THE NEOLITHIC PATTERN OF INDIA

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1. INTRODUCTION

The first find of a neolith in India was made in 1860 by H. P. le Mesurier, who drew attention to his discovery of ground and polished stone implements in the valley of the East Tons river, in the United Provinces (now Uttar Pradesh). For eighty years since then, neolithic artefacts of various types have been collected in all parts of India from the surface. The collection, however, proceeded on unscientific lines based on haphazard selection, and the material has found its way into museums in India and abroad without any value for a cultural or chronological classification. Even with a vast lithic collection, all that could be said of them, even as late as 1944, was that "the neolithians of India were principally tool-makers and hence culturally inferior to the neolithic Egyptians who knew, in addition to tool-making, agriculture, domestication of animals, manufacture of pottery, and textile industry." Somewhat later, in 1949, Worman stated that there was no Indian culture that could surely be called "neolithic". He would perhaps not have made this statement had he known the results of Wheeler's excavation, in 1947, of the Brahmagiri site in northern Mysore, confirming the chalcolithic-neolithic culture identified as early as 1942 by Krishna.

By definition, the neolithic culture pertains to the Stone Age, and the primary trait that sets it apart from the other cultures of that Age is deliberate food-production, as opposed to mere food-gathering, as the means of subsistence. This trait is found in the occupations of agriculture and animal-husbandry. The secondary traits often associated with the neolithic culture are manufacture of pottery and smoothed stone tools. A full-fledged neolithic site may, therefore, be characterized by the remains of domesticated animals and plants, pottery and smoothed stone tools. The absence of metal in an archaeological complex containing this triple trait, or stratigraphic evidence proving that the complex existed prior to the introduction of metal into the area, is also a prerequisite to the identification of a site or culture as neolithic.

On the basis of this definition, Worman plotted the sites at which Indian smoothed stone celts had been found. Accordingly, they were noted to occur almost exclusively in Assam and Bengal and central and southern India—south of the Ganga plain, north of Pudukottai and east of a line drawn in a south-south-westerly direction from Lucknow in Uttar Pradesh to Goa on the west coast. As a result of their typology and distribution, he drew tentative conclusions, which, as he himself admitted, were based on incomplete

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5Worman, op. cit.
information and should be checked, primarily more with the archaeology of the future than with that of the past. His conclusions are briefly: (i) in India there is no positive proof in regard to the existence of neolithic peoples at any time before or after the use of metal came into being; (ii) Indian smoothed stone celts of neolithic type, regardless of their cultural affiliation, appear to have mainly been derived from south-east Asia at different dates; and (iii) a typological comparison of Indian and Far Eastern celt-types corroborates the above postulate and supports the theory that certain Indian types are earlier in date than the others, and that the eastern half of India belonged to a fairly large south and south-east Asian culture, throughout which the evolution of the post-Pleistocene prehistoric cultures were apparently similar.

Central and western India, as depicted by Worman, were terra incognita, because there were no neolithic finds beyond what Foote had collected round about Maski and Raichur. With the discovery of polished pointed-butt axe culture at Brahmagiri by Wheeler, Worman's postulates (i) and (ii) are untenable and the other has to be revised in the light of recent discoveries and researches in India by Sankalia, Subbarao, Dani, Sen and Ray and in south-east Asia by Tweedie and Colani.

A brilliant decade followed the Brahmagiri excavation by the location of many centres of a new chalcolithic-neolithic culture in central and western India as revealed by the excavators at Nasik on the Godavari, Jorwe and Nevasa on the Pravara, a tributary of the former river, and Maheshwar and Navdatoli on the Narmada, by Sankalia and his team, at Tripuri in the upper reaches of the Narmada valley by Dikshit, at Bahal on the Girna (a feeder of the Tapti), by Deshpande, at Maski in the Krishna basin and at Prakash on the Tapti, both by Thapar, and at Nagda on the Chambal by Banerjee. Recent surface-explorations also have brought to light many other similar sites in Bijapur, Belgaum and other places, all comprised in the stretch of land between Nagda on the north and Brahmagiri in the south—roughly extending from the Tropic

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1 Wheeler, op. cit.
3 B. Subbarao, The Stone Age Cultures of Bellary, Deccan College Dissertation Series, no. 7 (Poona, 1948); The Personality of India, 2nd ed. (Baroda, 1958).
8 Sankalia et al., op. cit. (1958).
12 Indian Archaeology 1955-56, pp. 11-19.
of Cancer to 15°N. Latitude—a distance of about 600 miles. The fact that this culture transcended the respective limits of the latter-day Aryan and Dravidian language-zones may not be without import. There is a broad uniformity in the equipments of the culture, viz., the use of painted pottery, and, to a restricted degree, copper and the typological similarity of polished stone axes of Brahmagiri and Nevasa and the existence of ribbon-flake microliths.

Dani has made a special study of the neolithic culture of the east India and south-east Asia and has succinctly made out that the neolithic elements came in different waves at different times from the latter region into the former through Burma and that a definite chronology can be ascribed on the basis of a black polished ware associated with the specialized tools of the later complex in Malaya.

We have also to take into account the isolated neolithic culture of Kashmir, as represented at Burzahom.

We have, therefore, four neolithic provinces in India. They are: A, central and western India; B, south India; C, eastern India; and D, Kashmir.

I propose to describe these four provinces and deal with the origin of the neolithic traits in each.

2. THE PROTONEOLITHIC PHASE

Before, however, dealing with the quadruple division of the Indian neolithic complex, it is necessary to review briefly certain lithic industries brought to light in the Narmada basin at Hoshangabad in Madhya Pradesh by De Terra, in the Sabarmati basin in Gujarat by Sankalia and Subbarao, and in Mirzapur, Uttar Pradesh, by Cockburn, besides those of Sukkur, Rohri, Karachi and other places in Pakistan. All these have to be considered as protoneolithic in character (fig. 1), forming the basis of the Indian neolithic complex.

A. THE NARMADA VALLEY

The new alluvium of the third aggradational phase in the Narmada is equated to the cotton soil, corresponding to Terrace 5 of the Sohan in Panjab. In its basal gravel and sands and in the lower few feet of regur, De Terra and Teilhard found a flake-industry in jasper and flint dominated by microlithic blades and scrapers, homologous with the mesolithic culture and akin to the Capsian of Syria and Africa. They call this industry protoneolithic or even a late industry that might have flourished in recent times in the rock-shelters near Hoshangabad and elsewhere. Since it contained occasionally fluted cores, which are characteristic of the succeeding protohistoric cultural phase, as seen at Maheswar lower down the river, typologically and technologically this industry leads to the advanced microlithic industry of the succeeding chalcolithic phase spread all over central and western India. Since stone mace-heads with typical hour-glass section are found

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2 Dani, *op. cit.*
4 V. D. Krishnaswami, 'Stone Age India', *Ancient India*, no. 3 (1947), pp. 11-57, particularly pp. 36-38.
5 De Terra and Paterson, *op. cit.*, p. 320.
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stratigraphically over this industry at Navdatoli, De Terra’s description of it as proto-
neolithic is confirmed.¹ At Choli, not far from Maheswar in the interior, Sankalia also
found huge cores, about 3 ft. in length, in variegated jasper and number of microliths
around exposed veins of jasper, suggesting factory-sites of the same phase.²

B. THE SABARMATI VALLEY

Further north, in the Sabarmati valley, there is a marked concentration of micro-lithic sites at Langhnaj near Mehsana in north Gujarat.³ Even in central Gujarat, the
same culture predominates. The commonest type of implements is the lunate or crescent.
The asymmetrical lunate here is one of the few items that distinguish this hunting micro-
lithic industry of Langhnaj from the Wilton industry of south Africa. Backed blades
are absent altogether. There are doubtful remains of the dog and bovine fauna; but
the food-remains of Langhnaj indicate game-animals. In the Langhnaj industry three
zones of microliths are found without any variation in types. In the first zone, extending
from the surface to a depth of 3 ft., the microliths are associated with comparatively recent
potsherds, along with a long tanged iron dagger. In the second zone, at a depth of 3 to
4 ft., where an ancient land-surface is met with, a different type of pottery, with incised
lattice-decorations, is found. The pottery is thin and red-slipped over a pale-brown surface
with a cowdung-like greenish-yellow core. Besides microliths, a large quartzite mace-head
with an hour-glass section and pieces of two neolithic celts of chlorite-schist belong to this
zone. The third zone, from 4 to 8 ft., is the pure microlithic zone. Sandstone
quern-fragments are generally found below 4 ft., which is below that at which pottery is
found; therefore, some primitive form of agriculture was practised before pottery came
into use. Thus, in Gujarat we have evidence of a microlithic folk being introduced to
agriculture and pottery and the original mesolithic food-gatherers becoming neolithic
food-producers, albeit on a very restricted scale. Zeuner states that this should be
verified by the existence of domesticated animals in the lowest, pre-pottery, microlithic
zone in addition to the quern-stones.⁴ Not far from Langhnaj is Sojanipur, an important
chalcolithic-neolithic site, assignable, on the evidence of painted pottery and parallel-sided
blades, to the first millennium B.C.⁵

The other sites in central India that show evidence of the use of microliths
and pottery at the same time are Pachmarhi and Morhana-Pahar.⁶ The Pachmarhi
rock-shelters exhibit human occupation down to a depth of 51 in. There is very little
pottery below a depth of 18 in., as indicated by Hunter. The pottery is mostly a black
ware with occasional fragments of a whitish pottery of thick section of the same antiquity.⁷
The Pachmarhi evidence follows that of Langhnaj very closely. The discovery of pottery
in association with microliths at Morhana-Pahar in the same region by Carleye helps to
strengthen the Pachmarhi evidence.

¹Indian Archaeology 1957-58—A Review (New Delhi, 1958), p. 32.
XVIII (1956), pp. 275-84.
⁵Information from Shri S. R. Rao.
⁶D. H. Gordon, ‘The stone industries of the Holocene in India and Pakistan’, Ancient India,
no. 8 (1952), pp. 64-90.
⁷Ibid., pp. 73-75.
Fig. 1

Sukkur: Group A, 1, flake, 2 and 3, blades; Group B, 4, blade, 5 and 6 flakes; Group C, 7, flake, 8, core

Rohri: 9 and 10, cores; 11, pick-like implement; 12 to 16, blades

Sukkur and Rohri: 17, core; 18 and 20, crested flakes

Kot-Diji: 21, crested flake

Hisbani: 22, crested flake

Jericho: 23 and 24, crested flakes

Jerash: 25, crested flake

Makertu: 26, core
Fig. 1. Artefacts from protoneolithic phase
C. The Krishna valley

The evidence mooted at Langhnaj in Gujarat, in the Sabarmati valley, is confirmed by the excavations at Nagarjunakonda in the Krishna valley. The clear stratigraphical evidence obtained here shows that the pre-pottery microlithic industry on chert and chalcedony was succeeded by a mixed lithic industry containing the true hunting-type of microliths, along with coarse flakes of trap and quartzite made of a different technique and wheel-made pottery. At another place in the valley, similar coarse flakes are found in clear association with polished neolithic axes of trap, of the same type as the usual double-convex Brahmagiri ones. But the most characteristic neolithic toolform in the valley is the 'shoe-last' axe, not found in the eastern zone.

Subbarao's suggestion of an early protoneolithc industry, characterized by heavily-patinated flakes of trap and sandstone with a crude microlithic industry of quartz and chert, but without any evidence of pottery, in Phase I at Sanganakallu and the find by Seshadri of a flake-industry of jasper, flint and chert on the surface at Brahmagiri, having some resemblance to Phase I at Sanganakallu and styled 'Brahmagiri Pre-I', which, however, has not been encountered the excavation, have been amply confirmed by the evidence obtained in the excavations at Nagarjunakonda.

D. The Kon valley

A flint-industry was reported at Mirzapur in the Kon ravines by Cockburn in 1894. He found polished celts of basalt and flakes of chert derived from the lower Vindhyan limestone and pointed out that the only other locality in India where such flakes and blades had been found was Rohri in Sind. Except for a few specimens collected in 1893 by Hodges and deposited in the Lucknow Museum, the material collected by Cockburn is lost; his notes, too, are scanty and are marred by bad illustrations. Therefore, a fresh exploration appears necessary here for finding out the relationship between the ribbon-blades of flint and the polished celts of basalt and assessing the real nature of the site—whether it is protoneolithc (as Sukkur and Rohri) or otherwise.

E. Sukkur and Rohri

A stone industry that might be looked upon as preparatory to the chalcolithic cultures of Indus valley and Baluchistan is probably the one found at Sukkur and Rohri. De Terra found two groups of sites, one on the flint-bearing Eocene hill, west-north-west of Sukkur, and the other on the opposite bank of the Indus, south-east of Rohri. The

1 K. V. Soundara Rajan, 'Studies in the Stone Age of Nagarjunakonda and its neighbourhood', *Ancient India*, no. 14 (1958), pp. 49-113. After the publication of the article, the author visited the excavations and noted some additional evidence exposed thereafter.


3 M. Seshadri, 'The microlithic industries of Mysore', *An. Rep., Inst. Arch., University of London*, no. 9 (1953), pp. 29-38. He points out that a large number of parallel-sided blades, points and retouched blades, like those from Maski and Brahmagiri, were found at Lodai in Kutch and are now in the British Museum.


5 De Terra and Paterson, *op. cit.*, pp. 331-36.
Sukkur and Rohri sites, though connected geologically, present distinct variations in their tool-types.

In the Sukkur industry, with no apparent stratigraphic sequence, the heavier tools, such as handaxes and big cores, are found concentrated near the base, and large scrapers are on the top interspersed with blades. On grounds of patination, in the absence of any other evidence, the implements can be placed into three groups, A, B and C, which merge into each other. Group A shows a dark-brown desert-patination with lustre; blades are in the majority over flakes, cores being very few. Group B shows desert-patination with no lustre; the artefacts are similar to those of Group A, the chief difference being the presence of concave-convex flakes, which show Levallois technique with flake-scars. Blades are thinner. Flakes are greater in number than in Group A, and cores are common as in Group C. Group C is fresh and unpatinated. Flakes greatly out-number blades; there are concave-convex flakes as in Group B. The cores are small, conical and fluted, the flake-scars converging at the apex. These are similar to those in the earliest levels at Mohenjo-daro.

The Rohri industry, with large quantities of flint cores and flakes, falls in Group C of Sukkur. There is also a pick-like tool trimmed out of a thick blade which has been described by Subbarao as a ‘crested-guiding-ridge’ flake.1 Similar flakes are found in the Sturge collection from Sukkur and Rohri of the British Museum, varying in length from 10 to 12 in.2

The combination of so many different techniques in these industries suggests that they are very late and is indicative of an age approaching the chalcolithic civilization of the Indus valley. From the geological angle, however, De Terra ascribes to these Stone Age sites an age somewhat greater than what their typological evidence would admit. This accords with the evidence from further west—Palestine and Iraq.3 In the Fertile Crescent, such an industry appears in purely neolithic levels, as at Jericho, where this new technique of ‘crested-guiding-ridge’ flake for the mass-production of blades started among the earliest agricultural communities.

F. Karachi

Another lithic industry deserves consideration in this context: it is the one found at a golf-course near Karachi, wherefrom Todd collected lithic tools, now in the British Museum. Lal, who studied them, points out that the artefacts include along blades, points, scrapers, trapezes and crescents, besides fluted cores.4 Subbarao, who also saw the same collection, points to the existence of a crested flake.5 A fresh exploration of the site is desirable with a view to finding out if there is any pottery associated with these tools.

G. Kashmir

Pottery and flakes found at Sombur in Kashmir and in the alluvial deposits on the Jhelum and also at Burzahom and Pampur led De Terra to state: ‘In all these places it

2. Ibid.
was certain that the flakes are associated with pottery-bearing layers of either neolithic or historic date. Notwithstanding these observations, it is still possible that the flakes found in the lowest Jhelum terrace represent a late palaeolithic or proto-neolithic culture.\textsuperscript{1} The evidence of Uchali, west of Nausher in the Salt Range, West Pakistan, seems to bear this out, as stray finds of microliths of jasper of flint from the Potwar loess-surface may have been derived from a fossil-soil of sub-recent origin.\textsuperscript{2} Besides, there was the association of a burial in the implementiferous layer, which yielded hand-made pottery, presumably of neolithic character.

H. The Zhob Valley

Ross demonstrated five occupational deposits at Ranaghundai in the Zhob valley.\textsuperscript{3} The earliest level is characterized by plain hand-made pottery and flint blades. Domesticated animals are represented by sheep (\textit{Ovis vignei}), horse (\textit{Equus caballus}) and cattle (\textit{Bos indicus}). The second phase is distinguished by wheel-made painted red pottery, bearing designs of stylized bull and black-buck. There is a striking similarity between this pottery and that of Hissar I, and it is not unlikely that it represents an infiltration from the Iranian uplands in the second half of the fourth millennium B.C.

The existence of a pre-pottery microlithic culture has been reported by Fairservis at Kile Gul Mohammed in Baluchistan.\textsuperscript{4} Here, below the pre-Harappan Kichibeg culture, were found two phases: first, a pre-pottery microlithic culture, Kile I, characterized by flint flakes and fine polyhedral cores; next, Kile II, marked by the presence of wheel-made and hand-made pottery, some crudely painted in black, red and brown with geometric and mat-marked designs. Stone axes, flaked scrapers (flake-blades) and knives (blades) also occur. Broadly, the Kile Gul Mohammed culture may be placed in the early fourth millennium B.C.

The components of the proto-neolithic phases in India and Pakistan would show that if there were to be a real neolithic phase in the same region, it should exhibit a microlithic industry as a hold over into the neolithic, along with the ribbon-blade industry of Sukkur and Rohri. This is exactly what happened in the newly-discovered chalcolithic-neolithic sites of central and western India, as far south as Brahmagiri. Polished stone axes have not been reported either in central India or western India in any proto-neolithic phase, and its evidence in Kashmir\textsuperscript{5} can be attributed to a western influence from the Zhob valley in Baluchistan and the Iranian uplands, where a pre-Harappan neolithic culture is found.

3. PROVINCE A—CENTRAL AND WESTERN INDIA

Most of the chalcolithic-neolithic sites in central and western India are concentrated in the Deccan Trap area and are located in the valleys of the rivers Chambal, Narmada,

\textsuperscript{1}De Terra and Paterson, \textit{op. cit.}, p. 233.
\textsuperscript{2}Ibid., p. 277.
\textsuperscript{5}[Recent work at Burzahom will require a revision of De Terra’s stratification of the site, \textit{Indian Archaeology 1960-61—A Review} (New Delhi, 1961). See above, p. 28, n. 3, and below, p. 63, n. 2.—Ed.]}
Tapti, Godavari, Krishna and Tungabhadra. I propose to make a rapid survey of the results of the excavations done in these river-valleys and finally discuss the significance of these discoveries from the point of view of their origin and diffusion.

A. The Chambal valley and south Rajasthan

(i) Nagda

In Madhya Pradesh, more than thirty chalcolithic-neolithic sites have been discovered in the Chambal valley. Banerjee undertook the excavation of one of the most typical of these sites, Nagda.¹

The occupational deposits at Nagda, 32 ft. in depth, show three cultural periods, resting on the natural black cotton soil. Periods I and II are chalcolithic-neolithic in character. The earlier, Period I, is represented by a 22-ft. thick deposit. The lithic component of this culture includes microlithic tools, mostly parallel-sided blades, and fluted cores of chalcedony, quartz and carnelian, showing crested ridge. A few blades are retouched and their working side often serrated.

The ceramics consist of a dominant red- or cream-coloured ware, painted in black in various designs—horizontal bands, concentric semi-circles, connected loops, wavy lines, vertical radiating lines filled with hatched triangles along with sun-symbol and figures of the antler. There also exists a black-and-cream ware with oblique or vertical strokes and a crude grey ware with blackish core. Plain pottery is limited in quantity. The use of copper is restricted.

Period II is a continuation of Period I, with microliths persisting, but otherwise marked by the disappearance of the black-and-cream ware and the emergence of a wheel-made black-and-red ware and the Northern Black Polished Ware with iron.

(ii) Ahar

In the village of Ahar at Udaipur in Rajasthan, situated in the catchment-area of the Berach, there is a mound known as Dhulkot.² The occupational deposit of 30 ft. is represented by two main cultures, separated by a break. The first culture over the natural sandy soil could be divided into three phases with the characteristic black-and-red ware associated with plain red ware, with incised designs on the shoulders. Ghosh has pointed out that this region is not far removed from the fringes of the horizon of the Painted Grey Ware of northern India.³

A large number of the black-and-red ware are painted in white, but sometimes in black with parallel lines and dots recalling the post-Harappan late chalcolithic phase of Rangpur in Kathiawad. In the final phase, the devolution of the ware sets in. Another ceramic tradition, a red ware painted in black on the slipped surface makes its appearance in the final phase. Microliths, consisting of parallel-sided blades and fluted cores, are also found in the middle and upper phase, with copper objects along with black-and-red ware.

¹ Indian Archaeology 1955-56, pp. 11-19.
³ A. Ghosh in ibid., 1954-55, p. 2.
The upper culture, over a break, is probably contemporaneous with the Kushan times.

In Rajasthan, e.g., at Chitorgarh, Udaipur and Rairh near Jaipur, the existence of parallel-sided blades and fluted cores, along with black-and-red ware, would indicate the chalcolithic-neolithic period.¹

B. THE NARMADA VALLEY

(i) Maheswar-Navdatoli

A small town in East Nimar District, Maheswar is situated on the north bank of the Narmada, opposite which lies the tiny village of Navdatoli. While a few traces of a protohistoric cultural phase of painted pottery and microliths were discovered at both the sites, the occupational mounds here introduce a hitherto-unknown chalcolithic-neolithic phase in central India. In the earliest Phase, I, over the black cotton soil, there is a crude microlithic industry characterized by irregular and fluted cores and discoids of jasper and chert. The succeeding Phase, II, 5 to 8 ft. thick, is characterized by an advanced microlithic industry with painted and unpainted pottery. The microliths are characterized by long parallel-sided flakes, serrated blades and cores of milky chalcedony, agate, jasper and chert. The flakes are made into blunted blades with steep retouch on one side. The lunates are blunted on the arc. The triangles and trapezes are steeply retouched. The proportion of blades to geometric tools is in the ratio of 2:1. The most distinctive feature of this advanced microlithic industry is the deliberate use of the original fluted cores for making parallel-sided blades, pointed borers, etc., by alternate step-flaking. Other lithic characteristics are the flattish oval mace-heads with an hour-glass section, small stone balls, battered at double ends, primitive querns and plano-convex pestles. A polished stone axe, picked up from the surface near Mound II at Navdatoli, is also ascribed to this chalcolithic complex by Sankalia. The pottery from Mounds I and II shows a predominantly red ware, which persists to the last, whereas the black gradually dies out. Among the painted sherds, the black-on-red ware forms about eighty-nine per cent. The designs on the painted pottery include a variety of geometric and naturalistic designs and stylized human and animal motifs. There are hatched triangles, diamonds, parallel lines, semi-circles, leaves and creepers, dancing human figures and running antelopes. Though no complete vessels have been found, bowls and dishes with stands and bowls having channels or cut spouts are noteworthy. Besides, there is also incised pottery. There is a very small amount of copper in the shape of hooks, pins and chisels.

The next Period, III, is defined by the presence of the Northern Black Polished Ware, black-and-red ware and punch-marked coins, with iron tools. The chalcolithic-neolithic culture is dated roughly before 500 to 1500 B.C. or earlier, since Period III shows definite association of the Northern Black Polished Ware and punch-marked coins going to at least 400 B.C.

(ii) Mehgam and Telod

Special reference should be made to two sites, Mehgam and Telod both near the Narmada estuary.² Ghosh points out that a preliminary examination of their material

¹ Information from Shri S. R. Rao.
² Indian Archaeology 1956-57, p. 1.
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shows late Harappan pottery, indicating the southernmost stations of the Harappa culture, which is significant in the origin of the central Indian chalcolithic-neolithic phase.

(iii) Tripuri

In the upper Narmada valley, near Jabalpur, Dikshit brought to light at Tripuri the existence of a puzzling microlithic industry in the lowermost brownish silty clay (black cotton soil), below the Mauryan stratum, separated from it by a sterile pebble-bed.¹

Associated with the microlithic industry was a wheel-made red painted pottery with horizontal bands in black. Dikshit regards this as different from the red painted ware at Brahmagiri, Jorwe, Bahal or even Maheswar, from the fact that the painting is extremely thick on the outside and the pots are treated with a micaceous slip in the inside. The microliths consist of long blades (up to 1½ in. in length), retouched, with battered back and even occasionally serrated, along with a large number of lunate and triangles. He further remarks that this mixed microlithic industry of urban and hunting-types is almost identical with the types found at Chhota-Simla (Jabalpur), Pachmarhi and other sites recorded by Gordon² and equates it to the proto-lithic industry of De Terra in the regur beds overlying the yellow silt of the Narmada valley between Narsinghpur and Hoshangabad. The association of the painted pottery with the blade-industry in the black cotton soil at Tripuri would, however, bring it within the ambit of the chalcolithic-neolithic culture of central and western India. The animal-remains in this layer are those of the wild boar (Sus) and ox or cow (Bos taurus).

C. THE TAPTI VALLEY

(i) Bahal

Deshpande brought to light at Bahal, situated on the Girna river, a tributary of the Tapti, in East Khandesh District, five Periods in the occupational mound, with breaks between Periods I and II, and again between Periods III and IV and established the chalcolithic-neolithic nature of Period I, with the same sequence as at Nasik.³

Period I has two Sub-periods, A and B, both neolithic. Sub-period IA was distinguished by the globular jar with a flared rim in thick grey ware, reminiscent of the Brahmagiri burial-urn, bowl with a flat base and incurved rim and hand-made jar with incised oblique and criss-cross lines, or dot-and-chain patterns and applied finger-tip designs. A few sherds of thin grey ware, with painting in red ochre are also present. The tips of the knobs are also painted in red ochre.

The succeeding Sub-period, IB, shows wheel-made pottery, painted in black-on-red ware with a variety of designs—horizontal bands, hatched diamonds, triangles, concentric circles, parallel, criss-cross and wavy lines in between, foliage and rarely animal-figures, such as antelope and horse(?). A few sherds of a lustrous red-slipped ware recalled the post-Harappan Lustrous Red Ware of Rangpur as pointed out by Srivastava⁴; the carinated bowl and spouted vessel of the Jorwe type occur along with a terracotta lamp

¹Dikshit, op. cit., p. 18.
²Gordon, op. cit., pp. 64-90.
³Indian Archaeology 1956-57, p. 17.
with a stand in the upper levels of this Sub-period. Side by side, there appears, for the first time, a few sherds of burnished grey and black ware with oblique lines painted in white, as in Sanganakallu Phase II.

The lithic industry is essentially an urban one of chalcedony, agate and jasper, mostly of parallel-sided blades, sometimes serrated, and less frequently lunates and trapezes.

A limited use of copper is indicated by a shapeless lump of the metal.

Period II (circa 600-200 B.C.) marks a complete change with the emergence of iron and black and black-and-red wares, the latter being produced by inverted firing.

(ii) Tekwada

Another chalcolithic site was brought to light by Deshpande at Tekwada, opposite Bahal, across the Girna. Here he found four burials related to Period I B of Bahal. Three were urn-burials laid on the natural black cotton soil and the fourth a pit-burial, cut deep into the underlying yellowish clay. The pit-burial contained the skeleton of an adult, 5 ft. 2 in. long, laid in north-south orientation, with two pots, one of grey ware and the other black-and-red ware painted in black curvilinear lines. This skeleton, found with long blades near its feet, points indubitably to the contemporaneity of the burials with Period I B of Bahal.

Near by there are other probable sites, such as are Changdev, on the confluence of the Tapti and Girna, and Patan, at the foot of the hill near Pitalkhora caves.

(iii) Prakash and other sites

About 100 miles lower down in the Tapti basin from Bahal, Thapar excavated the chalcolithic mound, 75 ft. high, at Prakash, on the confluence of the Tapti and the Gomai, exposing four cultural Periods. The earliest period, datable to first millennium B.C., contained microliths. Copper, though known, was extremely scarce. The ceramic industry comprised a black-on-red painted pottery with designs consisting of diamonds, horizontal or oblique bands, criss-cross or wavy lines and ladder-patterns, along with animal-motifs. In association with this ware was found a thin burnished grey ware, as at Bahal, occasionally having linear designs in white. There were also thicker sherds of a coarser fabric in dull grey ware painted with ochre on the rim. The microlithic industry in this Period consists mostly of parallel-sided blades, a few of them serrated, some backed and a few converted into points, along with crescents and trapezes. From the rarity of the polished axes, the chalcolithic-neolithic sites located in the Tapti and the Narmada basins are seen to be different from those of the Godavari, Krishna and Tungabhadra river-basins.

Period II (circa fifth to first century B.C.), separated from Period I by a sterile layer, represents a full-fledged iron-using culture, characterized by black-and-red ware along with sherds of the Northern Black Polished Ware, as at Bahal and Maheswar, thus providing a datum for relative chronology.

As at the mouth of the Narmada, so also at that of the Tapti lies an important late-Harappan site, Bhagatrav near Surat, which contains parallel-sided blades that are characteristic of the chalcolithic-neolithic culture of the Tapti region. As many as nine

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1 Indian Archaeology 1956-57, p. 18.
3 Ibid., 1957-58, p. 15.
chalcolithic sites were recently noticed by Joshi round about Prakash on the banks of the Tapti. The sites at Kukarmunda, Ashrava, Bahurupa, Satola and Koparli are comparatively rich in antiquities. Chalcolithic black-on-red ware, often associated with burnished grey ware and/or coarse grey ware and microliths, consisting of parallel-sided blades, scrapers, points, crested-ridge flakes and fluted cores made of chalcedony and chert, are the important antiquities found there.

D. The Godavari valley

(i) Nasik

At Nasik, Sankalia brought to light five main cultural Periods. The earliest occupational layer of black clay at Mathi-chi-Gadi (Nasik) is characterized by advanced microliths, in association with painted pottery and a large amount of ochre-washed ware. This phase was styled protohistoric by Sankalia and assigned approximately to circa 1500-500 B.C., or even earlier. Subsequent explorations in this region have revealed a few identical elements of this culture at Bhojapur near Sinnar, Dhoki, Kopargaon, Nevasa and Paithan. In Ahmadnagar District, traces of the culture are found also at Gargaon, Kokamthan, Pravara-Sangam and Sangamner, with painted pottery and microliths.

The occurrence of microliths, in the basal habitation-layer, separated from the early historical one by a weathered horizon, constitutes one of the important discoveries at Nasik. About sixty per cent of the microliths were artefacts, such as cores, mostly fluted, blades with mid-ridge, blades backed with steep retouch, lunates and a few obliquely-blunted points. The distinctive light orange-(ochre-)coloured ware of this Period is characterized by a powdery surface along with a few sherds painted in black over a reddish surface. Both these wares are wheel-made. Besides, a few vessels show spouts and carination, which do not recur in the historic period.

Other wares of Period I include a pale whitish red ware, in association with a grey ware and a coarse black ware. The grey ware, being similar to the burial-urn at Jorwe and at Brahmagiri in Period I B, provides a link between the cultures of these two regions.

Bowls and dishes, as well as globular vessels, are the distinctive types of Period I. Besides, the sherds indicate the spouted vessel and bowl with carination, which do not occur later at Nasik but were found in abundance at Jorwe.

The bones found in this Period are those of the domesticated buffalo (Bos bubalus), ox (Bos indicus), pig (Sus species), sheep, goat and dog.

(ii) Jorwe

It is a single-culture site, on the left bank of the Pravara river, 5 miles east of Sangamner. The majority of the microliths are flakes and cores. They exhibit a special crested-guiding flake and keeled-core technique, characteristic of the neolithic in western Asia and the Aegean. There are parallel-sided blades with crested ridge, parallel-sided double-edged blades, saw-like blades, backed blades and a few crescents. There is a variety

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1 Information from Dr. R. V. Joshi.
2 Sankalia and Deo, op. cit. (1955).
3 Ibid., p. 148.
of fine fluted cores, fluted on one surface, flattened on the reverse, reminiscent of the 'ripple flaking on Egyptian Neolithic tools from the Fayyum Desert'.'

The bulk of the pottery is wheel-made, showing spouted vessels, but there are a few hand-made large storage-jars and dishes. The painted pottery shows horizontal panels, running round the neck, shoulder and belly. The affinity of the Jorwe painted pottery, particularly the spouts painted along their lengths with a single but identical spout in Period I of Nasik, suggests that the Jorwe culture may be contemporary, at least in part, with Nasik I.

Six unstratified flat cts of low-grade copper/bronze were discovered in a painted pot on the surface at Jorwe which could be assigned to Period I of Nasik. Daimabad, another chalcolithic site, yielded polished neolithic cts along with all varieties of the chalcolithic pottery.* Its geographical position, midway between Jorwe and Nevasa on the Pravara, is of great importance, as it links the Nevasa polished axes with the flat cts of copper of Jorwe.

(iii) Nevasa

The Ladmod mound at Nevasa on the south bank of the Pravara rests on black soil, as elsewhere. Five distinct cultural phases have been recognized here by Sankalia.3

The first phase is characterized by the presence of the Brahmagiri type of polished pointed-butt axes, a chisel and an adze, in trap, along with hammer-stones, round sling-stones of trap and quartz and microliths of chalcedony. The microliths are very similar to the blades of Maheswar and, showing the special technique observed at Jorwe, may include flakes, ripple-marked (fluted) cores, crested-ridge blades, serrated and backed blades, parallel-sided blades, obliquely-blunted blades, triangles, trapezes, scrapers and crescents. As the parallel-sided blades represent sixty per cent of the microliths, the industry is similar to the blade-industry of Maheswar, as pointed out by Subbarao. The use of metal in Phase I is evidenced by the discovery of a copper or bronze bead, a hook and a chisel, indicating a chalcolithic-neolithic age.

Except large storage-jars and burial-urns, the pottery is wheel-made and painted in black on fine red or chocolate surface. The commonest vessel is the bowl with flaring rim and rounded base with long side-spouts, painted along its length or at its edge. The painted designs are essentially geometric, consisting of hatched squares, triangles, rhomboids, intersecting circles and oblique lines, besides a few animal-motifs, representing deer, pipal-leaves and basket-patterns.

After this occupation the site was deserted. The succeeding Phase, II, separated by a sterile layer from the earlier Phase, is characterized by a red ware and the Northern Black Polished Ware and iron implements like sickles, daggers and plough-shares.

About 100 miles south-south-east of Nevasa, in the Godavari basin, a neolithic celt of the Brahmagiri type was found at Ter in District Osmanabad,* where remains of the early Sātavāhana period had previously been discovered.5 Probably we have a chalcolithic-neolithic culture here, as at Nevasa.

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1Sankalia and Deo, op. cit. (1955).
2Information from Shri M. N. Deshpande.
3See p. 27, n. 2.
4Indian Archaeology 1957-58, p. 23.
5Ibid., 1954-55, p. 61.
E. The Krishna valley

(i) Miski

Thapar exposed at Miski, in the Krishna basin, three Periods, with a break between Periods I and II, respectively chalcolithic-neolithic and megalithic. The cultural equipment of Period I is characterized by the distinguished microlithic industry of chert, agate, opal and carnelian, along with a meagre supply of copper, showing the essential neolithic economy of the culture. About eighty per cent of microliths include parallelsided ribbon-blades and asymmetrical flakes, associated with parallel-fluted cores. The blades range from 1\(\frac{1}{2}\) to 5 in. in length and are reminiscent of the ribbon-flakes of the Harappa. There are also examples of flakes with crested ridge. In small numbers are found steeply-blunted and serrated blades, lunates, trapezes, scrapers and worked points. The whole complex is evidently dominated by an essentially-urban blade-industry, without any retouch, the secondary work being always of a steep-blunting nature. No polished stone axe is found; however, the four trap specimens, from the surface, of the pointed-butt axe-type of Brahmagiri can be assigned to this Period, because of the undoubted association of the type with microliths both at Brahmagiri and Sanganakallu. The other specialized stone objects comprise spheroid balls of granite, showing flattened battered sides, indicative of their use as hammer-stones. They are similar to those found at Navdatoli and Brahmagiri in association with painted pottery and microliths.

The pottery of Period I is mainly wheel-made, though hand-made specimens are also present. There are two ceramic phases, the earlier of them characterized by a dull-grey ware, as at Bahal, sometimes mottled, and a pinkish-buff ware, showing a greater frequency at the lower levels. Noteworthy of the latter phase is the painted pottery with linear designs on red slip.

The animal-remains of Period I represent the short-horned humpless and humped varieties (Bos indicus) of cattle, buffalo (Bos bubalis), sheep (Ovis vignei) and goat (Capra hircus aegagrus). This is contrary to the assertion of Haimendorf that the neolithic settlers in India kept the pig and fowl but lacked the domesticated cattle.⁴

(ii) Other sites

Allchin, in his excavation at Paklihal in Raichur District, found a terracotta figurine representing a long-horned variety of cattle. This is confirmed by Zeuner's identification of the cinder as accumulated heaps of cow-dung from the ash-mounds at Kupgal and Kudatini in Bellary District; this is further supported by the identification of big bones of cattle in the ash-mounds between Gaudur and Machnur near Lingsugur in Raichur District. The domestication of these animals demonstrates a pastoral economy of the settlers, tending towards food-growing.

About fifteen chalcolithic sites in Bijapur District, in a very small area in the Bhima basin, yielded black-on-red painted pottery and a thick grey ware, associated with a

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¹Thapar, op. cit.
specialized blade-industry and fluted cores; in a few of them neolithic polished axes in trap are also found. It would appear that Hirakal near Bagalkot is also a likely site.

Saleatore found a neolithic polished axe in trap, along with microliths and chalcolithic pottery, at Saptasagar in Belgaum District, south-west of Bijapur. With the discovery by Lal and Deshpande of a chalcolithic site with painted pottery and microliths at Karad in Satara District, the Krishna basin becomes closely linked with that of the Godavari as revealed at Nasik-Jorwe and Nevasa, further north.

(iii) Nagurjunakonda

At Nagurjunakonda, about 250 miles east of Bellary, lies a neolithic site with polished stone axes in different stages of manufacture, in association with the typical neolithic burnished grey (as at Maski) and reddish brown wares, along with fragments of copper, besides animal-bones. The bones belong to the domesticated buffalo (Bos bubalus) and spotted deer (Axis axis). The culture seems to be analogous to the corresponding ones at Brahmagiri, Sanganakallu and Maski.

F. THE TUNGABHADRA VALLEY

(i) Brahmagiri

The cultural sequence at Brahmagiri, as revealed in the 1947-excavation, is: Period I, a stone-axe culture, represented by a depth of 9 ft., divisible into Sub-periods IA and IB, separated by a sterile weathered surface; Period II, megalithic culture, of 4-ft. deposit; Period III, the Andhra culture, extending to the surface, of about 3 ft. Period I is characterized by polished pointed-butt axes of trap-rock, the earlier examples of which show a flattened section, though the lenticular section is the normal. The axes are associated with microliths of jasper, flint, agate, opal and rock-crystal, amongst which the specialized geometric tools, such as the trapezes, triangles and the crescents, were very rare or entirely absent. A copper chisel, found midway down Sub-period IB, and two small rods, one of copper, from inside a burial-urn, and another of bronze, from a middle stratum of Sub-Period IB, indicate both a knowledge and an extreme scarcity of the metal. A bronze finger-ring was found from a late stratum of IB.

The pottery is hand-made, mostly of coarse grey fabric, in both the Sub-Periods of Period I, in contradistinction to the wheel-made pottery of Periods II and III. In the lowest black-soil layer of Sub-period IA occasional sherds of the painted and incised red or buff slipped ware, absent in the upper layers, were found.

The range of patterns on the painted sherds shows curvilinear lines representing a conventionalized plant-pattern, with no resemblance whatsoever, technically or artistically, with the Harappa. The incised sherds represent elementary herring-bone or criss-cross lines. The majority of the sherds in Sub-period IB represent burial-urn pottery, mottled and of dull-grey colour.

1 Indian Archaeology 1957-58, p. 39.
2 Ancient India, no. 5 (1949), p. 10.
3 Information from Dr. B. A. Saleatore.
4 Indian Archaeology 1956-57, p. 79.
6 Wheeler, op. cit.
THE NEOLITHIC PATTERN OF INDIA

The lithic finds from Brahmagiri are mainly confined to Period I. The microlithic industry is crude in the extreme and rarely exhibits any attempt at retouching. While there is a crescent, there are no lunates, trapezes or scrapers, in contrast to the mesolithic industries. The majority of the tools are double-edged blades in jasper without retouch, a few of which have serration on one edge. Finished microliths to the extent of ten per cent were recovered from Sub-period I A, while ninety per cent were recovered from Sub-period I B. Some blades are of the battered-back type. The technique of serration, though known from the earliest level of the site, was not widely applied. The serrated blades show no sign of gloss on the serrated or unserrated edges and are restricted to the lower level of Sub-period I B. There is also a crested-ridge flake.

The exact character of Brahmagiri microlithic industry is hard to determine, as fluted cores, corresponding to the parallel-sided blades, are absent.

Of the stone axes of the pointed-butt type, fifteen complete and twenty-nine broken specimens were found in Period I, in various stages of chipping, pecking, grinding and polishing (indicating that Brahmagiri had been a factory-site), there being no proof for Haimendorf's typological evolutionary phases, i.e. chipped axes with only the cutting-edge, ground and polished, preceded the axes ground and polished all over. Besides, the presence of cores and flakes of this material mostly in the strata of I A and in the low levels of I B indicates a local industry. Save for one small flat axe with roughly-parallel sides converging abruptly to a pointed butt and three broken axes from I A, the majority of the axes were obtained from the lower levels, with a unique stone adze from the higher levels of Sub-period I B. Again, the axes fall into two groups, one with flattened lenticular section, restricted the lower levels, and the other with ovoid section, present throughout the Period. The other lithic tools in this Period are saddle-querns, rubbers and spheroid balls.

The pig or sheep seems to be the domesticated animal, as indicated by a terracotta figurine found in Sub-period of I B.

(ii) Sanganakkallu

At Sanganakkallu, Subbarao found in Phase II a neolithic industry associated with coarse brown-and-black and pale-grey pottery, along with a superior urban microlithic industry of chert, jasper and quartz. Below this, and separated by a thin barren layer, was found the earliest occupation of the site, Phase I, characterized by heavily-patinated flakes of trap and sandstone associated with a crude microlithic industry of quartz and chert, without any evidence of pottery. The flakes are long and short, exhibiting longitudinal and convergent flaking by the Levallois technique. The microliths are mostly of quartz, without any secondary retouch, fluted cores being very few; on account of the bad material, no definite implement-types can be made out.

The succeeding Phase, II, shows a continuous occupation by the highly-developed neolithic culture, divisible into two Sub-phases on the evidence of associated pottery. The lower Sub-phase has a pale-grey ware along with a few sherds of coarse brown-and-black hand-made pottery, as at Bahal and Maski. In the upper Sub-phase the dominant ware is the brown, and black ware, the pale-grey ware being very much in subordination. A few painted sherds with violet and purple paintings on a dull red slip are also found.

*C. von Führer-Haimendorf, 'The problem of megalithic cultures in middle India', Man in India, XXV (1945), pp. 73-86.

Fig. 2

Maski: 1, pointed-butt axe, polished all over, with ovoid section; 2, pointed-butt axe, finely polished with flat lenticular section (similar to 6); 3, pointed-butt axe, polished all over with truncated lenticular section; 4, pointed-butt axe, finely polished on cutting-edge and roughly all over surface (similar to 8)

Brahmagiri: 5, pointed-butt axe, small flat, triangular (type A i); 6, small, flat, with roughly parallel sides which abruptly converge to pointed-butt (type A ii); 7, elongated variant of 6 (type A ii a); 8, small, flattened lenticular axe (type A iii); 9, elongated variant of 8 (type A iii a); 10, small lenticular axe (type B i); 11, elongated lenticular axe (type B ii a); 12, elongated ovoid axe (type B ii); 13, polished stone adze

Sanganakallu: 14, rechipped axe with polished cutting-edge; 15, unfinished axe in second stage of manufacture; 16, unfinished axe in first stage of manufacture; 17, broken axe with fine polish; 18, polished blade-axe; 19, broken chipped and polished axe; 20, broken butt-end of axe; 21, chipped and ground axe; 22, broken butt-end of a chisel

Bellarly region (surface-collection): 23, axe with circular section; 24, axe with semi-rectangular cross-section; 25, axe with circular section; 26, blunted-butt axe; 27, plano-convex axe of 'shoe-last' type; 28, axe-hammer; 29, axe with semi-rectangular body and straight cutting-edge; 30, adze; 31, thin flat cells
Fig. 2. Neoliths from Province B—south India
Fig. 3

Nagda: 1, parallel-sided blade; 2, parallel-sided blade, working-side dentated; 3, parallel-sided blade Maheswar and Navdatoli: 4, serrated blade with distinct dentition, serration due to taking away of small deep flakes; 5, serrated blade, dentition not clear; 6, obliquely-blunted point, but marks along the edge due to use (may be included under blades); 7, trapeze with retouch on transverse, tending towards lunate; 8 and 9, lunates, blunted by steep retouch along arc; 10, side-cut-end-scraper

Prakash: 11, parallel-sided blade; 12, serrated blade; 13 and 14, oblique points

Bahal: 15, parallel-sided blade; 16, 17 and 18, oblique points

Nasik: 19, fluted core with flattish, truncated base and roughly-conical cap; 20, parallel-sided backed blade, sharp but unworked edge; 21, trapeze, unretouched edge, back and oblique sides delicately worked; 22, lunate, straight unretouched edge, with blunted back; 23, lunate, small, straight unretouched edge, steeply-retouched back

Jorwe: 24, core, flat faceted platform at one end, fluted on one surface, with ridge on other by cross-flaking, section triangular; 25, core fluted on one surface flattened on reverse by delicate ‘ripple’ or ‘serial’ flaking, perhaps used or turned into side-scraper; 26, crescent-blade or lunate, vertically retouched, leaving chord untouched; 27, point on obliquely-retouched blade, elongated and sharpened by series of fine retouches on the oblique part; 28 and 29, straight, worked back, one-edged blades, unretouched, often-used edge, back also straight, vertically retouched; 30, parallel-sided flake without retouch, but with used edge

Maski: 31, pointed backed blade, lateral margin blunted by steep secondary retouch; 32, crescentic backed blade, lateral margin blunted by steep secondary retouchings in crescentic shape; 33, lunate, lateral margin blunted by secondary retouchings, working-end almost fresh; 34, trapeze with use-marks on working-edge, transverse sides blunted by steep secondary retouchings; 35, long parallel-sided blades, butt-end showing diffused bulb of percussion and a bulbar scar, prepared striking-platform at right angles to the main flake-surface

Sanganakallu: 36, lunate, blunted along arc; 37 and 38, parallel-sided blades blunted on one side by retouch; 39 and 40, simple blade-flakes without retouch; 41, parallel-sided blade blunted by retouch; 42, simple blade-flake without retouch

Brahmagiri: 43, double-edged blade without retouch; 44, double-edged blade without retouch nicked for hafting; 45, simple serrated blade, 46, bent blade, bent end probably active part of blade; 47, blade with battered back; 48, beaked graver; 49, lunate or crescentic blade
Fig. 3. Artefacts from Province A—central and western India
The stone-axe industry of this Phase is highly developed and is closely associated with a rich microlithic industry, which, however, weakens as it approaches the upper Sub-phase. This rich urban microlithic Phase is characterized by parallel-sided blades with steep blunting on one side and blades with serrated edges showing fine polish, with a few lunates. On the basis of the parallel-sided blade-industry, Phase II corresponds to Brahmagiri I, even though the painted pottery makes its appearance at a late stage of this Phase.

G. RELATIONSHIP AND CHRONOLOGY

Despite local variations, the culture of central and western India, nurtured on the black cotton soil, as far down at Brahmagiri, is broadly homogeneous in its contents. At the southern Deccan sites—Brahmagiri, Sanganakallu, Kallur and Maski—it is dominated by a local neolithic industry characterized by the polished stone axe (fig. 2), while in the northern Deccan and central Indian sites—Sojanipur, Nagda, Maheswar, Navdatoli, Bahal, Prakash, Nasik, Jorwe, Nevasa, etc.—it is distinguished by a profusion of painted pottery; however, a microlithic industry of parallel-sided blades and polished axes (fig. 3), as at Nevasa, and burial-urns, as at Bahal and Jorwe, link both these regions, and a two-way traffic is thus discernible.

The tradition of painted pottery, copper-bronze celts and ribbon-flakes of this culture are closely paralleled by those of the Harappan culture in Kithiawad, though in pottery-types the notable correspondence is confined to the dish-on-stand, the handled saucepan and the carinated bowl, which occur in the post-Harappan levels at Rangpur,1 Lothal4 and Somnath3 Maheswar and Prakash, and to a double-pot obtained from Jorwe, which is analogous to a similar pot from Kot-Diji in Sind.4 All these serve to underline the links between the Harappa culture and the chalcolithic culture of central and western India.

The most remarkable evidence that links up the central and western Indian chalcolithic sites with the Harappan and post-Harappan sites of Kithiawad is the recurrence of a common flaking-tradition of the parallel-sided blades in the Karnatak, western India and West Pakistan. This is the technique of crested guiding-ridge flaking, the one employed in the mass-production of blades.

The classic site where such flakes and fluted cores are found is Le Grand Presigny in France. The technique is also observed in the Aegean, in Turkey and in the lower Indus region. At Le Grand Presigny this long-blade industry did not reach its zenith until the end of the neolithic times. In the Aegean, at Melos, this industry belongs to the Pre-Mycenaean period. In Turkey it occurs in the middle chalcolithic levels. In the Fertile Crescent it comes from the neolithic levels of Jericho, Jerash and Makertu.5

In India, the appearance of this technique at a transitional stage between the Neolithic and Copper-Bronze Ages is significant, as with the emergence of metal tools, the blade had a greater utility than the earlier series of lithic tools.

At Maheswar, the earlier historical phase, Period III, characterized by the black- and-red ware and the Northern Black Polished Ware, together with the punch-marked silver

1 Indian Archaeology 1953-54, p. 7; ibid., 1954-55, pp. 11-12.
3 Ibid., 1955-56, pp. 7-8; 1956-57, pp. 16-17.
4 Cf. Thapar, op. cit., p. 21.
coins, can be assigned to *circa* 200 to 400 B.C.

On the Brahmagiri evidence, the megalithic black-and-red ware has been dated as *circa* 200 B.C. The protohistoric phases of Brahmagiri are represented by a deposit 9 ft. thick. Wheeler suggested a mean accumulation rate of 3 to 4 ft. of occupation-soil in two centuries, and, at this rate, one obtains a duration of at least six hundred years or 1000 B.C. as the date proposed for the introduction of this culture.

Applying the same scale of computation for the 22-ft. thick chalcolithic deposit at Nagda, the duration works out to 1500 years, more than double of the span arrived at for the Brahmagiri chalcolithic phase, thus going to the beginning of the second millennium B.C. This would probably be in accord with the evidence at Rangpur, as the latest phase there saw the deteriorating Harappan culture transforming itself into one affiliated to the protohistoric culture of central and western India. This span would also account for the evolution of the parallel-sided blade-industry in this region.

At the majority of the sites in central and western India, the dominant parallel-sided blade-industry is accompanied by backed blades with crescents and trapezes of the hunting-type. This would mean the survival of the earlier microlithic phase that merged into the immigrating urban parallel-sided blade-industry of the chalcolithic-neolithic phase. The link is shown by the backed blades, as the steep retouch of these blades is borrowed from the earlier microlithic tradition extant in the geometric tools. It is significant that the blunted-backed blades are completely absent in the proto-neolithic parallel-sided blade-industries and also in the later Harappan and post-Harappan sites in the Indus basin and Kathiawad. In Kathiawad, the crescents in the blade-industry of the late Harappan phase have their chords much longer than their mesolithic counterparts. For this technological change in the parallel-sided blade-industry of central and western India one should presume a longer date for the evolution of this culture, going back probably to 2000 B.C. All these show that the protohistoric culture of the region is an immigrating culture of western origin and is deep-rooted.

4. PROVINCE B—SOUTHERN INDIA.

A distribution-map depicting the pointed-butt polished axe, characteristic of a Neolithic Age in India, shows the grouping in two clusters, viz., in south India (particularly concentrated in the Karnataka region) and in east India. They are absent in both the coastal regions. From a superficial resemblance of these pointed-butt axes of the two clusters, a north-east to south-west movement has been suggested for the neolithic axe culture. This is further supported by Haimendorf's Munda hypothesis that a late neolithic civilization with eastern affinities, associated with the same form of Austro-Asiatic tongue, permeated the older population of the Deccan. A further correlation is also shown in the affinity of the living megalithic culture of Assam with the Gadabas and Bondos of Orissa and the Marias of Bastar.

The older stratum of the neolithic age of India may, therefore, be represented by the pointed-butt stone axe. Since this type is not uniformly distributed in India but is profuse in the Karnataka and east India, with an intermediate regional gap between the Krishna and the Mahanadi basins, we are led to think in terms of two different neolithic

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1 Sankalia, etc., *op. cit.* (1958), p. 21.
3 Information from Shri S. R. Rao.
4 Haimendorf, *op. cit.*
provinces—a southern stone-axe culture concentrated in the Karnataka and an eastern one embracing Orissa, Bihar, Bengal and Assam. Climatically also, these are two different regions: the Karnataka area of the Deccan plateau falls in the arid region in the lee of the Western Ghats, while the eastern area is within the heavy-monsoon zone. Besides, the neolithic sites in both the regions are confined to the plateaux and are found very rarely in the alluvial flats. The reason for the detached distribution of the pointed-butt axes in the eastern half of India appears to be ecological.

A. The Karnataka

The largest surface-collections of neolithic artefacts were made in Bellary District by Bruce Foote, Richards, Knox, Jardine and Gompertz. Allchin drew up a complete picture of the neolithic industry of the north Karnataka region from a typological study of all the early collections. He made out three basic stone-working techniques—flaking, pecking and grinding—and found that pecking was rarely employed for edge-tools. While it was more common among rubbers and grinders, it was restricted to certain sizes of celts. Similarly, overall grinding was reserved for a few small and well-shaped axes. He pointed out that there was no clear evidence of any evolution in the application of these techniques in this region, for they were known from the earliest neolithic settlements. He said that in all probability they were derived from the neolithic stone-working techniques of the Middle East and Iran. In the range of tools are included axes, adzes, chopping-tools, chisels, wedges, scrapers, points, rubbers and grinders, hammer-stones and mace-heads. On the other hand, Brahmagiri and Sanganakallu show a neolithic axe culture evolving in Bellary from a protoneolithic phase to a highly-developed neolithic phase in stratigraphic sequence and in accordance with the surface-evidence of Allchin. Whether I A of Brahmagiri represents a true neolithic culture remains to be decided. Copper was introduced in such small quantities into this axe culture that it was ineffective in changing the main neolithic culture, economically and technologically. The occurrence of a flat copper celt in the mid-level of I B at Brahmagiri and the unique polished flat axe in stone lower still in I A can only show copying in stone of the copper flat celt already familiar in this Period.

Phases I of Sanganakallu and Pre-I of Brahmagiri (above, pp. 30 and 41) seem to lead to the regular neolithic industry characterized by grinding and polishing of the implements in Karnataka. Since the lower levels of Brahmagiri I and, derivatively, Sanganakallu II B are ascribed to 1000 B.C., the earlier Sub-phase of Phase II and Phase I of Sanganakallu must be far anterior to that date, specially as there is a sterile layer intervening in between.

The Karnataka complex is to be deemed a local industry developed on the soil, as it emanates from a crude post-palaeolithic (microlithic) flake-industry of the hunting-stage when axes were rare. This, in turn, develops into a rich axe-industry, absorbing a dominant parallel-sided blade-industry coming from the protohistoric culture of central and western India. This complex is essentially different from the eastern complex which is devoid of any association with microliths. The origin of the polished axe culture of the Karnataka should not be looked for in the Indus valley or in west Asia and Iran as conjectured by Allchin. The all-eastern origin suggested by Worman on

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1 Allchin, _op. cit._
2 _Ibid._
typological grounds\(^1\) does not also seem to be tenable for the reason that the eastern complex is quite different from that of the southern, which is characterized only by the pointed-butt axe and its variations. The culture should have come on the scene autochthonously round about 2000 B.C.

**B. Salem**

The next largest collection of polished axes farther south comes from the Shevroy hills in Salem District,\(^2\) where, as in Bellary, there are large dykes of basalt that provided the requisite raw material. A few celts have also been collected from beyond Salem. The total absence of celts in the region south of the Cauvery should be attributed to the rarity of basaltic dykes in that region. A flat stone axe, similar to the one from Brahmagiri 1 A, reported by Foote in the Shevroy hills may perhaps indicate the extension of the chalcolithic influence as far south as Salem.

**5. PROVINCE C—EASTERN INDIA**

The east-Indian neolithic complex can be grouped into two regions: Assam and Bengal-Bihar-Orissa. The analysis presented below is mainly based on the systematic study of Dani.\(^3\) Since the classification of neolithic celt-types in India and south-east Asia by Worman\(^4\) is hard to reconcile with actual tools, it is purely of academic and theoretical interest.

**A. Assam**

The neolithic types of Assam follow a pattern dictated by geographical factors: they can be best studied on a regional basis, as each group of tools of a particular region shows a distant kinship in material and form. The technique of manufacture is common in all this region, though the forms show variation from zone to zone. As the material was obtained generally in the form of flat slabs from stream-beds, very little chipping or flaking was necessary, battering or hammering and grinding or smoothing being sufficient to produce tools.

(i) The zones

The tool-types of Assam (fig. 4) fall into six zones.

(a) **Sadiya Frontier.**—Chief material jadeite; less typological variation than in Cachar hills; main types showing affinity with ground tools from Yunnan, also the nearest source of jadeite.

(b) **Naga Hills.**—Chief material gneiss; varied and distinctive tool-types, which, besides the common types found all over Assam, include the gouge-adze found abundantly

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\(^{1}\) Worman, op. cit.


\(^{3}\) In this context 'Bengal' means the region covered by West Bengal (India) and East Pakistan.

\(^{4}\) Dani, op. cit., p. 41.

\(^{5}\) Worman, op. cit.
Fig. 4

1, shouldered hoe, irregular and broad; 2, shouldered hoe, irregular and long; 3, axe with broad-cutting edge; 4, faceted hoe with long parallel sides; 5, faceted hoe, curvilinear; 6, shouldered hoe, regular and broad; 7, shouldered hoe, regular and long; 8, shouldered hoe with regular with crescent-shaped body; 9, faceted hoe with unifacially-ground edge; 10, gouge-adze; 11, rounded-butt axe, curvilinear; 12, rounded-butt axe with bifacially-ground median edge; 13, splayed axe; 14, tanged axe; 15, faceted hoe with bifacially-ground median edge; 16, rounded-butt axe, unifacially-ground edge-bevelled; 17, wedge-blade; 18, faceted tool, with side-notches
Fig. 4. Neoliths from Province C—Assam
in Burma, Malaya, Siam, Laos and Cambodia, along with tanged axe and the wedge-blade, special to this region.¹

(c) KHASI, GARO AND CACHAR HILLS.—Most of the types seemingly derived from Cachar hills; remarkably similar to the developed tools of upper Burma.

(f) Brahmaputra valley.—Material sandstone; tools, mostly from Tezpur District; made of smoothed pebbles.

(ii) Tool-types

(i) Faceted hoe.—This is a common tool in Assam, Chittagong, Yunnan and south-east Asia, where it is known as 'quadrangular adze'. It has an oblong cross-section. Three stages are involved in the manufacture: (a) the primary one, for rough-out; (b) the secondary one, for producing the normal hoe; and (c) the tertiary one, for producing the median cutting-edge. Five sub-types, none of them mentioned by Worman, are noted: (a) curvilinear; (b) bifacially-ground median edge; (c) unifacially-ground edge; (d) faceted with side-notches, found only in the Naga hills; and (e) long with parallel sides.

(ii) Shouldered hoe (spade-shaped celt).—Similar to the faceted hoe, the main variation here consists in the prolonging of the butt into a tenon for better hafting. In some, corners are right-angled by a process of wire-cutting or sawing; in others, the angle is obtuse or even curved at the junction, both ranging in length from $2\frac{1}{2}$ to $5\frac{1}{2}$ in. The regular rectilinear variety is confined to the Naga and Cachar hills, where it appears to be derived from Burma. The irregular (curvilinear) variety, on the other hand, is restricted to the Brahmaputra valley and the Khasi and Garo hills, where it appears to be the local imitation of the regular (rectilinear) variety. The curvilinear specimens show ovoid transverse sections and the rectilinear ones oblong. Here also five sub-varieties are recognized. While chipping and pecking can be seen in curvilinear ones, the rectilinear ones show high smoothing. The distribution of the shouldered hoe is confined to east India, Burma, Indo-China and other parts of south-east Asia. The rectilinear variety, however, shows a sporadic distribution in India, having been found by Ball in Dhalbhum in Bihar² and Baidyapur in Mayurbhanj, by Rivet-Carnac in central India,³ by Cammiade near the mouth of the Godavari,⁴ by Haimendorf in Hyderabad⁵ and by Worman in northern Mysore.⁶

(iii) Splayed axe.—Rare in Assam, it is found in only one variety, viz. bifacial median splayed cutting-edge with concave sides terminating in a narrow flat butt, the transverse section being nearly rectangular. The majority of these tools are completely smoothed and highly polished, their lengths varying from $2\frac{3}{4}$ to 6 in. The distribution is

¹This is confirmed by Kanti Pakrasi from his study of the collections in University of Gauhati and Assam State Museum, 'A study of some neolithic artefacts from Assam', Jour. Uni. Gauhati, VII (1956).

²V. Ball, 'On some stone implements of the Barmese type, found in Pargana Dhalbhum; District of Singhbum; Chota-Nagpur Division', Proc. Asiatic Soc. Bengal, 1875, pp. 118-20.


⁶Worman, op. cit.
confined to east India and south-east Asia. The stone examples appear to have been copied from a metal prototype. This is the most highly developed form of all in India, and the distribution definitely indicates that the examples are the most recent arrivals in India from the east.

(iv) Rounded-butt axe ('round axe' of Heine-Geldern).—This is long, thin axe, oval to lenticular in section, with rounded butt and convex unifacial cutting-edge. It is found, in different stages of pecking, chipping and smoothing, in the Garo hills and rarely in the Naga hills. Their lengths range from 8 to 9 in.

(v) Axe with broad cutting-edge.—A variant of (iv), the cutting-edge of this type is very broad, and the sides taper very acutely. This corresponds to Pakrasi's new find in the Garo and Sarania hills.

(vi) and (vii) Tanged axe and wedge-blade.—They are a distinct group by themselves, found mainly in the Naga hills and also in upper Burma. The former type, with slight shoulders at the butt, is probably influenced by shouldered hoe; they, however, differ from each other in their bifacial cutting-edge and rounded butt-form. A few specimens have been found in Mayurbhanj in Orissa.

(viii) Grooved hammer-stone.—The type occurs at Bismath in Tezpur District. It is found in Annam, and a few examples come from China.

Types (i) to (iii)—the faceted hoe, shouldered hoe and splayed axe—have a wide distribution in south-east Asia and south China: the Assam specimens belong to a general complex.

B. Bengal-Bihar-Orissa

The area falls into three zones: (a) Chittagong zone, south of the Khasi, Garo and Naga hills; (b) sub-Himalayan zone; and (c) Chhota-Nagpur Zone.

(a) Chittagong zone.—This is culturally related to Assam, since the few tools found here are of the faceted variety of Assam.

(b) Sub-Himalayan zone.—Very few tools are found on the hill-terracettes and slopes of the higher regions in Darjeeling. They are absent in the plains. The tool-varieties include the faceted tool, rounded-butt axe and wedge-shaped axe, as in Assam, besides the chisel and hammer-stone.

(c) Chhota-Nagpur zone.—Luckily many tools have been found in this zone under observed conditions by such workers as Anderson in the valley of Sanjai below the alluvium, Sen in the Sanjai valley and Bamal in Midnapore District, Ray in the terraces of Bongara in Manbhum, Sinha in south Manbhum, Lal at Ban-Asuria, Jashpur, Daspalla and Baidypur in Orissa, Mukherji at Deulbarh in Midnapore District and Nagar at Musanagar in Kanpur District.

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3 Sen, *op. cit.*
7 Indian Archaeology 1955-56, p. 69.
8 Ibid.
Fig. 5

Bengal: 3, rounded-butt axe; 4, shouldered celt; 8, smoothly-ground triangular celt with sharp and straight bevelled cutting-edge; 9, small oval ground celt with deeply-convex cutting-edge

Bihar: 1, bar-chisel, rough-chipped, unground; 2, chisel, cutting-edge unifacially ground; 5, chipped axe, broad convex cutting-edge; 6, wedge-shaped axe with broad ground cutting-edge and flat butt; 7, 'screw-driver' chisel, obliquely- and sharply-bevelled cutting-edge, margins of sides converging at both ends; 10, rounded-butt axe, bifacially ground, median cutting-edge, with blunt or thick butt-end; 11, rounded butt-axe, broad ground cutting-edge; 12, broken axe, triangular or sub-triangular, chipped, often ground on body, working-end missing; 13, rectangular chisel with flat butt, chipped and ground, sharp straight cutting-edge; 14, axe, ground and polished, asymmetrically convex cutting-edge with rectangular cross-section; 15, axe, elongated oval, completely chipped, straight cutting-edge with flat lenticular cross-section; 16, partially-chipped and polished celt with sharp axe-like appearance; 17, short and stout chisel, rectangular, ground and smoothed, oblique and bevelled cutting-edge; 18, axe, chipped, ground and polished, polishing found mostly on cutting-edge, convex cutting-edge; 19, grooved hammer-stone, finely polished; 20, grooved hammer stone, crude; 21, rounded butt-axe, with rounded butt somewhat pointed; 22, partially-ground and polished chisel unifacial, polishing restricted only to cutting-edge; 23, polished celt with convex cutting-edge; 24, polished celt, triangular in shape with convex cutting-edge
Fig. 5. Neoliths from Province C—Bengal-Bihar-Orissa
There appears to be a chalcolithic facies in the neolithic complex of this region. In southern Bihar the majority of the microlithic sites are associated with the copper belt, which starts 5 miles north of Chakradharpur and runs through Kharsawan and Seraikela across Dhalbhum through the Rakha mines to Ghatila on the Subarnarekha. Gordon says that heaps of copper slag and microliths lie in close proximity and that the presence of microlithic sites from Chakradharpur to Ghatila, including Talsa, Banabassa and Rakha mines, coincides so closely with the copper seam that it is difficult to suppose that they were not anciently associated. The pointed-but axes found at Talsa and Chandaburu on the copper seam are probably part of a chalcolithic-neolithic culture.

Sen and Ray found a non-geometric parallel-sided blade industry in the Sanjai valley adjoining a neolithic site at Chakradharpur and Bongara in Manbhum. A few blades show the blunted back and curved back. There are a few geometric shapes, like the lunate, semi-lunate and trapeze, and fluted cores. Though there is no pottery or copper tool or slag associated with these microliths, the appearance of ribbon-flake blades, reminiscent of the Harappan tradition, side by side with the earlier hunting-types, commonly seen in the Singrauli basin near Mirzapur or in the microlithic site of Birbhanpur in West Bengal, would still point to some connexion with the protohistoric phase of western and central India. Can the Tripuri industry (above, p. 37) be considered as a link connecting western India and the Chhota-Nagpur plateau?

The following types (fig. 5) are represented in the zone: (i) axe; (ii) wedge; (iii) chisel; (iv) perforated tool; (v) shouldered hoe; and (vi) hammer-stone. Three different techniques—chipping, pecking or hammering and grinding—have been used, either singly or in combination, to produce these tools.

(i) Axe.—Rounded butt, with median cutting-edge bifacially ground and the transverse section ovoid or lenticular. Predominant tool in Singhbhum and Manbhum; also found in Assam and in Kaimur and Banda.

(ii) Wedge.—Variant of the axe, the main difference being the pointed butt-end chipped transversely and ground, producing a flat butt.

(iii) Chisel.—Generally rectangular in cross-section with flat butt; cutting-edge (occasionally splayed) bifacially and unifacially ground. Reported by Sen in Singhbhum in Bihar and found by Mitra in the excavation at Jaugada in southern Orissa.

(iv) Perforated tool.—Circular or oval flat stones with a hole in the centre; worked from both faces; hardly any grinding, edges blunt.

(v) Shouldered hoe.—Found at Deulbarh in Midnapore District, Bongara in Manbhum District, Dhalbhum in Singhbhum District and Mayurbhanj, as also in Assam, central India, at the mouth of the Godavari, Hyderabad and northern Mysore.

(vi) Hammer-stone.—Generally an elongated pebble hardly showing any working. A number of grooved hammer-stones are found in the Kaimur hills.

A few other types come from the surface-collections of Bodding, Ray and others. The ‘bar-chisel’ is one such, reported by Lal at Ban-Asuria, Jashpur, Thakurani,

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1 Gordon, op. cit.
5 Indian Archaeology 1956-57, p. 30
Sitabhanji and Daspalla in Orissa’ and in the Santal Parganas in Bihar. It bears close similarity to the Malayan types, with the main difference that the latter are ground. There are miniature faceted tools in jadeite from Lohardaga near Ranchi,—a type not found on the mainland of south-east Asia but occurring in large numbers in the river-valley cultures of northern China and Yunnan. From Santal Parganas comes a thin-sectioned broad axe, which is abundantly met with in the Garo hills in Assam. Sen found a chisel of the ‘screw-driver’ type, unique in India, in Singhbhum.

The faceted tool, the shouldered hoe and splayed axe, so common in south-east Asia, came to India much later, as they are found sporadically without any archaeological context. The occurrence of the shouldered hoe inside the fortifications of Kausambi and at Sisupalgarh and Raigir is highly suggestive of a fairly late intrusion. In Assam, these types are notably in evidence, and they slowly immigrated from the neighbouring countries into the hilly regions of eastern India, where they were integrated with the indigenous industry. This is, to a certain extent, corroborated by the absence of these types in the first group of neolithic types of the Bengal-Bihar-Orissa, specially characterized by the rounded-butt axe simulating the pointed-butt axes of peninsular India. The sporadic distribution of these specialized tools in India further suggests that they may be regarded as imports, or, at best, as local imitations of foreign types, instead of being the products of a separate and distinct cultural grouping in India.

C. RELATIONSHIP AND CHRONOLOGY

In eastern India and all over south-east Asia (fig. 6), two different tool-traditions persisted side by side, unaffected by any microlithic (mesolithic) influence, in contrast to Provinces A and B. The first tradition of predominantly chipped and flaked stone tools—reminiscent of the palaeolithic—was the earlier one, uniformly distributed all over this heavy-monsoon region. Further, edge-grinding was a consistent feature of the flaked and chipped tools in south-east Asia, wherein we can see an intermingling of the two traditions in the Hoabinhian and Bacsonian in Indo-China and Kelantan in Malaya. This was the main cultural tradition of the early eastern neolithic, prior to the appearance of an independent second tradition belonging to the later neolithic, using predominantly ground, sawn and fully-smoothed tools.

The second tradition gains in importance as we proceed eastward from Chhota-Nagpur to Indo-China through Assam and Burma. The focus of this culture can be located in Malaya and Indo-China. Further, this tradition of grinding and sawing tools is associated with pottery in south-east Asia, suggesting an intrusion from outside. The later Somrongsen culture of the Indo-China indicates a link with the Hong Kong culture of south-east China and shows similarities with the Malayan.

Laos, Yunnan and Burma show typological similarities to Somrong Sen and Malayan cultures; yet there are differences. The shouldered hoe and gouge-adzes are absent in Yunann, but they link Laos and Burma with Malaya and Siam.

1 Lal, op. cit. (1953).
2 Dani, op. cit.
4 Tweedie, op. cit.; Colani, op. cit.
5 For Indo-China, see H. Mansuny, Stations prehistorique de Somrong Sen et de Lang-Prao (Cambodge) (Hanoi, 1902); also his papers in l’Anthropologie, XX (1909), pp. 531-43; Mem. Serv. Geol. Indo-Chine, 10, fasc. 1 (1923); ibid., 11, fasc. 2 (1924); ibid., 12, fasc. 1 (1925); and ibid., 12, fasc. 2 (1925); also Mansuny and M. Colani, in ibid., 12, fasc. 3 (1925).
FIG. 6

Hoa-Binh: 1, scraper with secondary retouch; 2, ground tool; 3, chopping tool; 4, coarse handaxe; 5, ground handaxe; 6, 'haches courtes'

Bac-Son: 7, handaxe; 8, chopper (unique); 9, shouldered hoe, showing sawing-technique; 10, faceted tool, showing sawing-technique

Burma: 11 and 12, socketed shouldered hoes; 13, rectangular shouldered hoe

Malaya: 14 and 15, flat celts, bifacially ground, with splayed cutting-edge; 16, long chisel (bar-celt) with splayed cutting-edge, unifacially ground; 17, chisel, bifacially ground, with splayed cutting-edge; 18, long shouldered hoe; 19, flat celt, with convex cutting-edge; 20, flat celt, unifacially ground
Fig. 6. Neoliths from south-east Asia
In south-east Asia, there is a distinct grouping of tools in the later phase; a single type of tool, such as the shouldered hoe, cannot be torn of its context and attributed to the Austro-Asiatics, speaking the Mon-Khmer group of languages. One variety of the chisel, viz. bar-chisel or adze, is particularly characteristic of the late tool-types of Malaya. Noone has suggested that these might have been used as plough-shares, especially as they are often found ‘unfinished’, i.e., flaked but not ground. They recur only in eastern India—in the hilly tracts of southern Bihar, West Bengal and northern Orissa—in the same complex as they are found in Malaya. On this evidence, a maritime communication seems likely. In the copper-hoard site of Gungeria in Madhya Pradesh and in the Ganga basin, the bar-celt, the shouldered hoe, the splayed axe and the long rectangular chisel are found together. They appear to have been copied from stone celts of similar shapes occurring in this region. There is, therefore, good reason to believe that the copper-hoard complex developed from their prototypes in stone in quick succession when metal began to replace stone. In the Ganga basin, Lal observed an ill-fired thick ochre-coloured pottery as a likely associate of the copper tools, and if it is to be equated with that at Hastinapur lying below the Painted Grey Ware, it follows that the copper hoards of the Ganga basin could be pre-Aryan, assignable to about 1500 B.C.

The earliest evidence of the shouldered hoe in bronze comes from Anyang in Hupei, from the burials of the Yin dynasty (1300 to 1026 B.C.). A few stone specimens outside the graves come from Honan, and from this cultural area of China comes the faceted square-cut axe which has been obtained from a context where metal was in use. The infiltration of this northern Chinese culture into the southern countries is evident in Szechwan and Fukien. There is no doubt that it penetrated further south, into south-east Asia, where it is recognized as the developed neolithic culture. It follows that the appearance of metallic tradition in south-east Asia can hardly be earlier than the one at Anyang. On the other hand, the evidence from Hong Kong, Somrongsen and Malaya indicates a date somewhere about the second half of the first millennium B.C. for its existence in these regions. The persistence of this tradition even when iron and bronze were introduced is known from Malaya and Indo-China. At Kelantan in Malaya, the later group of ground tools with pottery lay under a complex in which Chinese glazed ware was found. A clue is given by the find of a few sherds of a typical highly-polished black ware (said to be ‘Greek or Attic’) in the upper levels of the Kelantan sequence, dated between the fourth to second centuries B.C. Dani says that its date may even come down to the first or second century A.D., if it is of the same type found at Arikamedu in India.

The shouldered type of hoe has been found at Kausambi and Rajgir, where the North Black Polished Ware is coeval with it; the highly-polished black ware of the Kelantan sequence may be re-examined in this light. At Jaugada in southern Orissa, Mitra found a stone axe in a sandy layer, seemingly associated with black-and-red ware. The neolithic industry of the place is characterized by a rounded-butte axe with a straight cutting-edge and two rectangular chisels with quadrangular section—mostly surface-finds. The seeming association of eastern neolithic type of axes with black-and-red ware at Jaugada

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2. B. B. Lal, 'Further copper hoards from the Gangetic basin and a review of the problem', *Ancient India*, no. 7 (1951), pp. 20-39.
7. See above, p. 48, n. 5.
has been confirmed at Sonpur in Bihar. The types of axes are a tiny celt, a rounded-butt type with thin lenticular section and a rectangular adze with quadrangular section. The find of a neolithic axe at Vaiśāli by Krishna Deva and Mishra can also be attributed to the period of the N.B.P. Ware. Thus, in eastern India, we have an association of the black-and-red ware and the N.B.P. Ware with the late neolithic complex of south-east Asia; this phase persisted even after iron and punch-marked coins were introduced. This is comparable with Malaya and Indo-China.

6. PROVINCE D—KASHMIR

Outside the Deccan and eastern India and unconnected with either, we have a neolithic site at Burzahom in Kashmir, where the pointed-butt axes with hand-made buff and grey ware found by De Terra in a post-glacial loess, 9 ft. deep. This industry was succeeded by the post-Harappan Jhangar culture, characterized by a black polished ware and sherds with incised geometric design.

Can it be that the neolithic phase of Kile II of Kile Gul Mohammed in Baluchistan, assigned to the fourth millennium B.C., inspired the loessic neolithic industry of Kashmir? Between Baluchistan and Kashmir, the only neolithic pointed-butt axe comes from a site on the banks of the Indus opposite Shadipur near Attock. The rest of the cels, found at Harappa and Mohenjo-daro and at Nal in Baluchistan, definitely occur in Metal Age levels. Thus, the north-Indian culture can be much earlier than the Karnatak culture and is apparently not influenced by the eastern Indian culture.

7. EPILOGUE

Summing up the facts stated above, we have in India a neolithic pattern showing four Provinces—A, B, C and D. Province A is chalcolithic in character and is restricted to western Madhya Pradesh and western India, co-extensive with the Deccan Trap region. This complex is characterized by parallel-sided ribbon-flake blades, painted pottery and copper artefacts of post-Harappan facies of western origin. As it comes closer to the Karnatak region in the south, it absorbs the polished stone axes of the second Province, B, spread all over the south. The urban parallel-blade industry is further galvanized by the earlier hunting-type of microliths, characterized by the lunates and trapezes with steep retouch, which was changing itself into the neolithic—as we see in Gujarat. This galvanization has become very patent in the blunted-backed blades that persist side by side with ribbon-flakes. It is interesting to note that such an impact did not take place in the later Harappan sites of Kathiawad, just outside Province A.

Province B is centred in the Karnatak in south India, away from the Deccan Trap region. It is characterized by the pointed-butt type of axe, which apparently originated in the region itself. In its earlier phase, it is related to the post-palaeolithic flaking-technique, arising in a microlithic milieu. Later, it absorbed the post-Harappan ribbon-flake, painted pottery and copper celt traits of Province A.

Province C is restricted to east India, where we see three phases overlapping each other. The earliest phase is of the rounded-butt axe, showing chipping, grinding and

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1Information from Shri Krishna Deva and Shri Vijayakanta Mishra.
2[See above, p. 28, n. 3, and p. 34, n. 5. The present excavation at Burzahom has not in any way confirmed what was said by De Terra about the stratification of the site or about its pottery.—Ed.]
polishing. It does not show any relationship with the pre-existing microlithic culture of
the region, unlike the Karnatak and central and western India. The second phase is
characterized by faceted and square-cut tools involving a metallic technique of manufacture.
The origin of the second two phases has to be located in the south-east Asia—in Indo-
China and Malaya, where they are found in real archaeological complexes. The first
phase shows a very great antiquity in south-east Asia; the rounded-butt type of axe has
spread uniformly from that region to Chhota-Nagpur. The second phase, characterized
by faceted square-cut tools, shows an irregular distribution in eastern India. In Assam
we have the faceted tools of Malaya along with the shouldered hoe. In Bengal-Bihar-
Orissa, the faceted type of tool is absent, but the shouldered hoe, the bar-celt and the
rectangular chisel with quadrangular section are similar to those of Malaya, thus showing a
maritime influence. This phase was closely followed by the third, with its copper hoards of
the Ganga basin and Gungeria, which exhibit, in metal, the same type of tools as in stone
(including the bar-celt) found in Chhota-Nagpur. This phase seems to have come as a
second wave round about fourth century B.C., when the Northern Black Polished Ware
and black-and-red ware were well-established in India. Province C has not materially
affected Province B except for the sporadic distribution of the regular shouldered hoe at a
few places in the later.

Province D had a distinct culture, probably to be traced to Baluchistan.

The picture I have outlined above is largely speculative, and the most that I hope
for is that it will ultimately stimulate discussion. But one thing is clear: without being
unduly influenced by a *mirage orientale* for the neolithic origin of India, we have evolved
our own neolithic pattern of India, influenced partly by a west-Asian neolithic culture, by
the Harappa culture and by the south-east Asian neolithic culture, the rest of autochthonous
origin. Further excavations in the four different regions, especially in east India, will make
us understand better the new pattern that is beginning to appear as a result of the brilliant
work done in recent years.

[Received on the 15th July 1959.—Ed.]