Chapter 3

The Indigenous Paleolithic Cultural Inheritance in the “Maritime Region of Southeastern Asia” During the Early Neolithization Around 10,000 Years Ago

The “Maritime Region of Southeastern Asia” between the south coast of China and Southeast Asia was once an important cross-border community in the multicultural lineages of human history. During the Mesolithic age around ten thousand years ago and the era of synchronically global and tremendous cultural change in human prehistory, the indigenous cultural connotation in this region and its unique model of cultural evolution along with both inheritance, continuation, and innovation between the Paleolithic and Neolithic age, are of great significance in the cultural history of humankind and Asia-Pacific ethno-history.

The author once made a preliminary analysis of this regional Mesolithic cultural evolution and its connotation variants, examining the distribution and evolution of the three main categories of material cultures, namely the chopped pebble stone tools, the innovative style of pebble stone tools with chiseled concave or perforation and ground edge, and the regional Microlithics and small stone implement industry, in the hilly and mountainous regions along the south coast of China, Indochina peninsula and Southeast Asia archipelago. This research emphasized the cross-border commonness and indigenous continuity of the prehistoric culture around 10,000 years ago and its implied meaning for understanding the origin of Austronesian, which is the most important ethno-historical event in the region (Wu, C.M. 1999b, 2006).

In the past ten years, a series of new archaeological discoveries and researches around the ten thousand years ago have been achieved in this region, and scholars have made a lot of more in-depth studies on the Neolithization and stone age cultural changes, prehistoric cultural and economic adaptation respectively to land and sea, subsistence pattern growth and the origin of cereal cultivation, human evolution and ethnics migration (Zhao, Z.J. et al. 2005; Zhang, C. et al. 2008, 2009; Xiang, J.H. 2014; Fu, Y.X. 2019; Chen, Y.C. et al. 2017; Matsumura, H. et al. 2019; Higham, C.F.W. 2019; Hung, H.C. et al. 2019). This chapter intends to further replenish the model of the inheritance and continuation essence of indigenous cultures during the transitional period from the Paleolithic to Neolithic ages in this region, and the significance of this inheritance model to the understanding of regional ethnic history.

3.1 The Issues of the “Maritime Region of Southeastern Asia” and Origin of the Austronesian Around 10,000 Years BP

The geological age between Pleistocene and Holocene around 10,000 years ago was a turning point with great changes in the earth and human history, accompanying with the last melting of glaciers on the earth, the “Neolithic Revolution” or “Agricultural Revolution” occurred simultaneously all over the world.

The upheaval might initially happen with the earth itself, no matter what the relationship between natural connotations as climate, biological environment, and human cultural change, the melting of last glaciers at the end of Pleistocene was undoubtedly the event in the geological history most closely affecting human survival. The Paleontological, paleo-climatological, and chronological evidences in the seabed sediments in the Pacific have confirmed that the last glacial retreat occurred at the turning point between Pleistocene and Holocene, and, around 11,000 to 9,000 years ago there were a series of cultural “revolutions” roughly synchronizing over the world. As early as the middle of the nineteenth century, European archaeologists put forward the topic of “Mesolithic Age” of the transition period between the Paleolithic and Neolithic ages, noting the simultaneous innovation of the subsistence economy and social life, such as the miniaturization of hunting objects, expanded utilization of aquatic animal resources, and alike. With the extensively archaeological discoveries and studies of the “Neolithic Revolution” and “Agricultural Revolution” since the middle of the twentieth century, the archaeological understandings of the Mesolithic cultural connotation such as subsistence economy, settlement pattern, and social life have been greatly deepened. The prehistoric archaeologists all over the world generally paid attention to the simultaneous changes in crop cultivation, animal domestication, pottery making, stone tool grinding, resident settlement, and agricultural society around the world during postglacial period (Childe, P.V.G. 1958).

Nevertheless, most archaeologists realized that this roughly synchronized social and cultural upheaval of the Mesolithic age had also presented obvious temporal and spatial diversity over the world. In the process of “Neolithization” in Mesopotamia of the Southwest Asia, European, middle and lower reaches of the Yellow and Yangtze rivers, coastal region between South China and Southeast Asia, and the American continent, the transition modes varied considerably in cultural discontinuity or continuation, cross regional transmission and replacement or intrinsic inheritance, different dynamics of environment or population pressure, asynchronism of the Neolithic innovations, and the developing gap between the “center” and “periphery”, highlighting the complexity and diversity of the cultural evolution of this era (Yu, X.Y. et al. 2011).

The East Asia is one of the relatively independent regions in the global Mesolithic “upheaval” and Neolithization around ten thousand years ago. Moreover, the regional cultural complex and its evolution models of the north and south of East Asia are also obviously different. Judging from the view of stone

industrial technology and artifact variants, this regional division of the Paleolithic cultures are basically consistent with the modern boundary of natural, humanistic, and geographical separation of south and north in mainland China, which is bounded by the Qinling (秦岭)-Huaihe River (淮河). In the “North”, centering on the area between the middle and lower reaches of the Yellow River and the piedmont Mongolia-Loess Plateau, Mesolithic culture characterized with the typical Microlithics implements as main content and accompanying with ground edge stone tools and millstones, was distinctively different from that in the “South” stretching from the plain of middle and lower reaches of the Yangtze River to the mountainous region around Wuyi (武夷)-Nanling (南岭) characterized with the chopped pebble stone tools with chiseled concave or perforation and ground edge. Regarding the subsistence patterns, not only the “North” characterized by the initial cultivation of millet and broomcorn millet, but also the west and north area of the watershed Wuyi-Nanling mountains in “South” centered in the middle and lower Yangtze River basin characterized by the initial cultivation of rice, were obviously different from the east and south area of the watershed Wuyi-Nanling mountains were mainly characterized by the foraging pattern of hunting, gathering and fishing for a long period of time in the Neolithic age. This coastal area of southeastern China presents an independent regional or sub-regional model of Mesolithic transition with specific stone tool complex and distinctive subsistence pattern in pre-history, showing initial cultural region of “South of the South” in ancient China (Ruan, Y. 2009: 2896; Fan, Y. 1965: 2834; Shen, Y. 1997:2377).

The Mesolithic cultural pattern of this region in “South of the South” of China around ten thousand years ago, extended actually to the peninsula and archipelago of Southeast Asia, forming the early prehistoric cultural sphere of the “Maritime Region of Southeastern Asia” (Lin, H.X. 1937,1958b). The main cultural commonness with the unique characteristics in this cross-border region was the continuation and inheritance of the native tradition of chopped pebble stone implements of the Paleolithic Age and its innovative patterns of post-Paleolithic complex, including both the oval or disk shaped pebble choppers and the “Neolithic” forms of pebble tools with chiseled concave or perforation and ground edge, as well prototype axes and adzes. The small stone tools and Microlithics differentially accompanied with these pebble stone implements, reflecting the global lithic commonality and the interregional cultural exchange between the north and south of East Asia. Regarding the livelihood economy, this hilly and mountainous region along the coast of South China Sea had long maintained its unproductive and “marginal” Neolithic foraging models of gathering, hunting, and fishing until cultivated rice was gradually introduced from the northern part of the “South” in middle and lower reaches of Yangtze River since the late and latest Neolithic period differentially from five or six thousand to three or four thousand years ago (Zhang, C. et al. 2009; Higham, C.F.W. 2019; Zhao, Z.J. 2005a). This cultural pattern with unique complex played a special role in the turning period between the Paleolithic and Neolithic ages in the world prehistory, which will be inevitable basis for understanding the development of prehistoric ethnicities in this maritime region, especially the origin of proto-Austronesian.

“Austronesian” or “Malaya-Polynesian”, mainly includes Malays in the Southeast Asian islands, Micronesia, Melanesians, Polynesians, and other ethnic groups on the Pacific islands, covering the broad maritime region from Easter Island in east of the Pacific Ocean to Madagascar in west of the Indian Ocean. It is the most widely distributed indigenous community mainly living on islands. Through the investigations and researches of linguistics, ethnology, archaeology, physical anthropology, and molecular biology, the international academic community has made fruitful achievements in the exploration of the origin of Austronesian. As a linguistic nomenclature, Austronesian is one of the few cross-border ethnic groups in the world ethnographies being identified as the language community. Therefore, linguistic approaches have always been the entryway for the comparative study of its origin. Historical linguistics, paleontology, and comparative linguistics have constructed a series of hypotheses for the origin and dispersal of Austronesian. Among them the most influential is comparative linguistics, which establishes “Family Tree for Austronesian” through classification and kinship analogy of the Austronesian language, assuming that it split successively in the original home in Taiwan, then spread to the Southeast Asian islands and the Pacific islands. The theory of “Language-Farming Model”, with linguistic methods, advocates that the proto-Austronesian who first spread to the Asia-Pacific maritime region was a group of “farming” and “Neolithic” people. Accordingly, based on this hypothesis, a number of archaeologists of the Southeast Asia put forward the “Two-Layer Model” theory, considering that the “farming” and “Neolithic” Austronesian were different from, and replaced the gathering-hunting groups in Paleolithic and Mesolithic ages or Hoabinhian period (Diamond, J. 1988; Diamond, J. et al. 2003). The archaeological “Two-Layer Model” was initially discovered by C. F. Gorman of the Department of Anthropology at the University of Hawaii in the 1960s, who put forward the cultural, ethnic, and economic differences in the two stages of “Hoabinhian Culture” and “Post-Hoabinhian Culture” after the excavation of cavern sites in the transitional period around ten thousand years in Southeast Asia, such as Spirit Cave in Thailand. He advocated that the Neolithic cultural elements such as grinding techniques of stone tools and pottery making of “post-Hoabinhian” stage were introduced by the foreign population from the region with developed culture characterized by lowland rice farming. He said: “By 6500 BC a new technological complex entered, or developed in, Southeast Asia. Over the next 1,500 years, a shift took place in population density, from the Karst riverine, inter-montane valleys to the Southeast Asian plains; a shift most probably brought about by the introduction of cereal grain, making the plains the most favorable environmental zone” (Gorman, C.F. 1971).

A representative and authoritative work which constructed the history of origin and spread of Austronesian on the basis of “Language-Farming Model” was carried out by Professor Peter Bellwood of the National University of Australia. He held that the earliest Austronesian had been the ancestor of Taiwan aborigines and established the theoretical framework of “Out of Taiwan”, considering that Austronesian spread from Taiwan southward to the Philippines, the Indonesian archipelago, and Oceania. “The Austronesian who expanded into the Indo-Malaysian Archipelago carried a full agricultural economy and introduced pottery and a new repertoire of unibeveled stone

adzes. However, woven in with this agricultural economy were continuing skills in terrestrial and maritime hunting and gathering. Linguistically, a presence of rice in the agricultural repertoire seems certain. Archaeologically, the evidence is less conclusive. The pre-Austronesian inhabitants of the archipelago occasionally used edge-ground stone axes and shell adzes, but they did not use pottery while they undoubtedly exploited many tubers fruit trees, later to be of great importance, as domesticated, they did not systematically cultivate these species ... During the millennia of expansion southward and into Oceania, the economics of Austronesian societies underwent a number of latitudinal and more localized ecological adaptations. Cereals were apparently replaced in eastern Indonesia by tubers and tree fruits. Some groups even specialized away from agriculture in the directions of terrestrial or maritime hunting and gatherings” (Bellwood, P. 1997: 201–202). Nevertheless, his views have somewhat changed recently, holding that Austronesian as “language-farming” did not completely replace and annihilate the original “hunter-gatherers”, but that there was a genetic mix between the original hunter-gatherers and the immigrated rice farmers, and even that the original hunter-gatherers provided unique cultural knowledge to the immigrated farmers. But his latest view has not changed the basic tone of the “Language-Farming Model” for the origin of Austronesian. “As far as the early Austronesians are concerned, my opinion over many years has been that their Pre-Austronesian ancestors moved as Neolithic and probably rice-and millet-cultivating populations from Fujian to Taiwan between 5,000 and 6,000 years ago” (Hung, H.C. 2017).

The multidisciplinary investigation and archaeological exploration of the origin of Austronesian involve a number of complicated theoretical issues. In fact, as one of the mainstream archaeological research on the origin of the Austronesian, “Two-Layer Model” or the population replacement under the theory of “Farming-Language Model” does not coincide with a lot of prehistoric archaeological discoveries in the maritime region of Southeastern Asia, such as the general continuity of indigenous culture around ten thousand years ago and its long inheritance in local Neolithic culture.

3.2 The Indigenous Paleolithic Cultural Inheritance in the “Maritime Region of Southeastern Asia” During the Early Neolithization Around 10,000 Years Ago.

In the “Maritime Region of Southeastern Asia” covering the south coast of China, the Indochina peninsula, and the Southeast Asian archipelago, the prehistoric cultures between Pleistocene and Holocene were widely discovered in caverns and rock shelters where mollusk shell remains accumulated, besides some discovered in open-air sites (Fig. 3.1). These cultural relics generally contain three categories of connotation of stone tool, namely the chipped pebble stone implements, the innovated forms of pebble implements with chiseled concaves or perforation and

Fig. 3.1 Distribution of the Mesolithic sites in South Coast of China and Southeast Asia mentioned in the text (Figure made by C.F.W. Higham using GeoMapApp, www.geomapp.org, CC by Ryan et al. 2009). (1. Bailian Dong, 2. Liyuzui, 3. Zengpiyan, 4. Miaoyan, 5. Dayan, 6. Yawaidong, 7. Baoqiao a, 8. Baxun b, 9. Tengxiang c, 10. Beimen d, 11. Niupo Dong, 12. Dushizi, 13. Huangyan Dong, 14. Zhuwuyan, 15. Huangmenyan, 16. Niulan Dong, 17. Shuiqiyan, 18. Qigaiyan, 19. Luojiyan, 20. Fangzengshan, 21. Luobi Dong, 22. Qihe Dong, 23. Hailei Dong, 24. Chaoying Dong, 25. Maguaiyan, 26. Sanjiaoyan, 27. Houlong Dong, 28. Yangjiayan, 29. Dongweiyuan, 30. Xianren Dong, 31. Diaotonghuang, 32. Xiatang, 33. Lianhuachishan, 34. Xiqiaoshan, 35. Hoabinhian, 36. Xom Trai, 37. Ban Du, 38. Con Moong, 39. Sao Dong, 40. Nguom, 41. Dieu, 42. Bo Nam, 43. Hang Doi, 44. Bo Lam, 45. Spirit Cave, 46. Banyan Valley Cave, 47. Pha Chang, 48. Sai Yok, 49. Tham Ongbah, 50. Khao Talu, 51. Men cave, 52. Hip, 53. Phet Kuha, 54. Lang Rongrien, 55. Khao Thao Ha, 56. Khao Khi Chan, 57. Gua Bukit Ta, 58. Gua Gunung Runtuh, 59. Gua Kelawa, 60. Gua Harimau, 61. Kota Tampan, 62. Gua Baik, 63. Gua Kerbau, 64. Gua Sag, 65. Gua Tenggek, 66. Gua Peraling, 67. Gua Chawas, 68. Gua Madu, 69. Gua Cha, 70. Lhokseumawe, 71. Medan, 72. Niah cave, 73. Tingkayu, 74. Madai, 75. Baturong, 76. Lahad Batu, 77. Liwan, 78. Tabon, 79. Guri, 80. Rizal, 81. Bulakan, 82. Leang Burung, 83. Ulu Leang, 84. Paso, 85. Uai Bobo, 86. Xiangshan, 87. Dongshan)

ground edge, and the regional Microlithics and small stone tool industry. These three categories of stone tools continuously distributed on the south coast of China to Southeast Asia, and their connotations varied gradually and regionally, highlighting the characteristics of cross-border community in this turning age. These cultural relics presented clear internal essentiality of cultural inheritance of local Paleolithic tradition and source tracking of prehistoric culture in the diachronic development from the late Paleolithic to the early Neolithic age.

3.2.1 Archaeological Discoveries of the Cultural Remains of the Paleolithic-Neolithic Transition Period in the “Maritime Region of Southeastern Asia”

3.2.1.1 Coast of Southeast China

In the mountainous areas of south coast of China, the cavern cultural remains of Paleolithic -Neolithic turning stage include the second and third stages of Bailian Dong (白莲洞) cave in Liuzhou (柳州) (SMBLZ et al. 1987), the first stage of Dalongtan Liyuzui (大龙潭鲤鱼嘴) rock shelter in Liuzhou (LZMM et al. 1983), the first to fourth stages of Zengpiyan (甑皮岩) cave (IA-CASS et al. 1983) and Miaoyan (庙岩) cave in Guilin (桂林) (Chen, S.L. 1999), Dayan (大岩) cave in Lingui (临桂) (Fu, X.G. et al. 2001), the second and third stages of Yawai Dong

(娅怀) cave in Long'an (隆安) county (Xie, G.M. et al. 2018; Wu, Y. et al. 2020), as well as the previously investigated Baoqiao (苞桥) cave a in Wuming (武鸣), Baxun (芭勋) cave b, Tengxiang (腾翔) cave c, Beimen (北门) cave d of Guilin (He, N.H. et al. 1985), in Guangxi; the first to third stages of Niupo Dong (牛坡) cave in Guian (贵安) of Guizhou Province (FSCAT-IA-CASS et al. 2015, 2017; Fu, Y.X. et al. 2017); the lower, middle and upper layers of Dushizi (独石仔) cave in Yangchun (阳春) (Qiu, L.C. et al. 1980;1982), the lower layer of the Huangyan Dong (黄岩洞) cave in Fengkai (Song, F.Y. et al. 1983; Zhang, Z.Q. et al. 1994), Zhuwuyan (朱屋岩) and Huangmenyan (黄门岩) caves in Qingtang (青塘) (GDPM 1961; Cai, Y.Z. et al. 1999; GDPI CRA et al. 2019) of Yingde (英德), the first and second stages Niulan Dong (牛栏洞) cave (YDMM et al. 1999) in Yingde, Shuiqiyan (水乞岩), Qigaiyan (乞丐岩), Luojiyan (罗髻岩) caves (Qiu, L.C. 1989) in Fengkai, Fangzengshan (饭甑山) cave in Luoding (罗定) (Song, F.Y. et al. 1989), in Guangdong Province; the lower and middle layers of Luobi Dong (落笔) cave in Sanya (三亚) of Hainan island (Hao, S.D. et al. 1994, 1998); the early and middle stages of Qihe Dong (奇和) cave in Zhangping (漳平) of Fujian (FJPM et al. 2013); and Hailei Dong (海雷) and Chaoying Dong (潮音) caves (Han, Q. 1979; Kato, S. 1990; He, C.K. 1996; Tsang, C.H. et al. 2018) in Changbin (长滨) of Taiwan. In addition, other related remains were also discovered in the adjacent areas of the northwest side of wuyi-Nanling Mountainous watershed at Maguaiyan (麻拐岩),

Sanjiaoyan (三角岩), Houlong Dong (后龙), Yangjiayan (杨家岩) and Dongweiyan (洞尾岩) caves in Daoxian (道县) county of Hunan Province (Yuan, J.R. 1991), the lower layer of Xianren Dong (仙人洞) and the middle layer of Diaotonghuang (吊桶环) caves in Wannian (万年) county of Jiangxi Province (JXPS 1963; JXPM 1976; SAM-PKU et al. 2014). Besides, a number of open-air sites such as Xiatang (下汤) in Xianju (仙居) County of Zhejiang (Sun, H.L. et al. 2019), the upper layer of Lianhuachishan (莲花池山) in Zhangzhou of Fujian (You, Y.Z. 1991), No. 17 and 18 locations at Xiqiaoshan (西樵山) site in Nanhai (南海) of Guangdong (Huang, W.W. et al. 1979; Zeng, Q. 1984), also belong to the culture of this stage.

These remains mainly contain three categories of stone implements, reflecting the origin, continuation, and change of prehistoric culture in this Paleolithic-Neolithic turning stage in the south coast of China (Figs. 3.2, 3.3 and 3.4).

- A. Chipped pebble stone implements, includes the discoid or ball shape beating, knocking, or chopping tools with straight blade or arc edge, made of the flat, long and round pebble or thick pebble flake, the discoid or fan shape scrapers with straight blade or arc edge made of pebble flakes, and the pointed implements made of pebble flakes. This series of remains are common and

Fig. 3.2 Three categories of stone implements of the second-third stages of Bailian Dong

Fig. 3.3 Two categories of stone implements of Zengpiyan

representative in cavern sites around ten thousand years ago, except that in Yawai Dong cave in Long'an of Guangxi.

- B. The innovative implements of "Neolithic" type including the chipped pebble tool with chiseled concave and perforation or ground edge, and the proto-axe and proto-adze. The blade cutter with ground arc oblique edge made of flat pebble flakes, and the "heavy stone" with bifacial chiseled and ground perforation made of sandstone pebble, were the two types of common artifacts from these caves. The chiseled concave pebble and coarsely ground rectangular axes and adzes were also differentially and respectively discovered in Zengpiyan and Niupo Dong caves.
- C. The emergence of Microlithics and small flint implements were discovered respectively in different amounts. The typical Microlithic artifacts accompanying the pebble tools were small flint tools (Bailian Dong, Liyuzui, and Niupo Dong caves), including scrapers, small points, carvers, arrowheads made of flint flakes, or columnar cherty cores material. The Microlithics and small stone implements unearthed in Hailei Dong and Chaoying Dong caves in Changbin of Taiwan include core materials of indefinite form, wedge-shaped implements,

Fig. 3.4 Two categories of stone implements of Mesolithic cavern sites in Guangdong (1, 2, 6, 7, 15. Dushizi; 2, 3, 4, 16. Huangyan Dong; 5, 8, 9, 11–14. Niulang Dong)

flakes, side edged scrapers, knife-shaped device, notched edge scrapers. The remains of small stone implements along the coast of Fujian and Guangdong, represented by the upper layer of Lianhuachishan, includes fine fakes, bifacial chipped fine scrapers, pointed tools, arrowhead, carvers, drills, pestles, and so on, made of various kinds of flint, basalt, quartzite, and alike. Among them, the most representative were scrapers with a series of different shapes edge. The typical Microlithics culture represented by No. 17 and 18 sites at Xiqiaoshan were also unearthed in the second and third stages in Niupo Dong cave, includes wedge-shaped, columnar, conical, multi platforms cores, stone blades, and stone flakes made of cherty and agate, as well as fan-shaped core implements, core scrapers, core carvers, points, flake scrapers, knife-shaped tools, arrowheads.

In addition, other tools made of the bone, horn, and shell with perforating and ground edge, and primitive coarse pottery with corded pattern also unearthed in various cavern sites.

Although the above three categories of artifacts were not completely symbiotic unearthed at each cavern site, they actually constituted distinct cultural

characteristics temporally and spatially, which inherited the local Paleolithic pebble tool industry but developed a lot of innovations in the region, initiated the important technologies of Neolithic culture but remained at a preliminary stage, and, were similar with the Mesolithic cultures represented by the typical Microlithic implements in the “North” of East Asia (north of China) but mostly with different forms (Wu, C.M. 1999b).

3.2.1.2 Indochina Peninsula

The prehistoric cultures of the Southeast Asian peninsula around ten thousand years ago have been included in the academic category of Hoabinhian Culture for a long time. These remains were discovered relatively concentrating in the mountainous regions of northern Vietnam, the limestone mountains in the north and west highlands of Kanchanaburi Province and the southern region in Thailand, and the Malay Peninsula (Higham, C.F.W. 1989: 31–32).

The northern Vietnam is the most densely distributed area of Hoabinhian cultural heritage. According to the latest statistics more than 120 cavern sites in limestone mountains of the Tỉnh Hoà Bình, Tỉnh Ninh Bình, Tỉnh Thanh Hóa, Tỉnh Nghệ An and Tỉnh Quảng Bnh provinces have been excavated (Bui Vinh 1994), among them the important remains were the middle layer of Con Moong cave in the Cuc Phuong highland of Tỉnh Thanh Hóa, the middle layer of Sao Dong cave in Tỉnh Hoà Bình (Higham, C.F.W 1989: 35–38), and the middle and late stages of Nguom rockshelter in Tỉnh Bac Thai (Ha Van Tan 1995). These cavern settlements and cultural layers near rivers were mostly composed of river snail shells, mountain snail shells, wild animal bones, and cavern debris. The stone implement remains in them were mainly pebble choppers and diggers, pebble flake scrapers, points and pebble artifacts with chiseled concave, partly ground edge stone tools, as well as some bone and horn implements. For instance, the lower layer of Con Moong cave was the remains of Paleolithic Son Vi Culture, the middle layer (12,000–11,000 BP) of it was the Hoabinhian assemblages of the unifacial discoid “Sumatralith” pebble tools and short axes, together with the chopped pebble tools of Son Vi tradition, accompanied with bone and horn implements, and the upper layer was the early Neolithic Bac Sonian Culture. The other example is the Nguom rockshelter, in the shell sediments of the middle stage of the site (23,100–18,600 BP), the pebble chopped choppers with side or end edges, and pebble flake implements were excavated. The discoid pebble tool of the “Sumatralith” style, short axes, ground edge tools, and pebble flake tools, accompanying with the pebble chopped chopper of Paleolithic tradition, were also unearthed in the mollusk shell sediments and tombs in its upper layer (Fig. 3.5).

More than thirty hunter-gatherer’s cavern and rock shelters of Hoabinhian Culture have also been found in limestone areas in western and northern Thailand (Kiernan, K. et al. 1987), among them the important sites are the first stage of Spirit Cave in Mae Hongson (Gorman, C.F. 1970, 1971; Higham, C.F.W. 1989: 46–54), the lower layer of Banyan Valley Cave 35 km west from Spirit Cave, Pha Chang rock shelter in Chiang Mai (Sabtoni, M. et al. 1990), Sai Yok in Kanchangaburi, the

Fig. 3.5 Stone implements of Hoabiahian in the north of Vietnam (1,2,9. Nguom, 3–8, Bac Bo; 10,11. Hoabiahian)

lower, or middle and lower layers of Tham Ongbah cave, Khao Talu cave, Men cave, Hip cave, and Phet Kuha cave (Pookajorn, S. 1990). Represented by the first stage of Spirit Cave (11,690–8750 BP), the unearthed objects of the Hoabinhian layer were mainly pebble stone tools, including the discoid chopper with a row unifacial removal of flakes as Sumatralith type, scrapers, used flakes, and ground pebble and so on. The second stage (8806–7622 BP) had not only continued the cultures of pebble stone tool of the first stage but also appeared the innovative elements such as square stone adzes, ground stone knives, and hand-made coarse pottery with corded pattern, representing the cultural continuation and innovation of the Hoabinhian tradition in the early Neolithic age. In the first phase of Pha Chang rockshelter the chopped pebble tools and rock paintings were found, and among the stone implements were pebble choppers, scrapers, hammer stones, axes, chopped axes, adzes, millstones, as well as the perforated pebbles which are also commonly seen in the cavern sites of southern China (Fig. 3.6). The discoid choppers of Sumatralith type pointed pebble flakes, chisels, scrapers, hammer stones, and so on were also found in the middle and lower layers of Khao Talu, which were the witnesses to the continued activities of hunter-gatherers in western Thailand around ten thousand years ago.

Fig. 3.6 Chopped and perforated pebble implements of Pha Chang Rockshelter in North Thailand

There are also densely populated cavern sites of Hoabinhian Culture in southern Thailand and the Malay peninsula. The important ones among them are Lang Rongrien rockshelter in Krabi Province in Thailand, Gua Bukit Ta at of Terengganu state, Gua Gunung Runtuh, Gua Kelawa, Gua Harimau, Kota Tampan, Gua Baik, Gua Kerbau in Perak state, Gua Sag, Gua Tenggek in Pahang state, Gua Peraling, Gua Chawas, Gua Madu, Gua Cha in Kelantan state of Malaysia (Bellwood, P. 1997: 158–169; Gorman, C.F. 1971). The stone implements in Gua Cha were characterized by discoid pebble implements with a row bifacial flaking, which could be the progressive type of unifacial flaking tool of general Sumatralith, and a small amount of roughly chopped pebble tools, pebble flakes, and hammer stone, as well as square stone adzes and primitive pottery. In Gua Peraling unearthed together were bifacial flaking implements, a large number of bifacial flaking discoid pebble tools, and ground edge stone tools. In Kota Tampan, unearthed together were chopped pebble tools, ground edge tools, and a large number of flakes.

3.2.1.3 Southeast Asian Archipelago

The prehistoric culture of the Southeast Asian archipelago during the Hoabinhian period also evolved into a new stage on the basis of the continuation of the Paleolithic culture with the compound assemblage of both pebble implements and the flake industries. The remains with oval-shaped, almond-shaped, and indefinite shaped pebble stone tools, pebble flakes, and a small number of ground edge

Fig. 3.7 Mesolithic pebble stone implements in Southeast Asian Islands (1–2. Cagayan, After F.L. Jocano 1975; 3. Sambat of Batanyas, After O.H. Beyer 1948; 4. Tabon, After F.L. Jocano 1975; 5–6. Tingkayu, After P. Bellwood 1990,1997)

implements were discovered, as well as the remains of Microlithic of flint and obsidian implements (Figs. 3.7 and 3.8).

The remains of the Hoabinhian Culture represented by chopped pebble tools and ground edged stone tools also have been discovered in Lhokseumawe and Medan shell mounds in Sumatra, the middle layer of Niah cave, Tingkayu site and nearby Madai caves, Baturong rockshelter, and Lahad Batu bay in Kalimantan (Bellwood, P. 1990, 1997: 169–170, 173–175; Cheng, T.K. 1969), as well as in the later stage of Liwan remains in the Cagayan valley in northern Luzon, the middle layer of Tabon and Guri caves in Palawan of Philippines (Jocano, F.L. 1975: 77–85). Among them, in Lhokseumawe shell mound the row flaked discoid pebble implements, long pebble stone tools, bifacial flaked implements and ground edged implements, millstone, and chiseled concave pebble implements were discovered. In the Mesolithic layer of the Niah cave, the improved flake tools and ground edged pebble axes were collected. In Tingkayu and Madai caves, Baturong rockshelter and Lahad Batu bay also unearthed regular oval-shaped chopper, sharp point with bilateral symmetry, drills, and carvers processed with pebble cores and pebble flakes. In the later stage of Liwan remains, the unifacial pebble flake scrapers, and pebble core choppers, and prototype “hand axe” were unearthed together with “horse hoof shaped scraper”. In Tabon and Guri caves also discovered a number of regular discoid and almond-shaped pebble tools.

The Microlithics and small stone implements made of flint and obsidian flakes can be seen in Rizal and Bulakan in Luzon (Beyer, H.O. 1948: 12–14; Jocano, F.L. 1975: 186–190), Leang Burung No. 2 cave, Ulu Leang No. 1 cave, Paso shell mound in Sulawesi island, Uai Bobo in East Timor (Bellwood, P. 1997: 181–189). Among them, the Bulakan assemblage of various types of fine and small scrapers

Fig. 3.8 Microlithic implements on south coast of China and Southeast Asian islands (1–11. Rizal and Bulakan, Philippines, After O.H. Beyer 1948; 12, 18–21. Xiangshan of Nan'ao, GuanDong, After Q. Zeng et al. 1995; 13–17. Dongshan, Fujian, After Y.Z. You 1991; 22–25. Uai Bobo, After P. Bellwood 1997)

with blades of concave, convex, concave and convex, concave and straight, or single straight, and the points, processed with obsidian, cherty and volcanic glass were very unique. The obsidian small stone tools in Leang Burung No. 2 cave were processed with obsidian flakes and multiplatform cores. The stone tools in the Ulu Leang No.1 cave were characterized by their domed tools with steep edged and horse hoof shaped cores of white cherty. Cherty flakes in Uai Bobo caves in East

Timor were processed into steep edged scrapers, and, some utilized flakes, long and thick blades were also discovered.

3.2.2 *The Continuation, Innovation, and Exchanges of Stone Tool Industry*

Among the three categories of stone industries in the “Maritime Region of Southeastern Asia” around ten thousand years ago, the mainstream was the continuously progressive pebble stone industry (implements of category A and B) which originated indigenously in distant Paleolithic age.

Pebble implements were the major tradition of Paleolithic culture in the “South” of East Asia that lasted for hundreds of thousands of years. They were discovered in Paleolithic sites early in the middle layer of Pleistocene, such as in Shilongtou (石龙头) in Daye (大冶) of Hubei, Jigongdang (鸡公埕) and Dashengmiao (大圣庙) in Lixian (澧县) of Hunan, Shuiyangjiang (水阳江) in Xuanzhou (宣州) of Anhui, Baise (百色) basin of Guangxi, the lower layer of Lingfeng (灵峰洞) cave and Chuanfan (船帆洞) cave at Wanshouyan (万寿岩) in Sanming of Fujian, as well as the early remains in Ban Mae Tha, Sao Din in Thailand, the early stage of Liwan Culture in Luzon of the Philippines. Other pebble implements of the early stage of late Pleistocene were discovered at Lion Rock (狮子岩) and Qima Rock (骑马石) in Maba (马坝) of Guangdong, Yongshan Rock (涌山岩) in Leping, Liaohe (潦河) in Anyi, Zhushanyuan (竹山园) in Pingxiang of Jiangxi (Wang, Y.P. 1997: 62–90; Wu, C.M. 1999c: 41–61). Most of these remains were large choppers, points, scrapers, and bifacial flaked quasi “hand axe” made of pebble cores and large pebble flakes, which were processed by platform of the pebble surface with mostly hammered unifacial flaking and gradually developed bifacial flaking. These remains had developed for hundreds of thousands of years, but the connotation of the pebble cobble and pebble flake industry was basically preserved stability in this cross-border region, reflecting the emergence and the earliest stage of cross-border community in the “Maritime Region of Southeastern Asia”.

By the later Late Pleistocene Age, which was about 50 to 12 thousand years ago, the pebble implement industry flourished and was mainly discovered in cavern sites. Among them, the importances are the first stage of Bailian Dong (白莲洞) in Liuzhou, Baojiyan (宝积岩) in Guilin, Dingmo Cave (定模洞) in Tiandong (田东) of Guangxi, Ruoshayan (罗砂岩) in Fengkai (封开) of Guangdong, the upper layer of Chuanfan Cave (船帆洞) in Sanming (三明), the lower layer of Lianhuachishan and Zhulinshan (竹林山) in Zhangzhou of Fujian, Qianyuan Cave (乾元洞) in Taidong of Taiwan (Jia, L.P. et al. 1960; SMLZ et al. 1987; Wang, L.H. et al. 1982; Li, Y.H. et al. 1985; Zhang, Z.Q. et al. 1994; You, Y.Z. 1991; He, C.K. 1996; Tsang, C.H. et al. 2018), the lower layer of Con Moong, the lower layer of Sao Dong (Higham, C.F.W. 1989: 35–38), the early stage of Nguom rock shelter in the northern Vietnam (Ha Van Tan 1995), the lower layer of Niah in

Kalimantan (Cheng, T.K.1969), the late stage of Liwan in Luzon, the lower layer of Tabon Cave in Palawan in Philippines (Jocano, F.L. 1975: 77–85), most of them were deposited in the lower layer of the Hoabinhian Culture sites. In general, these remains continued the culture of earlier stages of the choppers, scrapers, hammer stones, points processed with pebble cobble, and pebble flaker, which were made by unifacial flaking with hammer stone on a platform of pebble cobble surface.

At the turning period of the Pleistocene and Holocene around ten thousand years, whether the caverns and rock shelters differentially distributed in the south China, Indochina peninsula, and Southeast Asia islands or the shell mounds and open-air sites in Luzon and Kalimantan, shared both inheritance and innovation of chopped pebble tool industry, indicating to some extent the postglacial cultural community of “Hoabinhian Age” in this “Maritime Region of Southeastern Asia”. The main chopped stone implements of this industry include the relatively regular or symmetrical, oval or almond-shaped, flat discoid pebble choppers, beaters, and various forms of pebble flake scrapers. The technologies and forms of pebble stone tools in this stage were finer, more diverse and improved than those in the middle and late Pleistocene, representing the developed stage of pebble tool industry.

Coexisted with the major of the chopped pebble tool industry during this time and space was varying degrees of improved pebble tool complex with chiseled perforation, concaved surface, ground edge, as well as quasi “Neolithic” of embryonic axes and adzes. These innovative technologies include the grinding and polishing the fracture section of the pebble cores or pebble flakes into oblique, arc cutting edge of choppers and scrapers, the seriously and bifacial row flaking and grinding the flat pebble core or pebble flake into oval, rounded rectangle or rounded square implements as embryonic axes and adzes, the biface-chiseled flat pebbles into perforated artifacts, the biface-chiseled pebble into concaved stone tools, and correspondingly, the grinding edge and perforated bone, horn and clam into various tools. These compounds of new elements were the foundation of Neolithic stone tool technologies, different but inseparable from the original cultural tradition of Paleolithic pebble tools. They were the continuous, inheriting development and innovation of the local pebble tool industry, revealing the strong vitality of this indigenous pebble tool tradition and the important clues of native origin of Neolithic culture.

The gradual development of several categories of Microlithics and small stone tool industries in the “Maritime Region of Southeastern Asia” and their coexistence with mainstream pebble tools assemblage reflects the general and common trend of the postglacial global cultural “upheaval” around ten thousand years ago, and the exchange of prehistoric culture between the south and north of East Asia.

Firstly, in a few typical remains of Microlithics culture, such as Xiqiaoshan No. 17, 18 and Niupo Dong cave, wedge-shaped, columnar, conical, multiplatform cores, stone blades and flakes, and various kinds of stone tools made of these Microlithics cores and flakes were almost the same as those of the typical Microlithics culture in north of China developed since the late Pleistocene, which should be the result of the cultural spreading of “North” Microlithics southward to this early “South of the South”.

Secondly, the remains of the small stone tools made of flint flakes coexisted with pebble stone tools in the Bailian Dong, Liyuzui, and Niupo Dong caves, shared the common features with the small stone tool industry of north of China since the middle and late Pleistocene. A small number of columnar cores also belonged to the category of Microlithics. Both of these the regional small stone culture in the south should have been formed under the influence of the Microlithics and small stone industry of “North” China. The wedge-shaped flake implements discovered in Hailei Dong and Chaoying Dong caves in Changbin of Taiwan shared the similar cultural connotation of the Microlithics in north of China, and some flakes were also similar to that of the late Paleolithic culture in the western islands in Japan.

Lastly, small flint tool remains on the coast of Fujian and Guangdong, especially the large amount of the variously characteristic curved blade scrapers represented by the upper layer of Lianhuachishan were in some degree similar with the “North” small stone tool industry. And, on the representatively concave flint blade scrapers were similar to those discovered in Sanshan Island (三山岛) of Wuxian (吴县) in Jiangsu Province (Chen, C. 1987). However, on the whole, the local characteristics of this small flint implement industry were prominent. Quite similar remains were also discovered in Rizal, Bulakan in Luzon, Leang Burung 2, Ulu Leang 1 caves and Paso shell mound in Sulawesi island, and Uai Bobo Cave in East Timor, reflecting one of the important commonness of small flint tool industry and the possible cultural interaction in this cross-border maritime region around ten thousand years ago.

In short, the indigenous tradition of prehistoric culture characterized by pebble tool industry actually originated in distant Paleolithic and developed lately into the Neolithic age in the “Maritime Region of Southeastern Asia”. The pebble tool industry continued to be the main stream of the cultures in this cross-border region at the turning period around ten thousand years ago, with the technological innovations such as perforation-chiseling, concave-chiseling, and edge-grinding on pebble tools and the creation of quasi “Neolithic” type embryonic form of axes and adzes, indicating the profound indigenous foundation of local Paleolithic tradition in initiating of Mesolithic and early Neolithic cultures. At the same time, the gradual introduction of the Microlithics and small stone tool industries from the “North” to varying degrees became one of the sources of Microlithics and small stone tools with the local characteristics of this prehistoric “South of the South”.

3.3 Discussing on “Language-Farming Model” and Ethnical “Two-Layer Model” Related to the Origin of Austronesian from the View Point of Indigenous Paleolithic Cultural Inheritance

The indigenous characteristics and their cultural continuity during the Mesolithic and early Neolithic ages around ten thousand years ago in the “Maritime Region of Southeastern Asia”, being represented by both the inheritance and innovation of

pebble tool industry of Paleolithic, provide the new clues for re-understanding the prehistoric cultural evolution, ethnical migration and population change of this region and the related issue of the origin of Austronesian.

The argument of the “Ethnic Replacement” or “Population Change” of the origin of Austronesian based on “Language-Farming Model”, cuts apart the continuing line of cultural development in the “Maritime Region of Southeastern Asia” at the turn point between the Paleolithic and Neolithic ages. The new stage of prehistoric culture, being represented by the technological innovations of the pebble tool such as perforation-chiseling, concave-chiseling, and edge-grinding, as well as the quasi “Neolithic” type embryonic forms of axes and adzes, actually inherited and developed the local tradition of pebble tool industries of hundreds of thousands of years ago, rather than the result of “introduction” by or “intrusion” of an “external” Neolithic culture. In other words, the typical material and cultural characteristics as the basis of the argument of “Ethnic Replacement” of “Two-Layer Model”, such as the ground stone tools and pottery making of so-called the “upper layer” cultures and “foreign invaders” of the “post-Hoabinhian” stage, were actually the products of indigenous cultural continuation, inheritance, and innovation of the long-standing Paleolithic tradition.

The “Language-Farming Model” and “Two-Layer Model” generally regard Austronesian as migrated rice farmers different from the indigenous “hunter-gatherers” in the mountainous coast of the south China and Southeast Asia, that is, the race of “upper layer” in the “Two-Layer Model”. This “Two Layer” was depicted as the indigenous hunter-gatherers of lower layer and the rice farmers of upper layer who migrated southward from the north. In this model, “rice farming” was considered as the inherent cultural essence of the proto-Austronesian, and the spreading history of rice farming was taken as the key evidence of the dispersal of Austronesian. This argument is not consistent with the main aspect of ethnic histories that the indigenous “hunter-gathers” continued and developed their original culture and subsistence pattern for thousands of years during Neolithic Age in south coast of China and Southeast Asia, which were demonstrated by the cultural continuation and inheritance from the Paleolithic to Neolithic ages in this cross-border region.

On the one hand, in view of the development of the subsistence economy in the “Maritime Region of Southeastern Asia” over the past ten thousand years, indigenous cultures, including the proto-Austronesian, remained in a state of “hunting-gathering” for a long period of time. The history of Austronesian activities in this region is much earlier than that of rice farming. Agriculture, especially rice cultivation, is not the inherent livelihood and subsistent pattern of Austronesian. The southward track of the dissemination of rice farming is by no means circumstantial evidence of the Austronesian migration and the history of Austronesian ethnic replacement and conquest, but only the new cultural feature disseminated southward from the middle and lower reaches of the Yangtze River, which were gradually accepted by the indigenous hunting-gathering-fishing people including Proto-Austronesian in the late stage of their history.

The middle and lower reaches of the Yangtze River are one of the independent origin centers of cereal domestications in the world. The cultivation of rice here

originated roughly about ten thousand years ago, initially developed in 8000–7000 years ago, and were more developed in Hemudu (河姆渡), Chengtoushan (城头山) in 7000–6000 years ago. However, in the coastal and mountainous regions of Fujian, Guangdong, and Guangxi, which are located to the east and south of Wuyi-Nanling mountain watershed, rice cultivation did not start until 6000–5000 (Guangxi) to 5000–4000 (Fujian and Guangdong) years ago, and was introduced into the Red River Delta of Southeast Asia about 4000 years ago, and then into the southern coast of Vietnam and the Gulf of Thailand between 3500 and 3000 years ago. Rice, millet, and other cultivated agriculture were introduced into Taiwan about 5000–4000 years ago in the late stage of Tapenkeng Culture (Zhao, Z.J. et al. 2005; Zhang, C. et al. 2009; Higham, C.F.W. 2019; Kaikkonen, T. 2019; Tsang, C.H. et al. 2013: 158–159). A newly discovered phytolith remain of the domesticated rice in two layers of Minanga Sipakko site in Sulawesi Island of Indonesia, dating back to 3500–2500 years ago, pushing evidence of rice farming to the more southern Southeast Asia archipelago (Deng, Z.H. et al. 2020). In fact, there is no evidence that the spread of rice farming to the south “synchronized” with the prehistoric cultural and ethnical change. In the strata discovered of the early rice farming in Vietnam and Southeast Asia, the Neolithic culture preserved and continued its original and local connotation, while in Taiwan, the rice farming even appeared as late as the late stage of the development of Tapenkeng Culture, both of which revealed that the rice farming had been accepted by the varying and maturely developed Neolithic cultures while it spread southward. There is no evidence of synchronic emergence of the migrated Austronesian and southward rice farming on south coast of China and Southeast Asia. In the meantime, after the emergence of rice farming in mountainous coastal areas lying to the east and south of Wuyi-Nanling mountain watershed and Southeast Asia, it had been underdeveloped on a small scale for a long period of time, the original local foraging pattern of hunting, gathering, and fishing had generally coexisted as the main part in the social-economic life. Not until 2500 to 2000 years ago, being equivalent to the Zhou Dynasty and even in the Eastern Zhou, Qin, and Han dynasties in the chronology of the Central Nation, rice farming just began to develop on a large scale in some estuaries, deltas of big rivers and coastal plains in regions (Wu, C.M. 1996; Ma, T. et al. 2019, 2020). Obviously, the fact that rice farming had been widely spread and become the main food production pattern along the mountainous coast of south China and Southeast Asia was the result of cultural practices of regional indigenous people in the late prehistoric period, far later than the history of aboriginal *Bai Yue* ancestors and proto-Austronesian.

Regarding ethnographical distribution of the livelihood patterns of the Austronesian, rice farming was neither the common cultural connotation of all branches of Austronesian, even nor the subsistent method of its main population in the three archipelagos of the Pacific. So, it is hard too say that the rice farming had been the inherent means of livelihood of the proto-Austronesian. Although the coastal population of the Indochina Peninsula and the islanders of Southeast Asia and Madagascar have developed rice cultivation in their history and have continued it to the present, there is no agricultural practice of rice and other major starch grain cultivation in all three Pacific archipelagos, where the Austronesian have been

densely dispersed. They planted root tubers such as dioscorea, taro, arrowroot (kudzu), ginger, sugar cane, sweet potato, and fruits such as coconut, breadfruit, banana, plantain, gourd, and pepper, mainly by the “agroforests” or “orchard gardens” system. This horticultural system was the basis of their livelihood and even the basis for the development of a few complex societies of local Pacific. In the archaeological sites of Lapita Culture, which dated about 3500–2500 years ago and was the oldest archaeological remains of Austronesian of the Pacific Islands, no remains related to cultivated rice has been found (Kirch, P.V. 2002: 109–112). In the eastern far end of the ocean dispersal of the proto or historical Austronesian, the indigenous peoples of three Pacific archipelagos should be logically the descendant of early population in the history of ethnic migration, therefore, obviously, rice farming was not the inherent cultural connotation of the proto-Austronesian. Before the spread of pro-Austronesian or Austronesian to the south coast of China, Southeast Asia, and the Pacific archipelagos, there was no rice farming. That is to say, the early proto-Austronesian was not “Rice Farmer”. Before the rice farming gradually spread along the coast of south China and Southeast Asia, the proto-Austronesian had long lived in this land-sea connecting maritime region, with the compound foraging means of gathering, fishing, hunting, and the broad utilization of the tubers plants as their common, inherent and lower layer of subsistent pattern.

Taking “Rice Farming” as the inherent cultural characteristics of the proto-Austronesian and tracking the path of so-called Austronesian migration and dispersal along the spreading history of rice cultivation from south China to Southeast Asia, began with the linguistic practice of the Austronesian investigation. The linguistic paleontologists inferred and reconstructed the environmental and cultural background of contents including the animals and plants in the original land of the proto-Austronesian before migration, based on the analysis of the lexical composition of modern Austronesian languages. The representative figure in the field was made by Dutch linguist H. A. Kern who inferred dozens of plant and animal components inherent in the proto-Austronesian, including sugar cane, coconut, banana, bamboo, reed, rice, cucumber, sweet potato, nettle, taro, etc. It is true that linguistic inference may investigate the cultural composition and environmental characteristics in the “history” of a particular ethnic group, but these characteristic elements would be actually the superposition and accumulation of historical process, lacking the scale of time depth and the reliable dating respectively for each different historical element. The plant components inherent in the so-called “proto-Austronesian” Kern inferred, in fact, varied greatly with their starting times being used and cultivated. For example, the sweet potato, which was originally cultivated in America, spread to Southeast Asia and East Asia only after the Age of Discovery and maritime globalization less than 500 years ago, through Spanish trans-Pacific the “Manila Galleon” maritime trade routes. Obviously, linguistic methods can not accurately determine date and period of “history” when these plant components were used and cultivated by Austronesian, while “Rice Farming” included in them, had been verified by archaeological discoveries as a new feature of the Austronesian’s subsistence and livelihood pattern in the late stage after fishing, hunting and gathering of their ancestor.

On the other hand, the “Two-Layer Model” of the ethnic history of Southeast Asia in last ten thousand years reconstructed by physical anthropology is synchronized with the changing of the subsistence patterns from hunting-gathering to rice farming but did not coincide with the migration and replacement of Austronesian. Judging from the latest evidences of paleo-anthropology and molecular anthropology in the “Maritime Region of Southeastern Asia”, the people of Malay-Polynesian or Austronesian are not the “upper layer” rice farmers in the “Two-Layer Model”, but the indigenous hunter-gatherers in “lower layer”, being consistent with the continuation and inheritance of Paleolithic cultural tradition in Neolithic Age.

The regional features and diachronic stratification of the ancient ethnic groups in the “Maritime Region of Southeastern Asia” were complicatedly intertwined. The traditional research of paleo-anthropometrics and archaeology in last more than 100 years shared the general consensus that there had been both the continuation, inheritance of indigenous ethnicity, and mixture of variants during the long history of ethnic migration and interaction. Early research revealed that the main body of race and ethnic groups since prehistoric times had been stable and inherited, at least, the populations in Southeast Asia of the late Pleistocene to the early and mid-Holocene had hereditary genetic connection with the present Melanesians of Austronesian. These discoveries became the basis of the main viewpoint of preliminary “Regional Continuity Model” or “Local Evolution Hypothesis” of this regional physical anthropology (Howard, A. 1967; Wu, X.Z. 1987). Zhu Hong (朱泓) stated that the skulls of Neolithic “Ancient South China Type” represented by Hemudu (河姆渡), Tanshishan (昙石山), Hedang (河宕), Youyugang (鱿鱼岗), Zengpiyan (甑皮岩) and Jinlanshi (金兰寺) showed the species characteristics of the “Ancient *Yue* Ethnic” and their mixing with the northern Chinese population who historically moved southward and forming the contemporary southern Chinese people. He discovered that this “Ancient South China Type” had also been close to Indonesians and Melanesians as the branches of Austronesian, whose origin could even be traced to the Liujiang (柳江) people of late Paleolithic age (Zhu, H. 2002). Anyway, these early physical Anthropological studies also found evidence of the ethnic evolution and its stratification, that is, before the Han and Indian population migrated to Southeast Asia, indigenous Negrito, Negroids, Malay Polynesia (or Indonesian, that is, Austronesian) had been active in this region.

The more explicit information of “Two-Layer Model” found in the study on the nonmetric features of dental morphology also confirmed that the people of “lower layer” or the early ethnic groups of East and Southeast Asia had originated from late indigenous population of the Pleistocene period and had been closely related to Oceania natives. By distinguishing the geographical types of dental morphology, C. G. Turner II considered that the “Sinodonty” of north China, Mongolia, and south Siberia, and the “Sundadonty” of the Southeast Asian Peninsula and the archipelago centered on “Sunda Shelf”, extending to Hokkaido and Sakhalin of marine Northeast Asia, were separated and evolved respectively in their own path for a long time. The Sundadonty type at least has kept its local features preserved from the late Pleistocene, with many characteristics similar to that of the indigenous

Australian, which is the result of continuous population inheritance and local evolution. However, he also acknowledged that the populations in Southeast Asia, including Malays, Thais, and Laotians, had temporally external genetic exchanges and regional changes that evolved in the direction of the “Sinodonty” (Turner II, C. G. 1990). Hirofumi Matsumura’s similar study proposed the variation and stratification, their “Two-Layer Model” also argues that the early populations were closely related to modern Australian and Melanesian populations and that late population variability was associated with the spread, diffusion, and population expansion in East and Northeast Asian driven by agriculture in Neolithic Age. However, they also admit that these “two layers” of the new population expansion and the early indigenous population are not completely separated, but interacted with genic exchange and mix, eventually forming the morphology and genetic composition of the population in Southeast Asia today (Matsumura, H. et al. 2014).

The recent studies of molecular anthropology further support the viewpoint of the indigenous or “lower layer” essence of the proto-Austronesian population, rather than immigrated or “upper layer” feature. In the skull remain of “Liangdao I” (亮岛I号) dating back to 8,320–8,160 years ago, the researchers reveal that mitochondrial DNA of haplogroup E1, are commonly seen among aboriginal Taiwanese, Filipino, Indonesian and Pacific islanders but not in the mainland Chinese. Moreover, in “Liangdao II” dating back to 7,590–7,560 years ago, mitochondrial DNA of haplogroup R9b, R9c, are commonly seen among indigenous Zou (邹), Bunong (布农), Lukai (鲁凯) of Taiwan, Filipino, Indonesian and Pacific Islanders but rarely seen in Chinese (Chiu, H.L. 2015; Chen, C.Y. 2019). A newly published DNA study of migration and assimilation of the ancient people in China shows that early Neolithic populations in the south and north presented different patterns and had no common ancestors, the Neolithic peoples of Southeast Asia and the South Pacific shared highly genetic similarity, which proves that Austronesian originated in Fujian and adjacent coastal areas of south China 8400 years ago (Yang, M.A. et al. 2020).

The evidences of economic archaeology and physical anthropology show that it is the “upper layer” population of the “Two Layer” gradually promoted the spread of cultivated agriculture such as rice farming from the middle and lower reaches of the Yangtze River to Southeast Asia. The skull and dental morphology unearthed in Man Bac in Beibu (Bac Bo) Gulf of North Vietnam, Khok Phanom Di of Thailand, and other typical sites of early rice farming in Southeast Asia dating back to three or four thousand years ago, show the variation characteristics of the “upper layer” population and culture, which is considered to be related to immigration of the rice farmers in the Yangtze River Delta (Higham, C.F.W. 2019; Matsumura, H. et al. 2014). But, earlier than them, the human remains in the tombs of Vietnam’s Hoabinhian and Bac-Sonian cultures as the typical hunting and gathering society in Southeast Asia have been identified as Melanesia and Indonesian branches of the Austronesian (Bui Vinh, 1994). The same is true of the hunting and gathering society in the early Neolithic age in the mountainous areas of south China. The study of the skull morphology of Gaomiao (高庙) Culture in Hunan dating back to six or seven thousand years ago showed its connection with the lower layer of the “Two Layer”,

which has the genetic characteristics of the early indigenes in southern Eurasian continent since the late Pleistocene, and share the common ancestors with the present indigenous Australian and Melanesian peoples (Matsumura, H. et al. 2017).

It is obvious that whether the paleo-anthropometrics, recent dental morphology, or molecular anthropology studies, in the “Two-Layer Model” of ethnic studies of the Southeast Asia, it is the “lower layer” indigenous people as the direct descendants of ancient foraging people since the late Pleistocene that have directly genic relationship with Melanesian and others Austronesian in Pacific, rather than rice farmers of the “upper layer” who gradually moved from the north to south, causing the “variation” of southeast Asian populations and the genetic exchange in the direction of “Sinodonty” in three to four thousand years. Therefore, these immigrated rice farmers into Southeast Asia during the late and the latest Neolithic age might not be the new formation of Austronesian and Austroasiatic people of the “Maritime Region of Southeastern Asia”.

3.4 Conclusion

The cultural commonness, the indigenous continuity and inheritance of the pebble tool industry, and the local origin of Neolithic culture in the “Maritime Region of Southeastern Asia” around ten thousand years ago provided important clues for rethinking the prehistoric origin and migration of Austronesian.

The pebble tool industry with far distant origin since the early Paleolithic age continued to be the cultural property of the Paleolithic-Neolithic turning period. The new technologies such as perforation-chiseling, concave-chiseling, edge-grinding, and quasi “Neolithic” type embryonic axes and adzes, represented the origin, innovation and development of local Neolithic culture on the base of indigenous Paleolithic tradition. The introduction, and assimilation of the Microlithics and small flint tools as supplements of this period reflected the global cultural trend and the cultural interexchange between north and south of East Asia. The mainstream of this indigenous continuity, inheritance, and innovation of Paleolithic culture around ten thousand years revealed the deep roots of prehistoric aborigines such as Austronesian, who are not the foreign immigration transplanted and conquered this maritime region in the late and the latest Neolithic period.

The “Two-Layer Model” of livelihood economy and ethnic history revealed the indigenous and “lower layer” characteristics of the Proto-Austronesian. The archaeological discovery and chronology of domesticated rice and the ethnography of the subsistence patterns of Austronesian in the “Maritime Region of Southeastern Asia”, proved that rice farming was not the inherent livelihood pattern and cultural essence of the proto-Austronesian, that the emigration history of Austronesian was not synchronized with the spread of rice farming culture, that the main body of the indigenous community, including the proto-Austronesian, was the direct descendants of the indigenous “fisher, hunter and gatherers” of Paleolithic, Mesolithic and early Neolithic age around ten thousand years ago and even earlier, that rice

farming was the just result of the cultural spread and influence of the lower reaches of the Yangtze River, which was accepted by the proto-Austronesian later than the mid-Holocene. The “multi-layer” or “two-layer” models of physical anthropology also confirmed that the prehistoric and early historic people of “lower layer”, such as “Ancient South China Type” or “Sundadonty Type” more than seven or eight thousand years ago, were genetically related to the indigenous Australian and Oceanian population. These “lower layer” people were actually the foraging population of the turning period between Paleolithic and Neolithic, as well as the early and middle Neolithic ages, whose ancestors can even be traced back to the earlier human being of south coast of China as Liujiang Man in the late Pleistocene. On the contrary, the “upper layer” population with rice farming culture is characterized by “genetic variation”, which can be classified as “Sinodonty”, Northeast Asian or mainland Chinese, and their immigrant mixture since the late prehistory. They might not be the main origin of Austronesian and other indigenous people in the “Maritime Region of Southeastern Asia”.

In conclusion, the indigenous population of the “Maritime Region of Southeastern Asia”, including Austronesian, were the direct descendants of early prehistoric fisher, hunter, and gatherers who proliferated and evolved in thousands of years, based on the Paleolithic tradition of pebble tool industry. This indigenous population was not the rice and millet farmers immigrating to mountainous coast of South China and Southeast Asia from the middle and lower reaches of the Yangtze River after the late and the latest Neolithic Age. During the last glacial epoch, the global sea level dropped sharply, causing that the shallow shelf around the South China Sea where the “Sunda Shelf” situated was exposed to be the “land bridges” along the coast of South China, Beibu (Bac Bo) Gulf, Gulf of Thailand, Java Sea, Taiwan Strait, and Bashi Strait, connecting the “continent” and “islands” in the “Maritime Region of Southeastern Asia” into a broader land environment. This land bridges connection might be one of the reasons the indigenous ancestors such as the Proto-Austronesian moving to and staying in this coastal region since the far distant Paleolithic age.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution, and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.