REVIEW ARTICLE

THREE PERSPECTIVES ON COASTAL ARCHAEOLOGY AND A VIEW FROM 64° NORTH¹

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I

Coastal archaeology in Eastern Australia is a collection of sixteen papers given at the Australian Archaeological Association Conference at Valla, New South Wales, in 1980. According to the editor's introduction a broad and good cross section of modern Australian archaeology is provided here despite the focus on east coast prehistory. For the most part the papers present results of recent fieldwork carried out on the coast from New South Wales in the north to Bass Strait and Tasmania in the south. Six of the papers are concerned with various aspects of island archaeology, two deal directly with stone technology, two with osteology and two are syntheses of regional and chronological data.

Taking the papers as a whole, one recurring theme which is also one of the most interesting and important taken up here is environmental and technological change. In most instances this has been handled in connection with changes in shell midden composition over time and associated with the apparent impact that the introduction of the fish hook had on procurement patterns. Barz, who reports on an estuarine midden site at Tweed Heads, New South Wales, sees the transition from oysters to whelks and cockles as indicative of the rapid silting up of the estuary. There is also a respective change in fish types and sizes with a responsive increase in terrestrial exploitation — this being the last expression of traditional Aboriginal lifestyle in the area. Blackwell makes similar observations for a Bowen Island midden off the southern coast of New South Wales — in this case gastropod dominance gives way to bivalves.

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¹ *Coastal archaeology in Eastern Australia. Proceedings of the 1980 Valla Conference on Australian Prehistory.* Edited by Sandra Bowdler, Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra, 1982. Pp. ix + 151. p.b. \$10.00.
Coast and estuary. Archaeological investigations on the north coast of New South Wales at Wombah and Schnapper Point. By Isabel McBryde with contributions by V.M. Campbell, K.H. Lane, K. McQueen and N.A. Wakefield. Australian Institute of Aboriginal Studies, New Series no. 24, Canberra, 1982. Pp. vi + 88. 6 appendices. 20 plates, 35 figs, 35 tables. p.b. \$5.95.
Shell bed to shell midden. By Betty Meehan. Australian Institute of Aboriginal Studies, Canberra, 1982. Pp. x + 189. 40 plates, 33 tables, 32 figures. h.c. \$15.95. p.b. \$10.95.

This takes place between 1200-500 B.P. and is here explained using Bowdler's hypothesis that the introduction of the fish hook changed the womens' collecting patterns. Less time was spent collecting the larger but more time-consuming gastropods as women assumed more responsibility for fishing, a previously male-dominated activity. Changes in fish types and sizes add credence to the hypothesis as seen by the paralleled sites of Bass Point and Cemetery Point. Finally, the now apparent intensive exploitation of islands could perhaps be due to population pressure on the mainland, a proposal forwarded by Hughes and Lampert in another article.

Hall follows similar lines of reasoning for Moreton Bay, south-east Queensland. The very rich and abundant coastal resources of this bay are described using ethnohistorical references and ecological data. Survey and excavation data in the region which is today 'virtually paved over' do not conflict with this impression. Settlement goes back to at least 4500 B.P. Changes in sea levels between 6000-3000 B.P. led to the silting up of the bay and the formation of tidal flats, sea grass beds and mangroves, the basis of a rich vertebrate and invertebrate fauna upon which those people thrived. Bowdler and Lourandos, who write of Bass Strait farthest to the south (north-western Tasmania and Cape Otway, south-western Victoria), note some changes in shellfish as well. At Cave Bay Cave on Hunter Island between 6600-4000 B.P. there is an emphasis on limpets and small crabs which in time give way to abalone and also crayfish. According to them this was perhaps due to changes in fishing strategies. Bowdler argues that the bone awls found there were used in making fishing nets and the selectivity of fish types and sizes indicates use of nets. At the Seal Point site seal bones decrease in time as fishing increases, evidencing varying levels of sedentism, nomadism and perhaps changes in scheduling practices. The similarities between north-western Tasmania and south-western Victoria relate partly to similar environments and partly to early historical connections. One common feature is the bone awl/fishing connection which ceased at ca 3500 B.P. on Tasmania but continued in Australia. The economic strategy, based on varied resources in both regions suggests that fishing played a relatively minor role, the loss of which has been overemphasised in the literature.

Fishing is a major theme in two of the papers: Dyall writes of the Newcastle coastline (New South Wales) and Campbell has studied the fish traps 'automatic seafood retrieval systems' on Hinchbrook Island, North Queensland. The richness of this island in food resources supported most or all of the Bandjin tribe. The remarkable fishtrap at Scraggy Point consists of raceways, loops, pools, funnels, breakwaters, arrowheads, and covers an area of some 21,600 m². This trap which encompasses at least 3 systems evidences considerable planning and longterm proceeds — the traps still function and experiments could render information as to their productivity. A nearby midden evidences a change over time from oyster dominance to nerite; fish remains were not yet analysed. This trap/midden association offers a unique opportunity for study. Coleman also emphasises the importance of fish traps in her paper on the north coast of New South Wales. Using ethnohistorical evidence she reconstructs a picture not of mobile and scattered populations, but semi-sedentary and rather dense settlement.

Dyall's paper goes beyond a report of fieldwork at the Birubi and other sites in 1978-1979 to perceptive observations on fishing on the Newcastle coastline (New

South Wales). Midden deposits bagged at the site and sifted through later, have provided extensive material for study. He discussed the selective loss of bone on sites and aspects of angling. Most fish which were caught are in fact not listed in the angling books and fish are certainly not limited to their ideal habitats. The best practice to follow when judging fishing is to consider the assemblage as a whole. Experimentation with hooks and baits etc can shed much light on such problems.

In the area of technology, Hiscock, using material collected from the Mumballa Creek area (New South Wales), directs attention to quartz technology which is still poorly studied and understood. Of importance in this connection is the problem of bipolar technology which he addresses using concepts of inertia and depositional thresholds, reduction pathways etc. Stockton approaches an equally difficult and important problem – large tool assemblages in surface collections. Using comparative material he finds that they antedate the small tool (Bondaian) tradition but also continue into recent times. Surface finds of such implements are not automatically of older date.

Island archaeology is discussed in papers by Morwood, Rowland, Bowdler and Lourandos, Blackwell, O'Connor and Geering. Morwood demonstrates, using the case of Wild Duck Island off central Queensland, how rich these islands can be in archaeological remains and with the increasing tourist exploitation how critical their plight has become. O'Connor shows how Hunter Island off north-western Tasmania was effectively exploited in the past using a mid-island shell midden settlement and resource area within reach of two coasts (the Stockyard Site). This is seen as representative of a 'small island strategy'. Excavation was partly directed toward collecting large faunal samples (in particular the Tasmanian pademelon or Scrub Wallaby) to use as a seasonal indicator. Although ethnohistorical sources only indicated seasonal use of the island, a wide variety of resources were apparently utilised and site location represents a balance of these interests.

Geering's paper is an analysis of the pademelon jaw material (using a mandibular molar index) from this same site. Using seasonal age compositions as a basis the summer season is predominant but results are not seen as conclusive since this method does not function equally well on young and old individuals. The last island paper, by Rowland, is a presentation of the remarkable Keppel Islands' population which showed quite distinctive racial characteristics. These people lacked canoes, stone axes and boomerangs. They were truly specialised marine exploiters, unique from the mainland but not in relation to inlanders to the north. This uniqueness is probably due to isolation more than anything else and Rowland suggests we are perhaps looking at 'strandloping Austronesians', part of the island adaptation in the Southern Great Barrier Reef Province.

Although islands and coasts were the focus of the conference, one paper, by Flood, reminds us using documented tribal divisions and stone technology, that coastal archaeology cannot be divorced from the interior. There is in fact a correlation between Tindale's coastal tribal boundaries and interior drainage patterns. Last but not least, a paper by Hughes and Lampert attempts an overview of settlement for the southern coast of New South Wales. Using roof-fall rates (seemingly connected with intensity of site occupation), windblown sand and numbers of artifacts in rock shelters, they sketch long-term trends of site occupation/population. They observe a low but

continually increasing number of sites from before 8000 B.P. Between 8000-6000 B.P. new site locations start appearing in conjunction with the arrival of the sea at present levels. From then on there are progressively increasing numbers of sites with an increase on the order of two to three-fold over the last 5000 years for new sites and a 6-10 fold increase in intensity for sites already in use. This pattern is compared with material from the Sydney area and found in agreement. While increased use of marine resources can in part explain the growth at 5000 B.P., after 3000 B.P. the population growth is seen by the authors as due to other causes. Various sources of error are discussed including tool types and numbers and site visibility but it is concluded that only a population increase can explain the trends.

The research results presented at the Valla conference have raised a number of fundamental questions concerning coastal adaptation and prehistoric settlement in Australia. Most of this research is in its incipient stages, however, and one must see this publication as a progress report, the interpretations as working hypotheses. Undoubtedly much more solid knowledge of eastern Australian coastal archaeology has been gained since 1980. Considering the nature of this volume it is for this very reason lamentable that the discussions at the conference were not also published. This would have greatly enhanced its value for Australian archaeologists and elucidated the problems to outside readers. Hopefully this will not be overlooked in future.

There are two marked methodological emphases, the ethnohistorical approach and the use of ecological data (primarily zoological analysis) as a basis for understanding economic and cultural change. The former is one of the known strengths of Australian archaeology, here put to much critical use. Even so, almost more space was given to zoological identifications in the individual papers. While this is a positive effort vis-a-vis 'the economic approach to prehistory', this data will require much more critical testing before cultural-historical use can be made of it. (The considerable sources of error involved are illuminated by McBryde's and Meehan's publications.)

There seems also to be vague knowledge of cultural affinity and chronology. Many of the analysed cultural deposits have been dated directly or indirectly using single radiocarbon dates, a highly uncertain sampling and statistical procedure. This problem is simply illustrated by Campbells' article: the two dates from the Scraggy Point midden are anomalous — whereas single dates never are! Another serious source of error using marine samples is that of 'apparent age' due to sea water contamination, which should be a matter of concern here. Although chronology may not be the end of this research, ecological and cultural change can hardly be understood without it.

These papers reveal ambitious and thoughtful studies by enthusiastic and independent thinking archaeologists pursuing one of the most interesting and lesser known aspect of Australian archaeology. The articles are concisely written, refreshingly free of extraneous jargon and the illustrations are quite adequate for a report of this kind.

II

The second perspective in coastal archaeology *Coast and Estuary*, as the title indicates, deals with two sites on the northern coast of New South Wales. The first 50 pages deal with the Wombah site on the Clarence River estuary, a shell midden investigated in 1963 and 1964. The Schnapper Point site is a dense scatter of stone

artifacts which had been exposed among coastal sand dunes near Evans Head by heavy storms in 1971. It was mapped and collected that same year.

In the introduction the author defines the goals and significance of these sites. This coastal region with its characteristic wide resource-rich estuaries is known historically as supporting a dense Aboriginal population. It is an ideal region for archaeological studies of coastal adaptation and utilisation. The Schnapper Point site, only recently exposed and therefore not previously collected, provided a good opportunity to examine stone technology as well as a challenge — how to assign a cultural context to surface scatters?

Both investigations were salvage operations but McBryde does her best to extract information from them. She is certainly adding to the data base with these reports but the real value of the work is in greater measure the source-critical analysis she makes of these site types. Midden accumulation is clearly no simple matter. Besides being dumping grounds, often *peripheral* to occupation sites, they show considerable variation in size, thickness and composition. They consist of aggregates of many lenses of shell and she makes the point that correlation of stratigraphic sequences from pit to pit may not always be valid or even possible. Indeed, what is typical of such a site? Can one draw general conclusions from a single trench or column?

In excavation she employed rows of 5 foot squares rather than a trench in order to maximise the number of faces explored at any one time. At Wombah this approach was implemented in defining different activity deposits as well as the differential growth of the midden. Certain traces of structures were not observed in the midden although artifact concentrations, ashy lenses and bands of crushed shell as well as some possible postholes could indicate hut location. Ethnographic studies (cf. Meehan) and experimentation can serve an important function here by helping to define the character of structure types and their remains. The stone artifacts at Wombah, although few in number, reflect the major trends of the eastern New South Wales sequence with Bondaian elements in the first millennium B.C. but gradually becoming less important over time. The most recent material includes retouched glass of 19th century date. In addition to components such as the uniface pebble tools and backed blades, special attention was given to bipolar pieces (flake fabricators). The function of this relatively important artifact at Wombah (they seem to be more common on coastal sites) is examined. Although the general opinion today is that these bipolar pieces are nothing more than residual cores, the lack of local evidence for stone armed 'death spears' and the like leads the author to question this interpretation, in north-eastern New South Wales at least. The ethnographic evidence speaks instead of a wide range of wooden tools suggesting these pieces were chisels. This question is nevertheless left open. Whatever the functional interpretations, the use of greywacke for edge ground artifacts at Wombah shows that not only local stones were used but those from farther up river — an important indication of exchange and/or seasonal movement by these people (refer McQueen's contribution for an analysis of local chalcedonies). The stone tool assemblage is in fact non-distinctive as far as coastal adaptation is concerned and there is nothing which seems to relate to fishing — fish bones were not abundant on the site.

Wombah was situated back from the main river and by a small tidal creek. Dense rainforest vegetation behind the site could have forced concentration on the river and

estuary. Curiously, however, a pollen sample from the cultural deposits showed a dominance of grasses and no arboreal pollen, but the potential sources of error are considered to be too great to make this binding.

The overall evidence indicates that the collecting of oysters was the primary economic focus. Using flesh weights for the estimated volume of oysters, average daily consumption and the like, a population of 24.3 is estimated for Wombah. For an annual visit over the period of ca 2900 years estimated at the site, the occupation would only have been a few days at a time. This is unlikely, but the point is made that site occupation must have been of brief duration and undoubtedly seasonal. Other evidence — ethnohistorical, the ground stone axes, inland finds of shells — suggest that this exploitation encompasses the Clarence river valley drainage as well. The coastal region was probably used between September and November, the prime oyster season.

McBryde is careful in her interpretations of population estimates, seeing them more as academic exercises rather than accurate reconstructions. This is in line with her basic and most salient points: (1) We just know too little of the processes and complexities of midden formation. (2) The chronology of even this rather well dated site is necessarily coarse; we cannot therefore determine actual length of any one seasonal stay or assume continuity for that matter. (3) Shifts in site location (large and small) and changes in group size can have been frequent and quite random in character. They do not necessarily relate to changes in resource utilisation and depletion. (4) Lastly, a number of food resources may have left little or no traces. Among these are plant foods and especially fish which are historically known as having been important. Very few bones were preserved (refer Wakefield's contribution). One highlight is a find of one canine tooth dated to 3230 ± 100 B.P. making it the oldest dated archaeological dingo recovered so far in Australia. The Wombah site, it is suggested, should not be seen as an entity in itself but as one focus of a larger occupation site. The middens merge and overlap forming an almost continuous band of locales.

A particularly insightful contribution to this study is V.M. Campbell's analysis of shell content at Wombah. The question of seasonality and ecological change are approached along with questions of shellfish utilisation over time. Sampling was carried out using columns and so-called grab samples and a critical analysis is made of the deposits. Of special interest are conclusions which relate changes in shell composition to human exploitation. Decreases in numbers of oysters over time are correlated with valve length and weight. Continued human exploitation of the larger oysters led to a rapid turnover of age groups and thus an overall decrease in shell size. The beds were not depleted, however. They continued to be used and in fact valve size remained well above modern samples. The change in shell composition is thus not seen as having been due to environmental change, rather, 'the explanation appears to be a cultural one' (p.48). This interpretation conflicts with a number of conclusions presented at the Valla Conference. Changes in midden (oyster) composition over time are mostly attributed to environmental causes (for example silting up of the estuaries). Needless to say, this observation is of great theoretical significance for archaeological interpretation. The problems are complex and much more critical analysis is needed to define and segregate the cultural aspects of midden remains.

The last section of this publication treats the Schnapper Point site and includes appendices on petrology (McQueen), nearby midden sites (V.M. Campbell) and historical evidence for mining at Schnapper Point during the 19th and 20th centuries (K.H. Lane). As mentioned earlier Schnapper Point is important by virtue of being only recently exposed and thereby protected from collectors. The point is a rocky coastal headland south of the Evans River, a mythological site of the Bandjalang Tribe.

The large exposed surface provided a collection of material. Seven distinct areas were sampled. No traces of settlement were discerned, indicating that this was a specialised stone tool manufacturing site. Statistical comparisons of artifacts (pebble tools, elouera, edge ground artifacts, scrapers) with other north coast New South Wales sites, including Wombah, suggest a dating to the recent past (17th-18th centuries A.D.), a conclusion supported by C-14 dates of nearby middens. Interestingly enough, geological data suggest that periods of extreme storminess 300-500 years ago may have shifted the dunes and exposed the pebble-rich Pleistocene beach, thus opening it for exploitation. Finds of pipi shells in the contemporary middens indicate that the sandy beaches provided local food resources. This well-preserved site adds yet another important technological and chronological dimension to the archaeology of this coastal region.

III

The last publication, *Shell bed to shell midden* contributes to coastal archaeology on an entirely different level. This is an account and analysis of the Anbarra people of Arnhem land in the Northern Territory of Australia. These Gidjingali speaking people live by the mouth of the Blyth River and when investigated by Meehan 1972-73 were actively involved in shellfish collecting. These 400 people are divided into four loosely knit communities. They utilised the region from various home bases and very numerous 'dinnertime camps'. Of the four groups the Anbarra were described by an informant as sitting at the mouth of the river living off the abundant resources – the bourgeoisie of the an-gatja Wana! The opportunity to assess the nature of their economy, in particular the role of women, was exceptional – it was widely believed that fully functioning hunting and gathering societies no longer existed in Australia. So, although originally planning an archaeological project, Meehan shifted to ethnography when confronted with this opportunity for study.

The book consists of 10 chapters. Chapters 1-4 give a background and introduction to shellfishing in history, the Gidjingali people and their region, as well as their year, 1972-73. Chapter 5 deals with aspects of shellfish classification, theirs and ours, chapters 6 to 9, patterns of predation, collection, cooking and disposal, hunting performances and the role of shellfish in their diet. Chapter 10 relates these findings to archaeological evidence in this and other areas as well as the effects of an eco-disaster in 1973-74.

The exploitation by a group of Anbarra (an average of 34 people) of the available shellfish environments (sandy beaches and mudflats, mangroves and rocky shores) is documented for one year. Some 30 species of shellfish were collected on 194 (58%) of 334 days of observation. The wet season (November to March) was the period of highest gathering frequency although shellfish were collected year-round. A purely cultural activity could nevertheless alter the pattern. The Kunappi ceremony, for

example, kept the men so occupied on a dry season camp that the women had to increase shellfish collecting to a level above that for a normal wet season settlement. Bivalves were greatly preferred over gastropods (98% by weight) but the latter were regularly collected and consumed as *hors d'oeuvres*. Although over half the number of species eaten in a year could be collected on any one day, each gathering expedition was normally directed to only one species. It was common practice to clean or consume the shellfish at dinnertime camps or processing sites which were located closer to the shellbeds than the home camps. Shellfish remains at the home bases thus represent only a small fraction of the total amount eaten. Shellfish functioned as a staple food, a subsidiary food, snack and alternative food. Although it was calculated that shellfish only contributed a monthly average of 10%-30% by meat weight, 6% to 17% by energy, for the year, they were a dependable and less opportunistic energy source than that provided by hunting and even many types of fishing.

The Anbarra were affluent 'hunters' with high gastronomic standards and their diet (energy intake) and health were good by standards for Australia, comparative peoples and according to recommended daily allowances. Of equal significance is the ease with which this womens' activity fulfilled energy requirements. Only an average of two hours was spent gathering each day, during which an equivalent of 2000 kcal was obtained. The rest of the day was free for other pursuits. Besides collecting shellfish, the women hunted goannas and freshwater turtles. The men provided fish, birds and mammals. For the coastal Anbarra, animal and vegetable foods were of about equal importance.

Meehan's observations on consumption and disposal patterns are, needless to say, of special interest to archaeology. Disposal at the home camps was complex and bring to mind McBryde's analyses of the Wombah midden . . .

Various parts of base camps are continually being moved, distances ranging from a few metres to several hundred metres . . . At regular intervals, every week or two, the entire camp is cleaned up with rakes, sticks or feet. The rubbish is dumped in various places around the periphery of the hearth complex, usually in areas that are unimportant for use and access . . . This process of scraping and piling continues as long as the camp is occupied. Sometimes debris from a previous occupation is discovered and incorporated into the contemporary rubbish heap (p.114).

On processing sites it is common to find only a single shellfish species — a reflection of the collecting strategy. Dinnertime camps, like home bases, were also complex and shell materials was repeatedly redistributed and the deposits mixed. Anbarra males eat more flesh than the women and often eat larger quantities of their own catches (fish and wallabies) at their dinnertime camps. In my opinion, this can very well be hypothesised as explaining why so few fish and mammal bones were found on sites like Wombah (cf McBryde p.34). The shell middens are primarily reflections of female economy, and only part of it at that!

Meehan relates her findings to older midden deposits in the region, those of 'dead men', and finds their structure to be similar to those of modern Anbarra camps although shellfish frequencies are quite different. The latter is true of even older midden mounds 'dreaming mounds'. The same shell types are represented but in very different proportions. The reasons for this are not speculated on other than saying that they probably relate to an older and different coastline.

Comparisons with other archaeological sites are also briefly made, most notably Galatea Bay in New Zealand. Shawcross has put an extreme economic emphasis on shellfish (45% of the energy), requiring gathering at 10 times the daily Anbarra rate. Meehan suggests that unless some mechanical aid (?) were available in New Zealand, these figures need revision. On a positive note, Clark's 1975 calculations on an Ertebølle midden are seen as more realistic and in line with the Anbarra model — 5-16% of the energy derived from shellfish for a group of 20-24 people occupying the site for 6 months.

Last but not least is an account given of the Anbarra response to the destruction of the main shellfish resources by storms in 1973-74. They simply shifted around their other resources (fish, turtles, goannas, wallabies and vegetable food) although shellfish were never completely abandoned. They were evidently fully aware and prepared for such disasters — shellfish gathering was not as essential to their economy as it appeared in 1972-73. This implies that 'economic change' is a *mechanism* of survival for these people, not in terms of centuries but on a yearly and seasonal basis. Economic change as an historical event is perhaps not as important as we archaeologists conceive it!

Meehan has made a major contribution to archaeology with this ethnographic study. Her work is full of the kind of hard data which we need, particularly within the area of coastal archaeology. As so many times before, Australia has provided invaluable insight into the workings of hunting and gathering societies. These are real people and Meehan has written of them with humour, perception and sensitivity. Finally, this is above all a rare ethnographic study by a woman about women. The author, with all right, claims that the ubiquitous shell midden is a fitting monument to the unappreciated contribution made by women to the maintenance of human society.

IV

In summary, these three works complement each other by adding different dimensions to questions of coastal adaptation. The Valla Conference presents an overview of the 'raw material' being produced by archaeological field work in eastern Australia and the directions being taken to synthesise and interpret it. McBryde's report illuminates a number of source-critical aspects of coastal archaeology and, lastly, Meehan's investigation of the Aborigines of the Arnhem Land coast provides invaluable insight into the actual workings of a coastal gathering society. Although much of the information contained in these books is of interest primarily to Australian archaeologists, they have made very stimulating reading from both an American and North European perspective. The problems of coastal adaptation are remarkably similar which makes these contributions of value far beyond the coasts of Australia, even where I sit now at 64 degrees north latitude.