoise. When the sea level was rising, the local people exploited coastal seafood resources such as sea urchins, scallops, veneridaes, and they went fishing, although not as much as during the Cai Beo period.

Pollen spores found in some sites dating from the Da But culture indicate the existence at the time of a significant amount of legumes, coconuts, and herbaceous pollen, suggesting the possibility that the Da But people cultivated and tended certain species of vegetables, tubers, fruit, and seeds. The stone axes and hoes accounted for a high proportion of tools. The fertile Ma River Delta had favourable conditions for growing and cultivating fruit and vegetables such as tubers, gourd, squash, water potatoes, taro, and cyperus. The Da But inhabitants raised various animals such as buffaloes, cows, and pigs as well as possibly dogs and elephants (Patte, E., 1932; Vu The Long, 2003, pp.80-87).

The Da But people maintained their custom of burying the dead at their homes in a squatting position or lying on their sides according to their burial rites. Moreover, if a number of individuals passed away at the same time they would be buried collectively in one grave. They also unanimously agreed on arrangements for the deceased. Specifically, corpses were placed in circular acupoints of 0.6 to 0.7m in diameter and 0.5 to 0.8m in depth. Burials were one-off affairs with no re-burial rituals performed (Figure 6).

Figure 6: Con Co Ngua Burial Site



a. Laying on one side burial (single burial)



b. Squat-position burial (double burial)

Source: Marc, F. O., Hiep Hoang Trinh et al. (2018), "Between Foraging and Farming Strategic Responses to the Holocene Thermal Maximum in Southeast Asia", *Antiquity*, Vol. 92, No. 364, pp.940-957, <https://doi.org/10.15184/aqy.2018.69>.

The anthropological composition of skulls of the Da But people is predominantly *Melanesien (Australoid)* or *Indonesian (Southern Mogoloid)* which existed long before the Hoabinhian (Patte, E., 1965, p.128). Pottery and full-body-ground axes of the Da But culture were found in the surface layer of Con Moong Cave, Dang Cave, Lai Cave, and Doi Cave (Ba Thuoc District), suggesting the migration path taken to explore the coastal plain was from the area of Cuc Phuong National Park.

But during the late stage, in the marine culture sites such as Hoa Loc (Hau Loc District) and Man Bac (Ninh Binh Province), Le and Ho mountains (Nam Ha) new elements appeared which differed from those of the Da But culture. There is a high likelihood that this population group arose from exposure between the native Mon-Khmer language speakers and migrants who arrived by sea. In this regard, it is important to take Peter Bellwood's point of view into consideration, when he argued that there was a group of Malayo-Polynesian-speaking inhabitants in Chinese Taipei around 5,500 to 5,000 BP who migrated down the islands in Southeast Asia through Batanes Province to the islands of the Philippines, then to Borneo and the Palawan Islands, and into Vietnam. During this time, the majority of people in Vietnam spoke the Mon-Khmer language. Cultural and anthropological vestiges have been found at the Man Bac site (Ninh Binh Province) and the An Son site (Long An Province) (Bellwood, P., 2009).

5. Quynh Van inhabitants in the coastal plains of Nghe An and Ha Tinh Provinces

The 24 sites revealing scallop dunes or piles of kitchen deposits situated along the coastal plains of Quynh Luu District (Nghe An Province) and Phai Nam District (Ha Tinh Province) belonged to the Quynh Van culture, dating from 6,00 to 3,500 BP. This period had the three following development stages: (i) early stage (6,000 to 5,000 BP) a prime example being the Quynh Van sites, (ii) middle stage (5,000 to 4,500 BP) with the Quynh Hoa and Go Lap sites, and (iii) the late stage (4,500 to 3,500 BP) illustrated by Con Dat and Phai Nam sites (Nguyen Trung Chien, 1998, p.29).

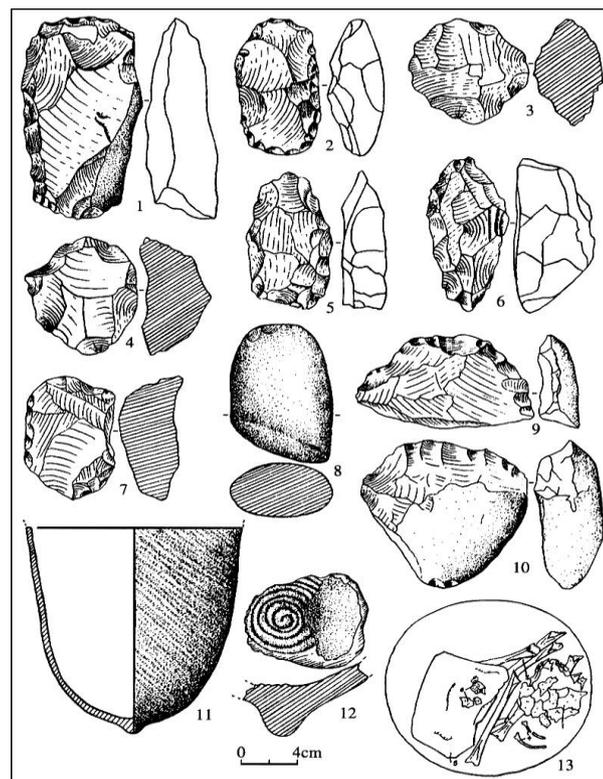
The Quynh Van inhabitants mainly fashioned tools from bedrock. More than 95% were grinding and dressing tools made from amorphous stones. These implements include choppers, chopping tools, discoid scrapers, turtle-shell-shaped scrapers, short axes, and triangular and iron-shaped picks.

The following two artefacts are representative of the Quynh Van culture. Some cobble tools such as pestles, striking stones and grinding tables were also excavated.

Generally speaking, in the Quynh Van culture, the tool-sharpening technique developed slowly whereas the pottery-creating technique and types of pottery developed rapidly. In the early and middle stages (6,000 to 4,500 BP), the main pottery items produced were large-sized conical ceramic vases with pointed bottoms, slightly flared mouths and patterns brushed on the inside and outside surfaces.

In the late stage (4,500 to 4,300 BP), a new small round-bottom ceramic type of pot appeared with thin sides, an average mouth diameter of 20cm to 30cm and body height of 15cm to 30cm. This item was often decorated with check and coarse cord patterns on the outside surface, with brushed patterns on the inside surface (Figure 7). The Quynh Van people mainly collected marine molluscs such as scallops, sea urchins, smooth scallops, screw snails, iron snails, meretrix, veneridae, oysters, clams, mussels, and lanceolaria fruhstorferis; crab, trionychid turtle, and tortoises.

Figure 7: Artefacts of Quynh Van Culture



Notes: 1-10. Stone tools; 11-12. Sharp bottom ceramic; 13. Grave of people buried in side-lying position.

Source: Ha Van Tan (ed.) (1998), “Vietnamese Archeology”, volume 1, Vietnam Stone Age, Social Sciences Publishing House, Hanoi, p.395.

These sea creatures usually lived in coastal zones, estuaries, and enclosed bays. Species of marine fish in this area were rare each site yielded only a few small head bones or vertebrae of such fish. The early inhabitants still hunted some terrestrial animals such as rhinoceros, wild buffalo, gaur, sambar deer, roe deer, deer, and elephants. There are no signs of cultivation and domestication practice during this period.

The Quynh Van people laid burial tombs at their own residences. 31 tombs were discovered in a 100m² excavation area at the Quynh Van site. The graves with round mouths and 60cm to 70cm in diameter, were dug into the scallop shell layer. The corpse was placed directly into the grave in a squatting posture with two hands holding the knees. There are few cases where the corpse is found lying on its side. The remains of bones are often broken, fragmented, and incomplete. Burial items include pestles, stones, chopping tools, bone-made tools, jewellery made of marine mollusc shell and ivory fragments. The excavated skulls bear anthropological characteristics of the *Australo-Melanesian* group with some traits of the *Mongoloid* group (Hoang Xuan Chinh, 1966, pp.37-72; Nguyen Duy & Nguyen Quang Quyen, 1966, pp.329-349).

The scallop dune sites of the Quynh Van culture are large with a layer of 7m thick, including the intermingled layers of scallops discarded by inhabitants at the time and scallops that had died naturally. This indicates that the people here lived a nomadic existence rather than in a permanent manner and caught seafood according to the seasons (Nguyen Trung Chien, 1984, pp.20-30).

Most archaeologists consider Hoabinhian to be derived from Hoabinhian, even from the Dieu technique in Ba Thuoc District (Thanh Hoa Province), evidenced by the existence of iron-shaped tools, which are identical to tools typical of the Quynh Van culture (Nguyen Gia Doi, 2003, pp.8-17). The latter evolved into the Bau Tro culture, through the Thach Lac culture. This development process reflected changes in population structure and ways of living, as well as the relocation of residences in order to adapt to environmental changes along the coastal plains of Nghe An and Ha Tinh Provinces at that time. Historically, the Quynh Van culture represented the post-Hoabinhian Neolithic path in central Vietnam, an approach to the shallow bay in this region.

6. Conclusion

(1) Inhabitants of the Middle Neolithic period in Vietnam resided in many different region terrains: the coastal plains, northern mountainous region, and red-soil of the Central Highlands. In these areas, inhabitants of the Middle Neolithic period in the northern mountainous region, found scattered around the original area of the Hoabinhian people, preserved the Hoabinhian tradition, such as sheltering in caves, catching snails, hunter-gatherer activities, and making pebble tools. However, living in caves was not common as shown by the extremely indistinct cultural vestiges left on the cave surfaces. Some groups of inhabitants left their cave dwellings to settle along the terraces of the Red River, Lo River, Da River, and so on. They began to temporarily settle down, and fish and farm which gradually changed the traditional Hoabinhian lifestyle.

Another group of Hoabinhian inhabitants occupied the Central Highlands, with cultural vestiges found in sites such as *Gà Village* (Gia Lai Province), *Kieu Village* (*Buôn Kiêu*)

(Dak Lak Province), *Tám Conton* and Dak So Volcanic Cave (Dak Nong). In this new environment, the inhabitants here still used the technique of making Hoabinhian tools such as short axes, oval axes, discoid graters, flake tools, and blade-sharpened axes. However, in comparison to the Hoabinhian, the tools found here are made from basalt and chert using the biface technique. Traces of cultivation and domestication here are extremely ambiguous. The burial rites of people lying on their side with two hands clutching their knees, the corpse sprinkled with ochre, and buried with working tools and Hoabinhian-style sea snail jewellery are still preserved in the graves at C6-1 Cave of the Dak So community. This demonstrates that the change in the spiritual culture of the highlanders was preserved in a more sustainable manner than the economic patterns at that time (Nguyen Khac Su et al., 2020, pp.16-31).

(2) Compared to the above two groups, inhabitants of the Middle Neolithic period dominated and exploited the coastal plains of Vietnam. Notably, the Cai Beo, Trang An, Da But and Quynh Van communities were the most prolific among others. They made use of the advantages the coastal plains and islands in their areas had to offer, thereby creating a difference in economic orientation between the sub-regions and paving the way for the formation of prehistoric marine cultures in Vietnam (Nguyen Khac Su, 2016, pp.36-39).

Along the northeastern coast of Vietnam, some groups of inhabitants left the caves, to explore the coastal plains such as Thoi Gieng, and then they ventured to the sea and islands such as Cai Beo and tidal flats such as Hon Ngo - Nui Hua. They gradually moved their activities to catching large quantities of diverse species of fish and occasionally collecting marine molluscs. This was the dawn of the prehistoric marine culture in Vietnam's northernmost waters. Meanwhile, the ancient Trang An inhabitants came directly to the sea, and witnessed the environmental transformation due to the rise and fall in sea level, moving from the mainland to the islands and back to the mainland. They gradually adapted to this marine and island environment; they used limestone tools and mollusc shells, made pottery, caught sea fish, collected marine molluscs, raised and hunted terrestrial animals, and cultivated plants.

Along the North Central coast, the Da But people started exploring the plains before, during and after the rise in the sea level. Their activities also started from exploiting river mussels and building mollusc dunes, to exploiting marine molluscs, and then fishing near the sea shore. This process went hand in hand with the development of cultivation and domestication. It rapidly changed stone tool making techniques from dressing to partial and whole body grinding, from poorly shaped to well formed; it established an early pottery-making centre in Vietnam, with long-term stable development in terms of production types and techniques, branded as Da But pottery.

Meanwhile, inhabitants of the Quynh Van culture had access to the shallow and landlocked sea in the Quynh Luu region, where scallops and oysters were found in abundance. Such a resource was harvested seasonally, and the residue created large dunes of scallop shells. This specialised activity made the stone tool assemblage here less volatile. The tools were still mainly triangular picks, iron-shaped picks, millet stones,

pestles, food-processing grinding tables, etc. However, the pottery items changed very quickly, from pointed-bottom pottery for use on sand to flat-bottom pottery for cooking; from thick-walled pottery with brushed patterns to thin-walled pottery bearing coarse cord patterns, bifacial brushed designs and simple line-inscribed patterns.

In each of these occupational zones, the internal development from the Middle Neolithic to the Late Neolithic periods in each region is evident. It is the transition from the Cai Beo to the Ha Long cultures along the northeastern coast, from the Da But to Hoa Loc and Man Bac cultures, and from the Quynh Van to Bau Tro cultures. The historical process of Vietnam's prehistoric marine culture from 7,000 to 4,000 BP is diverse and multi-directional. However, all developments during this period had the same starting point - a background of the Hoa Binh-Bac Son culture, converging at the pre-Dong-Son to Dong Son cultures in the North, and pre-Sa Huynh to Sa Huynh cultures in Central Vietnam.

Note: This paper was published in Vietnamese in *Khoa học xã hội Việt Nam*, số 4, 2021, then developed into this English version. Translator: Vu Xuan Nuoc. Language editor: Stella Ciorra.

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