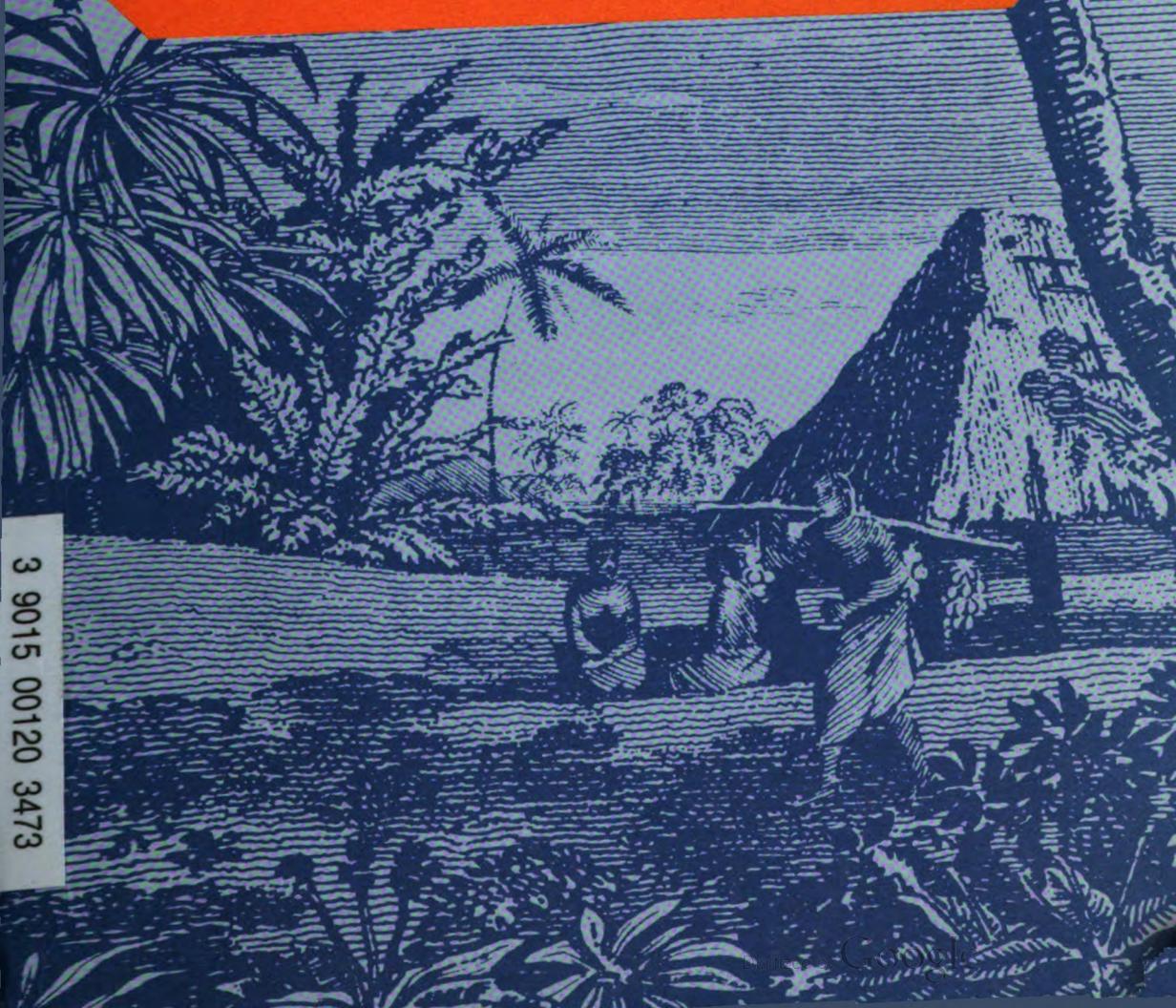


The Australian National University
Pacific Research Monograph Number Eight

The *Hiri* in History
Further aspects of long distance
Motu trade in Central Papua

Tom Dutton editor



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Summary

In days gone by some of the Motu-speaking peoples around Port Moresby used to go on annual trading expeditions to the Gulf of Papua. There they would exchange with the inhabitants of that area pots and other valuables for sago and canoe logs. These expeditions were called *hiri*, and were not only spectacular in terms of the number, nature and size of the sailing craft involved and the cargoes they carried but also very important economically and in other ways to the Motu and others directly or indirectly involved. Despite this importance, however, and despite the fact that the main aspects of this trade have been known for a long time, there are still many aspects of it about which not so much is known, or which have not been recorded. Some of these aspects involve empirical questions which have to do with the way the *hiri* were organized and operated, particularly at the inter-personal level; others are historical questions of unknown depth which can only be answered, if at all, by painstaking research involving investigators from a number of disciplines.

Research into both these areas is progressing steadily, and it is the purpose of this volume to present some of the results of this activity. The six papers published here cover socio-economic, religious, linguistic and prehistoric aspects of the *hiri*.

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Glossary of most important *hiri* and other terms
used in this monograph

- ageva* shell beads; shell necklace
- asi* hollowed-out log for *lagatoi* hull
- autubua* mast
- baditauna* (pl. *baditaudia*) organizer of a *hiri* and captain of a *lagatoi*; leading holy man on *lagatoi*
- Bogebada lagatoi* name
- daiva* short-haul *hiri* to Austronesian language-speaking villages close to the eastern end of the Gulf of Papua; also sometimes used as equivalent of *hirilata*
- darima* outrigger; outrigger side of canoe
- dikea* stick of roasted sago
- dodi* exchange
- dogo* anchor
- dogotauna* (pl. *dogotaudia*) anchorman
- doritauna* (pl. *doritaudia*) vice-captain of a *lagatoi*; number two holy man on *lagatoi*
- dubu* sacred platform; spirit house
- enoeno* mast side of *lagatoi* opposite to *darima*
- gaura* Motu trading expedition to the Gabadi area
- gorugoru* largest bundle of sago
- govi* trading voyages made by the Mailu of South-East Papua
- hakona* two-hulled sailing vessel
- helaga* sacred, holy
- helagatauna* (pl. *helagataudia*) holy person
- hiri* annual trading voyage of the Motu to the Gulf of Papua
- hiridudu* a *baditauna* who organizes a *hiri* without the help of a *doritauna*
- hirilata* lit. *hiri* long; a *hiri* to the most distant villages
- hirilou* short, quick *hiri*
- hodu* water pot
- hoihoi* buy, sell, trade, exchange
- hoilulu* private trading other than major *hiri* exchanges by crew members of a *lagatoi*

- iduhu* Motu descent group; clan
- ira* axe
- irutahuna* holy place between the masts of a *lagatoi*; the centre for the communal spirit in a house or in a garden
- kahi* tallies used to indicate the number of trading exchanges made
- Kevaubada lagatoi* name
- kibo* small round basin, smaller than *nau*
- kikiri* a kind of exchange involving credit
- kokohara* name for large bundle of sago weighing about 30 or 40 lb from Marea area; called *vai* in Namau area
- Konekone* name given by Motu to middle distance *hiri* villages
- Koriki* a Motu name for the people of the Purari delta; also called Namau
- kuku* tobacco
- kula* trading system in the islands of the south-east end of mainland Papua New Guinea
- lagatoi* multihulled *hiri* trading vessel
- lailasi* feast for relatives of a *baditauna* at which he announces his intention to organize a *hiri* and to enlist their support
- lara* a sail
- lohia* leader, head man, chief
- maramara* projecting platform at each end of a *lagatoi*
- Marea* name given by the Motu to *hiri* villages in the Vailala River and Orokololo areas
- meamea* magic
- muramura* medicine
- Namau* a Motu name for the people of the Purari delta; also called *Koriki*
- nau* earthenware dish or bowl; a basin
- patapata* any platform; table
- pepe* pennant, flag
- rabia* sago
- mumaruma* crew's sleeping quarters at each end of a *lagatoi*; a shelter
- siahu* heat; power or potency
- siaisiai* custom of taking the kinswomen's pots on *hiri*

- taiabada* lit. ears big; place on a *lagatoi* where ritually potent material was placed
- tanotano* base or root section of *lagatoi* mast
- toea* armshell; principal shell money of the Motu
- tohe* large pot for storing raw sago
- udiha* any one of four persons – the *baditauna*, *doritauna* and their two young male servants – in a state of holiness within the *irutahuna* on board a *lagatoi*; most generally the two male servants
- uro* cooking pot
- vai* name for *kokohara* in Namau area
- vaina* small string bag
- vasiahu* sago soup; liquid left in pot after food has been cooked
- varavara* relatives
- vili* Vulaa (now Hula) expeditions to provide fish for Motu dependents left in villages while men were away on *hiri*

Introduction

In days gone by and at the time of first European settlement in Papua, Port Moresby was the centre of an important and thriving trading network that involved the Motu and neighbouring peoples and others several hundred kilometres away to the west in the Gulf of Papua. The most spectacular part of this network, in terms of the number, nature and size of the long-distance sailing craft involved and the cargoes they carried, was that known as the *hiri* or annual trading expedition undertaken by some of the Motu-speaking peoples around Port Moresby to Gulf villages. This trade was not only spectacular but was also very important economically, socially, religiously, and politically to the Motu, their neighbours and trading partner communities away in the Gulf. This importance derived from two things: the focus and purpose it gave to life, and the numbers of people it involved, both directly and indirectly.

Yet, although the main aspects of this trade have been known for a long time, there are still many aspects of it that are not so well known or which have not been recorded for posterity. Some of these are empirical questions that have to do with the way the *hiri* was organized and operated, particularly at the inter-personal level; others are historical questions of unknown depth which can only be answered, if at all, by painstaking research involving investigators from a number of disciplines. Both sorts of research are necessary, however, for each stimulates the other and raises new questions for consideration. Therefore, before it is too late, there is an increasing urgency to recover as much information as possible from the few, but ever decreasing numbers of old Motu men who were actively engaged in the trade and knew its inner secrets. It is also important that researchers meet periodically to present the latest results of their work and to discuss and debate them.

This volume is a record of the most recent meeting and contains, as the sub-title indicates, papers that were prepared for a seminar held on the *hiri* at the Australian National University on 8 February 1980. Initially this seminar was proposed to give one of the participants in particular, Nigel Oram, who has been collecting material on the *hiri* for a long time, the opportunity of

presenting his ideas on economic aspects of the *hiri* to those interested in the history and prehistory of Central Papua. But as this was delayed several times by circumstances beyond his control, and as the prospect of the seminar generated so much interest it was decided to widen the scope and to request papers on other aspects of the *hiri*. Seven papers were eventually accepted for presentation, although in the end Sue Bulmer was unfortunately unable to attend and her paper was not read at the seminar. It was, however, circulated amongst participants subsequently and commented on by them.

Initially too the papers were not intended for publication. But, as they showed considerable advancement in knowledge and in the sophistication of the questions being asked compared with just a few years ago, this decision was reversed. Authors were therefore asked to review their papers in the light of comments made at the seminar and subsequently, to submit them for publication. All were submitted and are included in this volume, except for Rod Lacey's one on 'Some recorded changes in the *hiri* in the early colonial period' which the author had to withhold pending the location of additional material needed to fill out some of the ideas put forth in his paper. Hopefully it will appear later.

The papers themselves can be roughly grouped into two sets: those concerned solely with cultural aspects, and those concerned with change and historical aspects. The first two papers fall into the former category and the remainder into the latter; thus the title of the volume.

Nigel Oram's paper is in many ways the centrepiece not only for the historical reasons already indicated but also because it is the most complete and builds on a large amount of personal knowledge, private recordings and published material. In it the author describes the nature of the *hiri* trading system as it was at the time of first European contact and argues towards an economic basis for its existence at the time.

The second paper, by John Gwilliam, is on religious aspects and is in some ways a counterbalance to Oram's as the author feels rather strongly that the Papuan world view cannot be split up into our neat compartments of economics, religion, politics etc. The Motu saw the world as one integrated whole and Gwilliam seeks to show how important the religious aspects of the trade were and how these provided for connection between the living and the dead and continuity of existence.

The remaining papers are more speculative and endeavour, as already indicated, to deal with change or historical aspects in one form or another. My own paper is an attempt to see what we might learn from the languages spoken by the participants of the *hiri*. Although not very productive in itself the research work behind it and other aspects of language use on the *hiri* have been

very productive, especially in so far as attention has been forcibly focused on how the trade was organized and operated at the micro- or interpersonal level.

Allen and Rye's contribution is a very important one not only for the thesis it proposes but also for the innovative methodology it announces and the promise that that methodology holds out for providing essential sourcing data of pottery formerly used in the *hiri* trade area. These data are basic to the understanding of the origin of the trade and its growth and change over an extensive period of time.

Susan Bulmer's paper expresses views diametrically opposed to those expressed by Allen and Rye. In the author's words it attempts to show that 'it is not necessary to search beyond the immediate Port Moresby area or further back in time than the past 300-400 years to find the origins of the *hiri*. The differences in views between Allen and Rye on the one hand and Bulmer on the other are so fundamental that it was not possible to include debate on the points at issue in this volume - that is something for the authors to pursue elsewhere.

Last but not least is Jim Rhoads's paper which provides much needed data from the receiving end of Motu *hiri* trade. Obviously much more needs to be done in this regard but finding the researchers and the funds to do this is an inhibiting factor.

In the volume each contribution is presented as a self-contained unit with its own notes and references. Biographical notes on each contributor are also included. I should like to thank all contributors for their cooperation in getting this volume together. I have enjoyed acting as collator and official editor for them, although much of the credit for the present form and quality of the volume must go to Shirley Andrew who acted as external reader-cum-editor for the project. All contributors join with me in expressing our sincerest appreciation of the time and effort she put into reading the texts and in raising the queries and making suggestions for improving the intelligibility of the papers for the non-specialist.

Finally, for providing copies of photos which appear herein as plates 3 and 4 I should like to thank the relatives of Mrs L.M. Short and the Royal Geographical Society, London, while for his assistance in reproducing these and other plates I am most grateful to Dr D.B. Shaw, Development Studies Centre, Australian National University.

Tom Dutton
Canberra
June 1982

Pots for sago: the *hiri* trading network

Nigel Oram

Introduction¹

Hiri is the name given to the trading expeditions undertaken by Motu-speaking people in what is now the Port Moresby region. Leaving their villages between September and the end of the year, Motu trading canoes, called *lagatoi*, were carried by the south-east trade winds to villages bordering on the Gulf of Papua (See Plates 1 and 2). There they exchanged pots and armshells for sago, and also obtained additional canoe hulls at their more distant destinations. There were a number of further minor exchanges. They returned home between the beginning of the year and March or even later, when the north-west monsoon was blowing.

A number of authors have described the *hiri*. These include missionaries such as Chalmers (1887b:14-33), administrators such as Barton (1910:92-120) and ethnographers, especially Groves (1960; 1972a). Recently Allen (1976:419-54; 1977a:387-417) has put forward a number of stimulating hypotheses relating to the origins of the *hiri*. There has, however, been no major study and a number of important questions relating to the *hiri* remain to be answered. In this paper I discuss the *hiri* as it existed in 1870, just before the first known arrival of Europeans in the area. I consider the environment, the mode of exchange and the expectations and rewards of those involved. In conclusion, the extent to which the *hiri* was economically based is examined.

¹Earlier versions of this paper were presented at the ANU on 8 February and at ANZAAS, Brisbane in May 1980. This is a tentative work-in-progress paper, based on ethnographic material and a large number of oral accounts and intended as a prelude to a larger work. I am grateful for comments from Tom Dutton, Hank Nelson, Dawn Ryan and Rod Lacey; and for discussions with Bill Stent and with Jim Specht who raised questions arising out of his own study of the *hiri*. I am indebted to The Australian National University, The University of Papua New Guinea, La Trobe University, and the Australian Research Grants Commission for financial and other support over the years for the research upon which this paper is based.



Plate 1 Loading a *lagatoi*, Port Moresby
Source: J. W. Lindt, 1887.



Plate 2 A *lagatoi* under sail
Source: J. W. Lindt, 1887.

Ethnological background

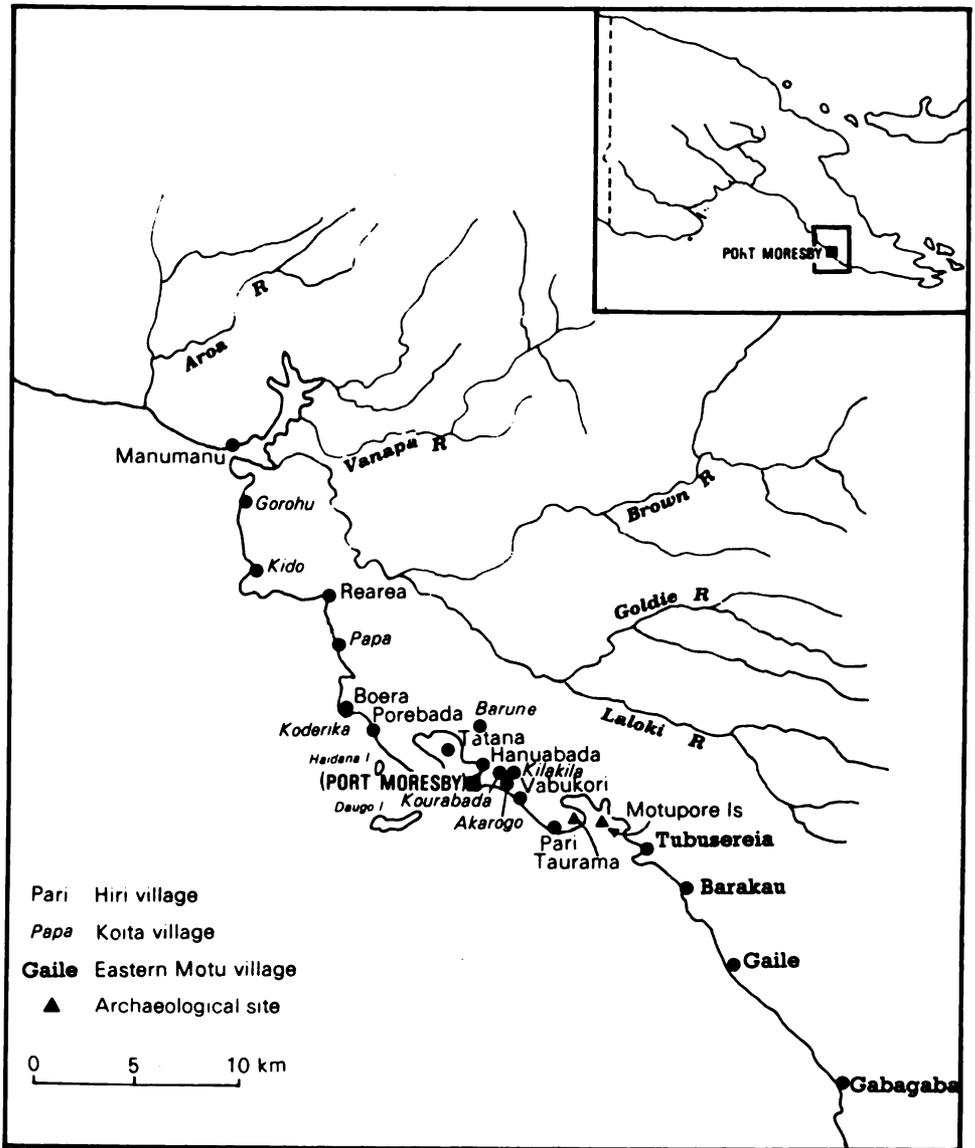
Hiri expeditions were undertaken by members of the seven villages of the Western Motu tribe (Groves, 1963:15) and the people of Tatana, Vabukori and Boera villages, who claim different origins from those of the Western Motu. These ten villages² were situated between Galley Reach and Bootless Inlet (Map 1). All except Manumanu included sections inhabited by the Koita, a tribe who lived either with Motu in their villages or in their own villages a short way inland from the coast. Koita and Motu lived in a symbiotic relationship: the former exchanged vegetables for fish of the latter and they were involved in the exchanges described later in this paper. In spite of exchanges and intermarriage, the Motu greatly feared the Koita for their sorcery, which enabled Koita sorcerers to levy tribute of sago on Motu traders (Chalmers, 1887b:112-44). Inland of the Koita, the Koiari lived in the foothills of the Owen Stanley Range.

The populations of Motu villages, which I have set out elsewhere (Oram, 1977:96), probably ranged, at first European contact, from 200 to 300. The Hanuabada village cluster, which consisted of three discrete villages and two Koita sections, had a population of 800. These populations may have been considerably larger before the coast was swept by an epidemic, either smallpox or chickenpox, a few years earlier (Oram, 1977:92).

As described by Groves (1963:15-30), the villages were divided into descent groups called *iduhu*, which formed residential sections. Membership was ideally through patrilineal descent, although others might have found separate lineages by a process of accretion. Marriage within the village was preferred and there was a high degree of inter-relationship among village members. The size of *iduhu* varied greatly and a guess can only be made that the size of pre-contact *iduhu* varied between twenty and fifty members. The number of adult males capable of leading an expedition would then be between five and twelve, although it is not clear how many adult males were needed to carry out the functions of an *iduhu* (see Groves, 1963:21) and some *iduhu* may have been larger.

Leadership was both inherited and achieved. Some villages, at least, had a village head, who was the eldest descendant in the male line of the founder. Accorded respect for his position, he appears to have been *primus inter pares* among descent-group heads but there was no formal political organization at the village level. These heads performed important ritual functions and had considerable authority over their *iduhu* members but in no sense exercised autocratic control. Those who achieved renown

²I refer to the people of these ten villages as the Motu unless the context makes a more specific description desirable.



Map 1 Motu and Koita villages in 1870

for their strength and skill in such pursuits as warfare, fishing, gardening and the carrying out of *hiri* expeditions were known as *lohia*. Groves (1963:17; 1972a:527; 1972b:804-5) has described how village men at all levels competed for prestige.

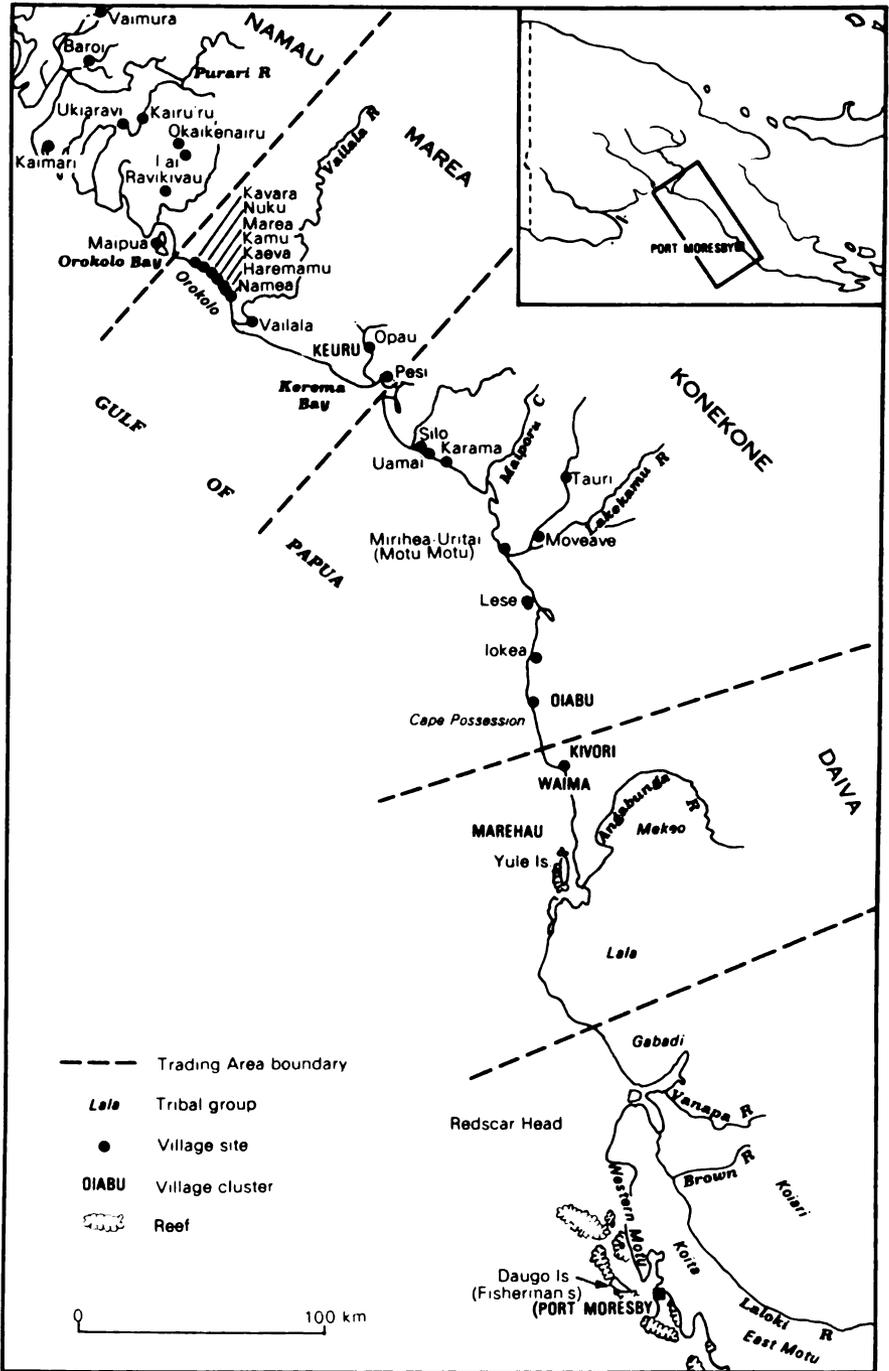
The people of all the Motu villages agree that *hiri* expeditions were begun by a man named Edai Siabo, of Boera village (Map 1). Not entirely satisfactory genealogical evidence suggests that he lived some nine generations ago; but there is good evidence that he existed. Some traditions say that the earliest expeditions were undertaken to the Purari Delta and even that Edai Siabo came from that area.

The Western Motu live in a poor environment (Groves, 1960: 5-7; Oram, 1977:80-7; Bulmer, 1979:5-11).³ Groves (1960:7) describes how, in Motu villages, yams harvested in April 'begin to rot by November or December when the rains return' and food is short till the next harvest. Frequently the harvest failed and, as described in many early eyewitness accounts, for example Chalmers (1895:187-92), Lawes (Diary, 13 February 1876) and *British New Guinea Annual Reports* (B.N.G.A.R. *passim*), this caused hunger and deaths from starvation, 'mostly of the very old and very young' (B.N.G.A.R. 1889-90:102). Informants frequently use the Motu equivalents of hunger and famine when describing their state in the past. The conditions in which some of the Motu speakers lived were poor: Rearea in the 1880s was unhealthy, 'the place is surrounded by swamp, and the people looked very miserable' and Tatana was 'a collection of huts' (Chalmers & Gill, 1885b:134, 272).⁴ Manumanu village, before moving to its present site in 1881 (Lawes, Diary 23 September 1881), was situated in a mosquito-ridden swamp and the people lived in fear of their enemies (e.g. B.N.G.A.R. 1886:22, 1892-93:38).

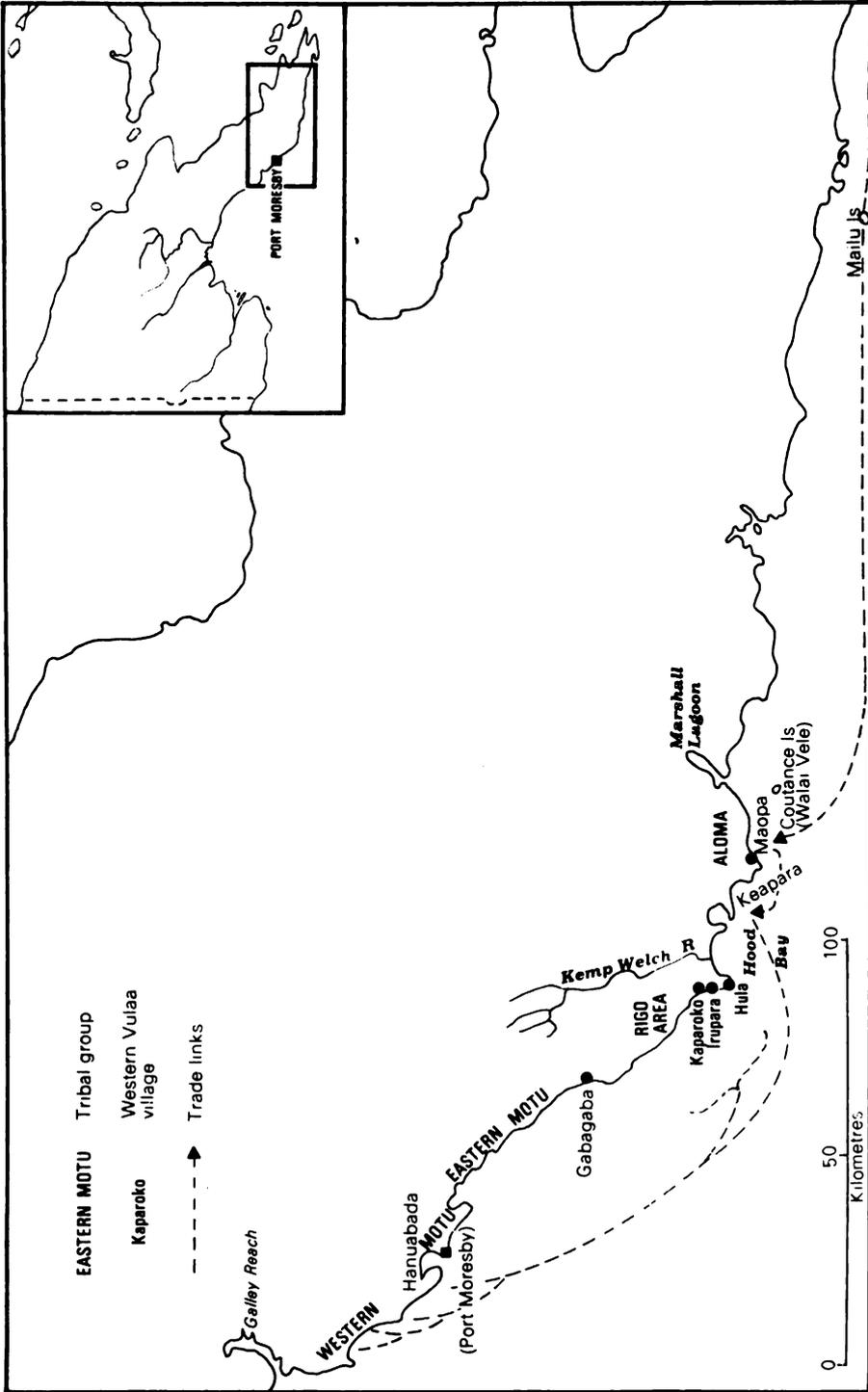
Food shortages were not confined to the Western Motu area but extended all along the coast, including inland areas, and there were frequent references to them in the literature (e.g. B.N.G.A.R. 1889-90:102; Pearse, 1901; *Papuan Villager* 3(2):15, 1933). There were serious food shortages inland of Rigo as late as 1964 and in Hula in 1976 (Map 3), owing to flooding, (Oram, 1962-80).

³Since this paper went to press, D. Vasey (n.d.) has challenged the view that the Western Motu environment was necessarily a poor one. Evidence for food shortages seems to be overwhelming and investigations into this contradiction are continuing.

⁴There are three editions of *Work and Adventures in New Guinea* by J. Chalmers and W.W. Gill, each with different contents: (1) the first standard edition dated 1885; (2) a presentation edition dated ?1885; and (3) n.d. in Chalmers' name alone, apparently after his death in 1901. There also appear to be two editions of *Pioneering in New Guinea*, one dated 1887 and one with no date with different pagination.



Map 2 The *hiri* trading area in 1870



Map 3 Trade links with the hiri in Southern Papua

The people of the *hiri* villages divided the area where they traded into four sections: Daiva, Konekone, Marea and Namau. There are minor differences in the placing of section boundaries (Map 2)⁵ and a major difference between the eastern and western villages of the area over the meaning of *daiva*. People of western villages say that *daiva* expeditions were made between Yule Island and Cape Possession, while the eastern people refer to the long *hiri* expedition as *daiva*. On Yule Island and in the Waima area were village groups called Marehau who at contact were still Motu-speaking although they have since changed their language to Roro (Oram, 1981: 215). The Yule Island Marehau may have undertaken *hiri* expeditions but these are not considered in this paper. An offshoot of the Marehau called Apau are said by informants to have founded Boera village and Chatterton (1969:95) has suggested that, as they had lived near sago-producing areas, they may have brought the sago trade with them when they came to the south-west. The Daiva area included pockets of fertile soils cultivated by Kivori and Waima villagers and inland was the rich alluvial Mekeo plain. The Motu conducted short *daiva* trading expeditions, which was outside the true *hiri* area, and obtained yams, taro, coconuts, sugar-cane and betel nut rather than sago.

The true *hiri* area began at Cape Possession, which marked the beginning of both the Gulf of Papua and also of the non-Austro-nesian-speaking area (Map 2 - see also Dutton's paper, this volume). The people of the Konekone and Marea areas spoke related languages and are often collectively referred to as Elema.⁶ The Konekone villages lay between Cape Possession and Kerema Bay while some informants include the Keuru villages. The Konekone area included the twin villages of Mirihea-Uritai which the Motu called Motumotu. They are also known as Toaripi. Early travellers (e.g. Chalmers, n.d.:130) and current informants describe the abundance of vegetable foods in the Konekone area. The yield from wild sago palms in that area is small and wild sago is mainly found in the swamps of the Tauri and Lakekamu rivers; higher yields are obtained from sago planted on river banks (Brown, n.d.:11).

Beyond Kerema Bay, the Marea and Namau areas constitute a vast expanse of mangroves, nipa palms and sago swamps amidst a network of broad rivers. The area includes the cluster of villages described by F.E. Williams in his *Drama of Orokololo*. He says that the Orokololo people make gardens but '...are predominantly, though not to the same extent as their neighbours on the west, dependent

⁵The map is mainly derived, among other sources, from Chalmers, n.d. (3):126-37; Brown, n.d.; Maher, 1961 Map II p.49; and oral tradition. Dawn Ryan made useful comments on the Toaripi-speaking area. It is tentative. Only Motu names, e.g. Oiabu and Motumotu, have been given to some Gulf settlements.

⁶For convenience, I refer to the peoples of the whole *hiri* area west of Cape Possession as Gulf villagers.

on sago' (Williams, 1940:12). The Namau are the people of the Purari Delta, where many Motu say that the most abundant sago is to be found.

To the south-east of Bootless Inlet near what is now Port Moresby were the people of four villages which constituted the Eastern Motu tribe (Map 1). The Eastern Motu differed little linguistically or culturally from the Western Motu. They did not undertake *hiri* expeditions, however, until after European contact, partly because their food supplies were more abundant than those of the Western Motu and partly because the two Motu-speaking tribal groups were frequently at war (Oram, 1977:80). Approximately 100 kilometres to the south-east were situated three Western Vulaa villages, Hula, Kaparoko and Irupara, on the shores of the Hood Peninsula. At the time of European contact these villages were of recent foundation. It is doubtful whether they practised gardening and they obtained their subsistence from fishing and trade (Oram, 1968:248-50). These villages, with Keapara which was on the eastern side of Hood Bay, were involved in exchanges linked with the *hiri* expeditions. Further to the south-east was a village of potmakers on Mailu Island (Irwin, 1978:406-15) which provided a further link in the trading chain (Map 3).

Warfare was endemic throughout the area. The Western Motu did not make war on each other (Groves, 1963:15), although, because of an insult, they attacked Boera, which was of a different origin to that of the Western Motu tribe (e.g. Romilly, 1893:216). Except in the west, where the Koita (Rokurokuna) group were at enmity with Rearea and Manumanu, Motu and Koita appear rarely to have made war on each other. The western group of Vulaa villages (Map 3) (Oram, 1976:11), who traded with the Western Motu, were hostile to the Koita because they thought that the Koita caused wrecks and loss of sago through sorcery. According to oral accounts, the Vulaa destroyed two Koita villages, Kilakila and Roku, although the Motu afforded the Koita some protection (Chalmers, 1887a:120). To the south-east the Western Motu waged intermittent war against the Eastern Motu and to the north-west they raided as far as Yule Island. Rearea and Manumanu were also involved in war with Gabadi. While in their own area the Motu at Hanuabada were 'a belligerent maritime power in an area of frequent battles' (Groves, 1954:78 n.l.) and Lawes (Diary, 17 May 1884) described them as pirates, the whole coast was terrorised by the Toaripi, who burned, looted and killed. In the Western Motu area, records suggest that they limited themselves to intimidating the people and abducting women (Chalmers, n.d.:106-11; Romilly, 1893:213), a practice which continued into post-contact times. Although they were vulnerable, I have found only one account of villages in the Western Motu area being attacked while their men were away on *hiri* expeditions, when Gabadi attacked Rearea (Chalmers, n.d.:79). This does not mean, however, that other attacks did not occur. The strength of the Hanuabada cluster may have discouraged attacks on other Western Motu villages. Warfare frequently interrupted

trade in different areas. Stone (1880:101-3), when describing the departure of the expedition in 1876, observed that no *hiri* had sailed the previous year because 'in their last voyage some of their canoes were wrecked and several lives lost'. Lawes (King, 1909:189) wrote in January 1882:

They and their fathers before them have gone [on *hiri* expeditions] at this season, except when someone got killed, and they were afraid to go. For several years now, none have gone, but this year as many as a hundred men and boys went to a place called Vailala...

He recorded the sailing of an expedition on 18 August 1877 and then was away on furlough from December 1877 until April 1881. Failure to carry out *hiri* expeditions in 1880-81 for fear of Toaripi raids is confirmed by Chalmers (n.d.:182).

The voyages themselves were full of dangers and lives were lost. Many trading canoes sank near the shore, sometimes because they were overloaded. A number of villages lost their canoes in 1890 (B.N.G.A.R. 1890-91:102). There was always the danger of being swept out to sea and the canoe being lost. Sometimes they were carried past their own villages or wrecked and faced death on landing among hostile people (e.g. B.N.G.A.R. [Fort Report] 1886:46). Both oral tradition and ethnographic sources (Chalmers & Gill, 1885a:305) agree that the Waima, as payback, massacred the crews of three or four Boera canoes and that the Manumanu, who were friendly with the Waima, killed the two survivors as they made their way home.

Economic aspects of the *hiri*

The economic importance of the *hiri*. A number of factors demonstrate the economic importance of the *hiri*. Above all, there was the need for sago on which their lives depended. As Groves (1972a:527) says, 'without it they could not have subsisted'. Reports in the early years of British administration make it clear that the people of the Western Motu area did not undertake trading expeditions when the harvest was good. 'The Motuans have depended so much on their gardens that they did not go on their usual trading expedition to the West, nor do they intend going this season' (B.N.G.A.R. 1891-92:86). The following year there was again 'a splendid harvest' and 'there is no need for them to go West for sago this year. This will be the third year in succession they have not been...' (B.N.G.A.R. 1892-93:43). The more ample food supplies enjoyed by Manumanu and Rearea made it unnecessary for them to undertake long-distance and lengthy expeditions.

When the harvest was poor, there was no other source from which the Motu could have obtained adequate food supplies. During the 'bad' months, February to April, in the half-year known as

Lahara, the people of the Western Motu area might depend on fish, but their fishing was limited by bad seas to inshore fishing. Rough seas hindered sea travel. One year, Hanuabada canoes were prevented by heavy seas from going to Rearea or Manumanu to collect edible mangrove pods (Chalmers, 1895:190). This area was protected by both barrier and fringing reefs, but from Redscar Head to the west, except from the immediate vicinity of Yule Island, there was no barrier reef. In 1870, the coast between Redscar Head and Cape Possession was largely empty: the only settlements were three small Motu-speaking settlements on Yule Island and possibly a Waima and a Kivoro village at the western end of the area (Oram, n.d.). Kivori and Waima villages were established by river mouths and creeks to protect their canoes from heavy seas and surf. In April 1846 the crew of H.M.S. *Bramble* made a landing in that area in a whaleboat with difficulty (Allen & Corris, 1977:90-1). It may be significant that, according to their traditions, the Apau left the unprotected Lala (generally referred to in the literature as Nara) coast and moved to Boera (Oram, 1981:216), which is protected by a barrier reef (Map 2).

The small groups of Koita were constantly moving their settlements and, inland, the Koiari were equally mobile. To the south-east were the Eastern Motu. While these tribal groups were somewhat better off for food than the people of Western Motu area (Oram, 1977:83), they were also at times subject to famine and could not produce a surplus which was sufficient to meet the shortage of food experienced by the Motu. As seen below, the Koita themselves were eager to obtain sago. Their food surpluses, with those of the Motu, existed only after the harvest and during the hunting season and were equally perishable. The political situation did not permit of infiltration into the Koita area or to the south-east. The Koita were being pushed towards the coast by the Koiari and the Tubusereia people were in a state of intermittent warfare with the Western Motu which continued until European contact (Oram, 1969:82-6; n.d.).

Thus, in the period before first European contact, the Motu villagers involved in the *hiri* were barred by the sea, by enemies and by their own fears from expansion into more productive areas. Nor was surplus food available in nearby areas in sufficient quantities to meet their needs. Similar conditions are likely to have obtained at earlier periods as the Western Motu expanded westward along the coast (Oram, n.d.).

The organization of *hiri* expeditions

The reasons why one man rather than another undertook the leadership of a *hiri* expedition require examination and lie in the social structure and organization of Motu villages.

There were, for the majority of expeditions, two leaders called *baditauna* and *doritauna*, and each had a mast man and a

sail man. The greatest prestige was accorded to the two former. There were not always two leaders. If a man had sufficient resources to organize an expedition by himself, this was called *hiridudu*. The *baditauna* was the organizer (Groves, 1972a:525 calls him the 'sponsor') of the expedition and the leader in exchanges in Gulf villages, but he did not navigate the vessel and stayed ritually on his mat during the voyage.

Towards the end of the year before an expedition, a man who, informants say, had at least one armshell (*toea*) and other valuables in his box and a canoe hull, set about making large gardens so that he could provide the feasts required during the making of a trading canoe. In April or May, according to Groves (1972a:525) but earlier according to some informants (see e.g. Revo Pita *et al.*, 1975:65), the man would examine the state of his gardens. If satisfactory, he would stay apart from his wife and practise other abstentions to put himself in a state of 'ritual potency' (Groves, 1972a:525).⁷ He would then summon his close relatives to a small feast, called *lailasi*, at which he would announce his intention and enlist their support (see e.g. Revo Pita *et al.*, 1975:64). They would provide the additional hulls, making up three, four or five needed to make a trading canoe and also armshells and other valuables.

About June he would signify his intention to the public by coming down from his house with a fire and sitting in the street in the early morning. He would do this until he was joined by a *doritauna* who would also have practised ritual abstentions. According to Groves (1972a:525), the *baditauna* would have made an arrangement with his partner earlier, but some informants say that this was forbidden and that he waited until he took his fire down for a partner to join him. Practices may have varied in different villages. The second leader was not always from the same descent group. If different, the canoe would have two names and two pennants (*pepe*) representing each descent group. Each leader would then be joined by his mast man and sail man and by crew men. According to Barton (1910:114) the average number of crew was twenty-nine and ranged between twenty and forty.

The making of the canoe involved collecting vines and cane from Rearea and Manumanu areas, assembling and binding the hulls, and stepping the masts which were handed down from father to son. These operations were accompanied by supplies of food from the large gardens which had been prepared. These were cooked by the wives of the leaders. The women of a village set about making pots in preparation and this process has been described by Groves (1960:11-19). Women undertook the heavy work of digging the clay. The kinds of pots - principally cooking pots but also water pots,

⁷For a full account of the religious implications of the *hiri*, see Gwilliam this volume.

dishes and smaller pots — have been described in oral accounts and in literary sources (B.N.G.A.R. 1902-03:18; Seligman, 1910: 115; Groves, 1960:14). Groves (1960:11), however, saw only cooking pots being made during three seasons and some Pari informants say that they only took cooking pots to the Gulf.

Women owned the pots. Groves (1960:19-21) has described in detail the way in which crew members were obliged to take with them the pots belonging to their wives, their mothers if unmarried, their sisters and the women to whom they were betrothed. They took the pots belonging to other kinswomen to whom they were indebted, according to their sense of social responsibility and interest in maintaining relationships. 'Obligations diminish as social distance increases.' Groves points out that this custom of taking the pots belonging to kinswomen, called *siaisiai*, made no difference to the total number of pots sent from a household, although it provides some insurance against breakage of their own pots. The leaders customarily took the pots belonging to those households who did not provide crew members (1960:19). Some villages do not use the term *siaisiai* but refer to this custom as *dodi*, a general term for exchange. Two villages, Vabukori and Tatana, in pre-contact times did not make pots but exchanged shell beads called *ageva* with other Motu villages for pots (Barton, 1910:114).

Armshells (*toea*) and other valuables were obtained from limited local manufacture, especially at Boera, and from the Hood Bay area. Men obtained armshells through good fortune in marriage exchanges, the vigour and skill with which they carried out various activities, the size of their kin group and their success in entrepreneurial activities. Barton (1910:110) noted a trading canoe carrying fifty-seven armshells. The majority of armshells were taken by the leaders, and informants say that crew members were 'lucky' — using the English word — if they took any. Other valuables of particular importance were *doa* (boars' tusks) and *dodama* (dogs' teeth necklaces) (B.N.G.A.R. 1902-03:19), the latter being greatly valued for marriage exchanges in the Konekone area.

The number of people who were in an economic position to lead an expedition was limited and depended on possession of valuables, good gardens and support of kinsmen; although not only senior members of a descent group but all adults, including young married men, could become leaders. Some informants say that the previous year, fathers might advise their sons to make a trading canoe. Evidence suggests that men would only lead expeditions once or twice in a lifetime but would serve as a member of the crew on other occasions. Sometimes the descent group head might even form part of the crew.

Motu people themselves give a number of answers when asked why a man should organize a *hiri* expedition. One is that the village needed food and this, before other considerations, was the underlying pressure to organize a *hiri*. This need was

expressed when, at the end of the south-east season, the village head or descent group head or one of the few people qualified to do so rose early in the morning to exhort the people, who respectfully listened. They exhorted them to mend their houses, set about their gardens and to undertake *hiri* expeditions. As Groves (1972a: 527) says:

A major function of the *hiri*, Motu themselves insist, was economic. Without it they could not have subsisted... Yet they valued the institution for other reasons...

Among other reasons, he includes sustaining links with nearby trade partners, the provision of a great festive occasion, and 'finally, it conferred prestige upon those who participated'.

Another reason frequently given for undertaking an expedition, which involves prestige, is *heai*, meaning quarrel or dispute. One man might taunt another for his lack of achievement in feast giving, net making or undertaking *hiri* voyages. He might then accept the challenge. According to some accounts both the challenger and challenged might undertake the expedition.

The voyage

The *hiri* was not the only sea-borne expedition organized by the Motu to collect food. The villagers between Pari and Boera inclusive went in two-hulled canoes called *hakona* in expeditions called *gaura* to Gabadi (Map 2). There they exchanged dugong, turtle and pots for vegetables including seed yams. These expeditions occurred before and after the *hiri* had sailed. It is said that Rearea did not need to make such expeditions because of the size of their gardens, but that, in pre-contact times, they and Manumanu did exchange goods with Gabadi when not interrupted by warfare. Voyages were also made for vegetables, coconuts and betel nut to the area between Delena and Cape Possession.

There were two kinds of *hiri* expeditions: short *hiri* (*hirilou* or *hirikwadogi*) and the long *hiri* (*hirilata* or, for some villages, *daiva*). During *hirilou* expeditions, the Motu obtained urgently needed food from the Daiva and Konekone areas and returned to their villages within about three weeks. According to informants, they took place instead of or after, and sometimes before, *hirilata* expeditions but available records suggest that they were launched towards the end of the year to take advantage of the doldrums period for the return voyage. The essence of the short *hiri* was that canoes were not dismantled and new hulls were not added, thus saving a great deal of time (although, of course, there was nothing to stop new hulls being added if circumstances required it).

Hirilata expeditions involved staying a long time away from the village. I have records for the departure dates of thirty-one

canoes and nearly all lie between mid-September and early November. The majority of the thirty-four return dates which I have were in December and January but three returned in March and one as late as 23 March. Informants say that, in the past, voyages were longer but that young married men resented the long time spent away from home. Some support is given to this claim by the record in Lawes's Diary of the departure of four canoes from Hanuabada on 16 August 1877 that they were leaving early 'because they are going to a more distant place' (18 August, 26 July 1877).

When asked why they went to a particular Gulf river, the majority of informants say that it was because they had a good trading partner there. Given willingness to undertake a long-distance expedition, the supply of sago took second place, sago being more plentiful in the Marea, and especially in the Namau areas. According to one informant, the *baditauna* did not announce his intended destination until the canoe passed Yule Island. Generally, however, the *baditauna* announced their destination before the *lagatoi* sailed. A safe anchorage was an important consideration (see Dutton, 1980:30, fn.23).

Although such figures have no statistical significance, it may be of interest to note that out of voyages undertaken between the 1880s and 1940s for which I have been able to record the destination, fifteen went to the Konekone area, eleven to the Marea area and six to the Namau area.

Exchange in Gulf villages and relationships between trading partners

While the desire for pots on the part of the Gulf peoples was not of the same urgency as the need for food for the Motu speakers, there is much evidence derived from the literature and from oral sources for its strength. Chalmers mentions this desire many times and he also describes how the people of the Namau village of Maipua went to Vailala to obtain pots (n.d.:56, 57). War canoes from a Konekone village tried, by threat of arms, to force the *lagatoi* in which Chalmers was travelling to Vailala to go to their own village (1895:83-5).

Armshells and other valuables were an important element in the *hiri* exchanges but they are not mentioned as greatly desired goods in the same way as pots are. They were, however, an important element in marriage exchanges.

There are apparent contradictions between the remarks of early observers such as Chalmers (1895:119) that 'as a tribe, the Motu are hard, close-fisted, sharp traders' (cf. Lawes, Diary 4 January 1882), the existence of customary regulation of rates of exchange, and the insistence by the Motu and Gulf villagers that exchanges were marked by values of friendship and generosity.

An examination of the mode of exchange may resolve these contradictions.

Both Motu and Gulf informants describe the rates of exchange of pots for sago with great precision. There were at least six kinds of bundles of sago offered for exchange, of which four can be mentioned here. The basic sago bundle was called *vai* in Namau and *kokohara* in Marea and Konekone. It weighed about forty pounds and was exchanged for a cooking pot. *Gorugoru* consisted of six to fourteen *vai* or *kokohara* contained in a cone-shaped arrangement of sago fronds and were exchanged for armshells. Some ten *dikea*, which were sago roasted on sticks and which can still be seen in Port Moresby markets, were exchanged for a cooking pot. An armshell was also exchanged for either a pig or canoe log. The size of the cooking pot to some extent governed the size of the article given in exchange. Food for the crews and betel nut or, in the Namau area where betel nut was not available, a smaller nut which the Motu call *viroro* were provided free by the Gulf villagers. While these rates of exchange served as a yardstick, as will be seen they were not always observed and there are contradictory accounts relating to the modes of exchange.

When a *lagatoi* arrived in the river of a Gulf village, the *baditauna* was greeted amidst rejoicing by his trading partner and sometimes the *lagatoi* was towed by the hosts to the village. The two expedition leaders exchanged armshells for the pigs or dogs of their trading partners. Arrangements were made between the senior partners to provide crew members with partners if necessary or else individuals from the Gulf villages sought out their own partners. Pots were then unloaded on the shore and two tallies, called *kahi*, were made; one was taken by each partner to mark the number of sago bundles which would be returned later. The size of the pot was marked by the length of the *kahi*. According to Barton (1910:109), tallies were not used in the Namau area because sago was so plentiful, but Williams (1924:126) and present-day informants say that they were used there.

After initial exchanges, the Motu leader handed his remaining armshells, other valuables and pots which were lined up on the shore, to his partner. The Motu did not specify what was to be exchanged for their valuables and left it to their partners to give them *gorugoru* and logs. Tallies used to count pots were frequently not matched in the exchanges. The number of sago bundles might exceed the number of pots, or a partner might provide sago in return even for broken pots. According to one account, Gulf people provided sago for a salvaged canoe, even though all its pots were lost when it sank. The Motu insist that no debt was created by either surpluses or deficits. They say that *hiri* was not trade (*dia hoihoi*). Yet some Gulf informants (H.A. Brown, pers. comm.; A. Maori Kiki, pers. comm.) claim that a man was ashamed if outdone in generosity by his partner and would consider it a debt (*abitorehai*) to be repaid on a future occasion.

After exchanges of pots for tallies had been made, the Gulf villagers went to prepare sago and to cut logs which the Motu then fashioned into canoe hulls. The logs were given mainly to the six principal men, the *doritauna*, *baditauna* and their respective mast and sail men but, as just noted, occasionally by members of the crew with armshells to exchange. Up to a dozen or more extra hulls might be acquired depending on the distance from their point of origin in the Western Motu area and the amount of sago obtained. Chalmers (n.d.:218) saw a canoe with sixteen hulls and, for those of which I have a record, twelve to fourteen hulls were common. The Motu dismantled their canoes and reassembled them with the additional hulls. While they were preparing their canoes and were waiting for sago, they lived in huts which they built on the shore and were fed by the host villagers.

Two forms of exchange are said by informants to have taken place at the end of the Motuan visit. As Groves (1972a:525) mentions briefly, the Motu might hide some of their pots when exchanging with their partners and wait until their canoe was being loaded with sago. They would then exchange their remaining pots for extra sago or for articles such as special grass skirts or bows and arrows or other weapons. One informant said that he used to set aside four or five big cooking pots and ten to fifteen small pots called *oburo*. This form of exchange was called *hoilulu* and was carried on with other people in the village besides trading partners. The latter might participate and the practice was accepted without resentment. According to some informants, *hoilulu* occurred most extensively in the Konekone area.

The Motu recognized that an obligation to reciprocate in the future existed in a form of exchange called *kikiri*. A Gulf villager might beg an armshell from a Motuan visitor and reward the latter with abundant sago when he returned on a subsequent expedition. A further Motu account tells of Gulf villagers giving ordinary crew members large canoe logs in exchange for small armshells in expectation that they would organize an expedition and visit them the following year.

While the Motu say that the relationship between their trading partners was one of *hetura*, which can be translated as friendship, they often refer to their partners as *varavara*, which is a general term for relatives. They stress the strength of the ties which could extend over several generations. In the Marea area at least, partners might call their children by each others' names: '...the declarations of friendship that went with it were as important as the exchange of goods itself' (Kiki, 1968: 23). Accounts of these relationships are, however, contradictory even though they paint an almost idyllic picture of relationships with their partners. The Motu admit that quarrels (*heai*) did arise: one informant said that they occurred all the time (*hanai-hanai*). One cause of anger arose when a man who was expected to act as a trading partner adopted someone else. Another was

failure by the Gulf partner to match the pots with his sago. Chalmers (1895:89) says that 'if one or more bundles (of sago) is short, there is a lively disturbance and weapons are ready for action in the event of a disturbance over trading'. Informants say that, in the past, quarrels between trading partners were limited to words but that those between the visiting trading canoes from different Motu villages were more serious and that weapons were used and deaths occurred.

The contradictions in the trading system can be explained by the situation in which the traders found themselves. In societies where all except those between whom acknowledged relationships existed were considered as potential enemies and often treated as such, trading partners provided security for the Motu in a hostile environment redolent with sorcery and actual violence (e.g. Chalmers, n.d.:146). The Gulf people cultivated their partners as a means of encouraging the return of expeditions to their villages. Generous behaviour in such relationships was highly valued but was also based on solid advantages. In a world where the need to avenge any injury or affront in the interests of security led to the development in men of a touchy pride, conflict was kept to a minimum by these partnerships. Both sides needed each other. Under these conditions, the formal rates of exchange provided the yardstick by which transactions were covertly measured. As Williams (1924:127) says: 'These tallies are less in the nature of a receipt than of an aid to memory'.

While Motu informants are diffident on the point, they say that Konekone partners were good but not always as generous as those of other areas. Informants' accounts suggest that the short *hirilou* expeditions may have involved stricter balanced reciprocity than the longer expeditions. Sometimes they had to buy food during their Konekone stay if their hosts were not sufficiently hospitable in supplying it. The most generous partners were those of the Namau area. This rating of partners reflects the availability of sago in the three Gulf areas. Moreover people from the Konekone area were the only ones to make return journeys to the Daiva and Motu areas in pre-contact times and, although at times they brought welcome sago, at other times they furnished, in Sahlins's terms (1974:195), a clear example of negative reciprocity (see Chalmers, 1897-98:326). The Marea people did not make return journeys carrying sago until after the First World War (Williams, 1932:40) so there was less opportunity for conflict.

Return home of *hiri* expeditions

When the canoes returned to their villages, there was great rejoicing. Those who had returned then paid their debts. They gave sago to those who had contributed pots although, if there were breakages, they might not give sago bundles equivalent to the pots contributed or, if Gulf partners had been generous, they

might return more. They gave food to those who had helped their wives and families when they were away. According to a Hanuabadan source (Revo Pita *et al.*, 1975:102) three or four men would leave one man behind to look after their families and this man would be suitably rewarded. They also met their obligations to Koita and Vulaa people.

During the construction of *lagatoi* or when the news of the departure of the *hiri* was received, Koita people who lived nearby would take game, vegetables and flour made from the cycad palm to friends and kinsmen in the Motu villages. These exchanges were called *abilakwa* and are said to have originated after Boio, sister of Edai Siabo, founder of the *hiri*, married a Koita man called Bokina Bokina. There was a fixed rate of exchange: for example, three cycad bundles or one bunch of bananas for one sago bundle. Again, however, these exchanges were marked by generosity. They were not confined to the time of the *hiri* but occurred all the year round when opportunity arose. It is not possible to estimate the amount of food contributed by the Koita, but available evidence suggests that at any one time it was not very great.

When the *hiri* expeditions sailed, Vulaa double-hulled trading canoes from the three villages with men and women on board visited different Motu villages as far west as Rearea. They provided fish on credit for the people remaining in the villages and also after the *hiri* expedition returned. The Vulaa called these expeditions *vili* and the mode of exchange *ugulakwa* (e.g. Lawes's Diary, 15 January 1876; 3 January 1887; Oram, 1968:249). While some Motu say that these exchanges were trade (*hoihoi*), others say the Vulaa were like relatives and examples can be given of exchanges on the basis of generalised reciprocity. The Vulaa themselves say that the Motu were generous in making a return of sago and even gave them canoe hulls to carry it away (Oram, 1968:249). This statement is supported by a photograph (see Plate 3), taken in the 1920s, showing a *lagatoi* (trading canoe) hull lying on Hula beach. The Vulaa brought coconuts with them but would have in part depended on food provided by the host villagers. Crews of trading canoes consisted of at least eight men (see Plate 4) and would have been able to keep a village supplied with fish. The net food gain from the presence of the Vulaa would have been considerable.

Besides those which they manufactured themselves, the Motu obtained armshells (*toea*) from Keapara (Map 3). The earliest reports (e.g. Lawes's Diary, 22, 23 January 1876) say that the Keapara brought armshells to the Motu villages when the *hiri* trading canoes returned. They obtained these through kinship ties with the Maopa people. They, in turn, exchanged their pigs for the armshells brought to them by the Mailu who needed pigs for their affinal exchanges (Oram, 1968:249-50; Malinowski, 1915; Saville, 1926; Harding, 1965:53). The Keapara and Motu exchanges provide the only clear example of haggling, if Lawes's precise account (Diary, 5, 6 January 1882) is accepted. During an exchange

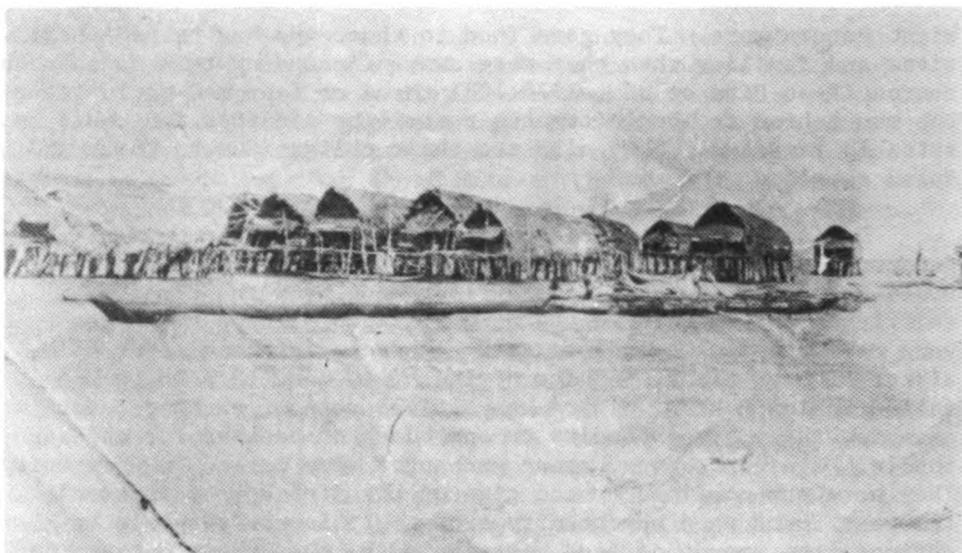


Plate 3 *Lagatoi* hulls on Hula beach
Source: L. M. Short, n.d.



Plate 4 Hula *vili* traders
Source: R. E. Guise, c.1898.

of armshells for sago, both the Motu and Keapara accused each other of being stingy and demanding too high a price. After the Keapara threatened to leave, Lawes found: 'The wishing us goodbye and preparing for sea was all a dodge. They tried their utmost to get the sago with small and inferior armlets. The people here were firm and this morning the big fine ones were produced' (Diary, 6 January 1882).

In post-contact times the Vulaa were involved in armshell exchanges but there is no mention of these in early reports. The first government appointed 'chief' at Hula was engaged in a bêche-de-mer and armshell enterprise in the 1880s. They made armshells and also obtained them through kinship exchanges with the Keapara and Maopa. Hula and the other two western Vulaa villages were expanding (Oram, 1968:244-56, 257) and, as with their export of canoes which began about the 1890s (Seligman, 1910:93), their export of armshells may have begun after European contact in the 1870s.

When *hiri* expeditions returned with food, '...for days or even weeks they gave themselves up entirely...to feasting and dancing' (Groves, 1972a:527). According to Chalmers (1887a:124) they distributed their sago widely and kept little for themselves. In spite of the accounts of some present-day informants that their sago lasted until the next harvest, there is considerable evidence that earlier this was not so. On 11 January 1876, just over a year after he became the first white man known to have settled in Papua, Lawes recorded in his Diary that 'the canoes have all come back from Elema...'. On 13 February he said that: 'The people are all very hungry now, living almost entirely on mangrove fruit and the bottom of banana trees'. On 1 April, six Toaripi canoes brought sago and people felt joy at their arrival. 'They have been short of food for some time now...'. Romilly (1893:257) noted that although the estimated 150 tons brought back by the *hiri* expeditions 'sounds a large quantity, it lasts but a very short time, for the whole population get through it as fast as possible and make no provision for the six months of the year during which they have to go without it'. Writing on 8 March 1903, Barton said:

As it is now, all the sago brought back by the lakatoi a few weeks ago, has been consumed or sold, and many of the people are subsisting on mala (banana root) relying for better fare on chance cargoes brought here in traders' vessels or on the scanty supply of vegetables got from their drought stricken gardens. (B.N.G.A.R. 1902-3:20)

From this evidence it can be accepted that, during some years at least, the Motu experienced food shortages in spite of receiving sago brought by *hiri* expeditions from the Gulf region.

No accurate figures are available for the amounts of sago and other goods obtained by the Motu and distributed by them among their families and others. I have listed ninety voyages from different sources undertaken from the 1870s until the 1950s. The records are always incomplete and changes resulting from European contact increasingly affected food supplies and the availability of different kinds of goods. They provide, however, some information.

Estimates for the amount of sago flour produced by a husband and wife in a day range between forty-five pounds in the Marea area (Williams, 1940:12) and twenty to thirty pounds in the Konekone area (Brown, n.d.:14). It would therefore take thirty couples forty-one working days to produce twenty-five tons in the Marea area and some sixty-two days in Konekone, and a Gulf village would have been able to fill two or three canoes with sago. Variables affecting the production of flour include the number of visiting canoes seeking loads of sago, the size of the village population and the goods brought by the visitors.

The number of canoes sailing from a particular Motu village varied according to conditions of war and peace, the state of gardens and availability of materials. In 1885, Romilly (1893:257) estimated that twenty canoes carrying 600 men would sail for the Gulf and Barton (B.N.G.A.R. 1902-3:13) also recorded that twenty canoes from ten villages sailed in 1902. He said that the number was small because several hulls were unseaworthy. Recorded voyages show that the numbers sailing from a particular village varied from none to several.

Romilly (1893:257) made an estimate of 30,000 pots among twenty canoes, or an average of 1500 pots for each canoe, and Lawes (Seligman, 1910:114) said that four canoes carried an average of 1628 in 1885. In 1958, Groves (1960:10) counted 1100 pots on a four-hulled Manumanu canoe. The most complete account of the goods loaded by a canoe is provided by Barton (1910:114): in 1903 a four-hulled canoe carried 1294 pots, fifty-seven armshells, two pearl-shells and eight shell beads, and tobacco and imported trade articles.

The amount of sago obtained from the Gulf by a single canoe appears to vary between twenty-five and thirty-five tons, although nowhere is the method of assessment of tonnage stated. Barton said that the canoe mentioned above returned with about twenty-five tons carried in ten hulls. Lawes (Diary, 5 October 1883) said that one canoe carried thirty-four tons and two canoes each carried thirty tons of sago, one canoe returning with fourteen hulls. Unfortunately there are no figures which illustrate the differences in the amounts of sago derived from the Konekone and remoter areas respectively.

There are no figures at all for amounts of sago distributed to individuals and groups. Romilly (1893:257) asks the question how so much sago disappeared so quickly. If three canoes each returned with twenty-five tons of sago and if the village population was 300, on average each person would receive 560 pounds. This assumes the sago is equally distributed and no account is taken of the number of infants. If, as early reports suggest, sago was finished within three months, this amount would provide just over six pounds a day for ninety days. While two pounds a day per adult might be reasonable consumption, much of this amount would have gone to creditors, Vulaa and Koita, from outside the village, part to visitors to feasts, and part in conspicuous consumption within the village. Moreover seventy-five tons would be near the maximum. At other times less sago might be brought to the village or none at all.

Discussion

In considering the *hiri* in 1870, the post-contact changes which occurred afterwards must constantly be borne in mind. The establishment of internal peace led to a radical expansion of trading activities. There is no record of exchanges between the Eastern and Western Motu in the earliest ethnographic accounts, but these developed in post-contact times. The Mailu, who in pre-contact times had not ventured further west than Maopa, regularly began to take armshells to the Western Motu area and, as noted, the Orokolo people began to make return journeys in the 1920s.

The peoples in the Port Moresby coastal area lived in small villages. The extent of hunger and the disruption caused by warfare which they suffered cannot easily be exaggerated. For that reason, their achievements in undertaking the heavy tasks of making pots and canoes and venturing on dangerous journeys are all the more remarkable. It is against this background that such questions as the extent to which the *hiri* is economically based and the relative strength of the Motu, Gulf and other peoples involved in the exchange network must be examined. Allen has put forward hypotheses to answer these questions. According to his model, based on archaeological evidence from Motupore, 'the Western Motu were not forced by their immediate environment to trade in the west for food, but because trading was an already developed strategy, it was the obvious option among a possible number of alternatives...' (1977a:408). One of the problems in this discussion is that different time scales are involved. Allen is seeking, through bold hypothesis, to account for the development of the Motu whom he regards as descendants of the people who occupied Motupore Island from about 1200 to 1700AD (1976:443). The present paper is concerned with the *hiri* as it existed in 1870 and historical evidence relating to it is reserved for separate discussion. As Allen uses ethnographic evidence to support his views and the questions are valid in themselves, they must be examined in some detail.

The question of an alternative source of food in place of sago from the *hiri* trade must be considered. Allen asks why men should undertake distant expeditions when it was possible to 'infiltrate more fertile and populous regions' and why, when 'the Western Motu controlled the westward movement of armshells in a monopolistic fashion', 'they [armshells] were not merely passed to their nearest neighbours for sago which these neighbours acquire further along the line' (Allen, 1977a:408, 405). Austronesian-speaking peoples, for example the Mekeo and Rigo peoples, did move inland from the southern Papuan coast, mainly along major rivers such as the Angabunga and Kemp Welch. It is unlikely, but there is at present no clear evidence on this point, that the land was occupied at the time and the movement would have occurred over a long period. The Western Motu were sea people settled in an area without rivers or an environmentally attractive hinterland. Their pattern of settlement was not through mass migration but by the breaking away of an individual with his immediate family. If their settlement was successful, they were joined by members of other descent groups: in Groves's terms (1963:16), 'the original village did not segment, it reproduced itself'. Such settlements would have been vulnerable to attacks by groups already settled in the area. The Motu certainly controlled the westward movement of armshells, but other possible contenders were either barred by hostility or had no pots to offer. As already pointed out the only settlements between the Western Motu and the sago-producing areas were three small Motu-speaking settlements on Yule Island and a Waima and a Kivori settlement near Cape Possession.

In 1870, whatever the situation in more distant times, the Western Motu tapped every available food source. They were restricted to the unfavourable environment in which they lived. There was no adequate alternative to supplementing their food supplies by obtaining sago from the Gulf region.

Allen sees the Motu as dominant in the exchange system and he asks (1976:447):

In short it is a simple matter to see how the system worked to the advantage of the Motu but unclear why it should work. How were the Motu able to impose their trading systems on groups which appear to have been economically self-sufficient?

Politically the Motu traders were in a weak position. They ventured into potentially hostile territory and when the Toaripi-speakers made return voyages, the visitors were militarily the stronger. There was a more successful hijacking of a *lagatoi* than the attempt described by Chalmers. Barton (B.N.G.A.R. 1902-3:19), when arguing that the Gulf villagers did not 'knuckle under' to the Motu for fear of their superior powers of sorcery, cited the seizing of a Motu canoe by Keuru villagers (Map 2) who took everything and left the Motu helpless. The Motu were also forced to

learn, as Dutton (1977, 1979) is demonstrating, trade languages based on Gulf dialects.

Barton (B.N.G.A.R. 1902-3:18-20) carried out an enquiry into 'alleged extortion by the Motuans' during *hiri* expeditions. He found that far from making complaints, 'the welcome extended to the visitors is as cordial as it is self seeking'. Barton considers rates of exchange (B.N.G.A.R. 1902-3:19). After noting that a large armshell could be exchanged for a pig, a canoe hull or 400 pounds of sago (*gorugoru*), he says:

Now the value of the sago to the Gulf native is represented by the amount of work needed to produce it, not by its intrinsic value as a food article, because, of sago, there is an unlimited supply; the ilimo tree is one of a fast growing kind.... Probably the pig is the chief item of value from a Papuan point of view; but a full sized pig can usually be bought in the Gulf with a hatchet and a few sticks of tobacco.

He abandons his own labour theory of value when he goes on to say that: 'It is next to impossible, on a European standard, to estimate the value set by natives on this or that article'.

The Motu do not appear to have been in any way in a dominant position in the armshell and other valuable exchanges. In the passage from which the quotation is made above, Barton said that in 1902 the Motu paid £2 for armshells, a considerable sum considering the low level of wages. If Lawes's account of bargaining between Keapara and Motu is accepted, the former were unlikely to be bested. The standard rate for a large armshell is said by informants to have been, as in the Gulf, a *gorugoru* or a *moitabataba* (a long large bundle).

Quantities of pots and sago depended on the energy of those who provided them. The number of pots depended on the industry and skill of the women who made them and those of the men who made the canoes and later added further hulls. The amount of sago was roughly related to the number of pots and valuables brought but also, given an almost unlimited supply of sago palms, to the labour of the Gulf people concerned. The energy expended by the Motu, when the voyage is included, seems to have been considerably greater than that of the Gulf peoples.

While, in general, Allen's theme (1976:438) can be accepted that 'the three exchange systems [Koiari, Koita and Motu]...are interlocking and interdependent as food items, utilitarian goods and valuables all pass through the Motu central exchange', this interdependence can be exaggerated. Certainly the Koita obtained armshells through marriage and other exchanges, but as all coastal villages exchanged goods with inland peoples, most of these exchanges would have been carried on even if the *hiri* had not

existed. As Bulmer (this volume) points out, the term 'central exchange' is hardly applicable as trade was with a number of villages situated along a length of coastline and not a single centre. In this sense, other centres were to be found in the Hood Bay and Mailu areas.

The principal material goods which the Motu received from the network of exchanges were food, which was unusual among Oceanic trading systems. Some of the valuables which the Motu obtained locally or from traders from the south-east were retained by them or were exchanged for food or canoe hulls. These canoe hulls carried food and, on return, were given to others, used in subsequent voyages and eventually broken up and used as house flooring. The Motu also obtained minor articles such as weapons and grass skirts.

As Barton says, 'It is next to impossible to estimate values of goods exchanged in European terms'. Both sides in the various parts of the network derived benefits from the exchanges without any apparent superior advantages on either side. As Schwimmer (1979:71) has suggested in the summary of his article dealing with another trading system, 'while...the rules follow the principle of balanced reciprocity, these rules are in practice so interpreted that actual behavioural norms are close to Sahlins' mode of generalised reciprocity'. Both sides gained advantages from a mode of exchange involving 'generosity'. The Motu or Vulaa gained a secure base in a strange and, particularly for the Motu, a potentially hostile host village, while it paid the hosts to encourage further visits in the future.

One view of the basis of the *hiri* is that it was economic, the result of the need of the Motu for additional food in the lean season. The Western Motu were often hungry when they had exhausted the food obtained from their harvest. It is difficult to measure the extent of their hunger but at times it was extreme. Young and old died and frequently villagers were forced to subsist on bush foods (Lawes, Diary, 13 February 1876; Stone, 1880:103; Barton, 1902-3:20). Informants say that some of these foods caused discomfort and illness: *matoa* (*amorphophallus comparulatus*), for example, is said to have caused dysentery. Therefore they often urgently desired additional food which they could only obtain from the Gulf region.

There is evidence that the *hiri* was undertaken only to the extent that it was necessary. Manumanu and Rearea only undertook short expeditions because they lived in a more favourable environment than other Western Motu villages. According to early government annual reports (B.N.G.A.R. 1892-3:43), the Motu did not sail if the harvest was good. The introduction of money would have been unlikely to have increased food supplies sufficiently to alter village economies as few Motuans were employed for wages in the early 1890s. Even if some yams could have been kept through

to the next harvest, informants say that their fathers told them that they should undertake *hiri* expeditions because yams lost their savour after being kept.

An approach towards the *hiri*, raised by Specht (1980), is to regard the institutions in terms of exporting consumers rather than of importing food. The Gulf people fed the *lagatoi* crews for considerable periods and thus relieved the Motu villages of feeding a number of their biggest consumers.

If the view is taken that the economic imperative is a sufficient explanation for the existence of the *hiri*, it can be argued that those living on the margin of subsistence could hardly have afforded the luxury of running unnecessary danger for the rewards conferred by prestige alone. The elaborate rituals in preparation for, and maintained during, the voyage as well as the prestige, signified by special tattoos, attached to the successful carrying out of an expedition were social reinforcements. The rituals gave confidence: informants say that when in a state of ritual potency, they feared neither wind nor wave; and the rewards provided an additional spur to face the hazards involved.

The strongest argument against this view is that the Motu population survived and slowly increased. While Allen's use of the term 'affluence' in relation to the Western Motu may seem inappropriate, the concept of subsistence affluence (see e.g. Sahlins, 1974:1-39; Fisk, 1962:462-78; Stent & Webb, 1975:522-3) does embrace periodic food shortages. The population grew in spite of bad harvests, failure of the *hiri* to sail, and loss of canoes and cargo. It is difficult to interpret the rapid consumption of sago, which seems well attested, soon after it was received. It is possible, although the evidence is not clear, that villagers relied on the appearance of Konekone canoes with more sago. Alternatively, it can be considered as improvidence, and there are examples in many societies of institutionalised conspicuous consumption, which led to the impoverishment of those concerned.

Present day informants say that the number of canoes which sailed from a village depended on the state of the harvest. If it was poor, few or no canoes sailed, but if it was good, several expeditions were launched. This relationship between food supplies and the *hiri* appears to contradict that stated by early annual reports (see p.23 above) and to support a social basis for the *hiri* but this is not necessarily so. The harvests described by the annual reports may have been exceptionally large or modern informants have been thinking in terms of *hirilata* rather than *hirilou* expeditions.

It might be argued that the Gulf peoples did not learn to make pots so that the *hiri* trade could be continued and examples can be cited, such as the Yanamamö in South America (Chagnon,

1977:100), of people who deliberately did not make pots to preserve a particular form of trade. In the Konekone area, no clay was available for pot-making (Dawn Ryan, pers. comm.) and this is likely to have been so elsewhere in the Gulf region. Some Motu speakers in the Yule Island area deliberately tried to preserve their pot-making monopoly (Oram, 1981). During the long period during which the *hiri* existed, it seems unlikely that none of the Gulf villages would have taken up pot making should they have been able to do so in view of the strength of their desire to obtain pots.

Stent (pers. comm.) argues that fixed rates of exchange combined with generalized reciprocity indicate subsistence affluence, in which case prices are determined by social factors rather than economic scarcity. While the differences between *hirilou* and *hirilata* modes of exchange cannot be accurately assessed, it could be argued as suggested above, that the former was essentially an economic operation, while the desire for prestige was the basis for the latter.

Any conclusion must be tentative but the weight of the evidence seems to point to an economic basis for the *hiri* as it existed at the time of European contact. It is doubtful whether the Western Motu population could have withstood the degree of poverty which they would have experienced if they had not received supplies of sago, and these cannot be regarded as a mere bonus. The Motu were vulnerable and hardly in a position to bargain. If more balanced reciprocity was the mode in the Konekone area, it may have been because supplies of sago were more limited than further west.

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Note: This list contains references not cited in the text as they give access to source material for a more detailed study of the subject.

Some religious aspects of the *hiri*

John W. Gwilliam

Introduction

The Motu like all other societies have a system of beliefs which guides their activities in daily living. The world is not seen as composed of different and unrelated activities but as an integrated whole where physical and spiritual worlds are one. Almost every activity has some religious basis and/or is supported by religious beliefs. Often there are no sharp distinctions between the motives behind different kinds of actions.

The *hiri* trading voyages were no exception and many of the rituals and other religious practices and beliefs associated with the preparation and carrying out of the *hiri* have been described and recorded in the presently available literature (Chalmers, 1880; Barton, 1910; Price, 1975). There are beliefs and practices which have not hitherto been described, however, but which should be recorded if as complete an understanding as possible of the nature of the *hiri* is to be obtained. It is the purpose of this paper to introduce some of these briefly, in particular the concept of *irutahuna* or sacred area between the masts of a *lagatoi*, and the relationship or connection between this term and that used in other contexts, as well as between that and the term *udihā* used to denote the sacred people of the mats in the same sacred area, will be discussed.

The description is based on restricted research work carried out while the author was a student in religious studies at the University of Papua New Guinea in the mid-seventies. For this reason the account can only be a preliminary one but it is hoped that a more detailed one can be presented later when certain questions raised by this investigation have been pursued.

The description is supported by the testimony of two elderly Motu who have had extensive experience with the *hiri*, especially with its religious aspects. These testimonies are presented as Appendices 1 and 2 and referred to in the description in the following way: The initials SB and SH are used to refer to the speakers Seri Bodibo and Siaka Heni in each appendix

respectively. These are then followed by a 'Q' followed by a number and separated from the prefixes SB and SH by a slash. The numbered 'Q's refer to the questions posed by the author as interviewers and are numbered consecutively throughout each text, and include the answers given by the relevant speaker. Thus SH/Q12, for example, refers to the information contained in the answer to Q12 by Siaka Heni.

The ancestor spirits and the *hiri*

It has long been known (Chalmers, 1880:18; Oram, this volume) that the Motu speak of themselves as one with the peoples of the Gulf, as being of one origin, and Rev. Siaka Heni in his testimony, (SH/Q2), expresses this same idea when he says: 'The Motu and Namau peoples loved each other, just like they were from the same mother and father.'

The Motu believed that the spirits of the departed proceeded to the Gulf of Papua where they would forever dwell in the midst of plenty of food and betel nuts, and spend their days and nights in endless enjoyment, eating, chewing (betel nut) and dancing (Murray, 1874:10; Chalmers, 1880:19).¹

The ancestor spirits were honoured by a successful *lagatoi* preparation, expedition and return. This would have been of great assistance to the Motu people in their daily life for they constantly depended upon the assistance of the ancestor spirits in attempting to meet their daily needs.² The Motu honoured the Gulf 'gods' by visiting their temples especially upon arrival in the Gulf and prior to departure for home (SB/Q2). They also sought out charms there, stones and other objects such as sticks and leaves, that had been blessed by the 'gods' at Vailala, a great traditional religious centre, for use in fertility rites in their home village.

The Motu also maintained their contact with spiritual ancestors through the *irutahuna* both at home and abroad.

¹In his chapter 'The Barakauans' World View' in Kopi (1979) the author refers to the dwelling place of ancestors as *Koma Hanua*. This may well be the same as, if not derived from, the name for a former large village, called *akoma hanua*, near Urika in Koriki territory in the Gulf of Papua. I wish to thank Bishop Ravu Henao for bringing this to my attention.

²Laying a fish trap, digging the soil for a garden, planting new crops, succeeding in love, are just some examples of the many ways assistance was required from ancestor spirits.

The concept of *irutahuna* and its relationship to other terms

The term *irutahuna* can be used in many ways.³ In one sense it is used to refer to a definite place with varying degrees of holiness (*helaga*) about it. Thus when one refers to the *irutahuna* of the house it is usually the centre of the house that is being spoken about. When a shelter is erected out in a central part of the garden, this is held to be the *irutahuna* of the garden. These places in the house and in the garden were, and still are, held to be the spiritual and physical centre for the family's activities. In both these instances the belief is held that the spirits of the departed maintain their special point of contact with the physical world at the *irutahuna*.⁴ In modern Papua the communion table or altar is held by the Motu to be the *irutahuna* of the church building. Then apart from using the word *irutahuna* to denote a particular place with a degree of holiness about it, the word can be used to denote a group of people engaged in a common task of work or enjoyment - a small group of men sitting in a circle chewing betel-nut, this constitutes an *irutahuna* at that time. The word embraces the concept of 'making our hearts together', 'enjoying something together', 'a common activity which generates heat and power'.

Thirdly, the word *irutahuna* can mean an individual's heart or mind. 'You must respect your *irutahuna*', an informant will say while touching his chest. 'You must try to live holy and good.' Or alternatively, 'If you have sickness or boils on your skin many people believe that your personal *irutahuna* is no good.'

So therefore the word can be used in a physical and also an abstract sense meaning the centre of things in more ways than one.

The *irutahuna* on the *lagatoi* was the central part between the two masts.⁵ If it was a single masted *lagatoi*, or *udatamona*,

³While not being able to prove any definite connection as to the historical origin of the word *irutahuna* it is possible that some of the following Motu words have something to do with it: *hunia*, to hide; *iduhu*, a clan, family; *ihuna*, place of respect; *iru*, a line of men, a big group of people; *irurumatana*, tears; *gabuna*, place; *tahu-a*, to seek, to examine; *tubuna*, grandparent, grandchild; *unai*, that, those.

⁴It is often found in Oceanic traditional belief systems that the centre of spiritual power is at the physical centre of things, e.g. sacred objects were positioned at the centre of a building. A graveyard was often found in the centre of a village, initiates often slept in a house at the centre of a village.

⁵Whilst it is true that there were several especially holy (*helaga*) parts of a *lagatoi*, such as the bottom of the masts (*tanotano*), the decorative basket of cowrie shells at the top of each mast, the stone anchor and its rattan cane rope and the *taiabada* depositories of sacred 'medicine' towards the bow on either side, the undoubted
(continued)

the *irutahuna* was around the base of the one mast. Even today when the Motu go fishing, those on board will gather at what is considered to be the *irutahuna* of the canoe, even though it might have an outboard engine and not a sail, to share a common meal together and often make a prayer for success in their fishing trip.

The *irutahuna* on the *lagatoi* was the area in which the two holy men and the two holy boys resided and were confined on the voyages. These four people were the *udiha* 'the people of the mat', those in a state of high ritual potency.⁶ The *baditauna* and *doritauna* were the spiritual leaders on the voyage to the Gulf and return. There were mast captains and sail captains to attend to the physical running of the vessel. The *badi* and *dorिताudia* had spent some months in special preparation to obtain this ritual potency by exercising rigid self discipline in matters of sexual relationships, food consumption, and spiritual meditation. They were also in constant communion with the spirits (SB/Q9, Q12, Q15, Q18, Q30).

The two boys around the age of puberty and the sons or nephews of the two holy men were also called the *udiha*. Their prime qualification for the role was that they had sexual innocence. Their main work appears to have been to assist in maintaining the continuity of contact at the *irutahuna* on the *lagatoi* between the physical world and the spiritual world.⁷ For instance when either the *badi* or *doritauna* would leave his mat his place would be immediately taken by his *udiha* (SH/Q14).

For the time at sea (up to a week before the craft entered a river at its destination) these four people were obliged to obey a strict set of rules covering all aspects of their daily routine. They were all attempting to attain and maintain the very highest level of spiritual consciousness for they, and the crew of some thirty men, believed that the success of the whole expedition depended upon how well the *udiha* — the four individuals inside the *irutahuna* — performed their roles. The ancestor spirits could easily be offended if the correct ritual was not obeyed, or if the right degree of inter-personal relations was not kept, not only between members of the *udiha* but between members of the crew as well.

⁵(continued)

centre of spiritual power lay within the area between the two masts, the *irutahuna*.

⁶Note that in Barton's account (1910), *udiha* refers only to the cabin boys of the captains, *baditauna* and *doritauna*. My informants were adamant that *udiha* referred to all those who sat on the sacred mats, notably the captains and their cabin boys.

⁷Continuity is something often striven for in Oceanic belief systems. Objects such as stones, poles and fire are often used to help to promote continuity of sacred presence or favour (cf. SH/Q14, Q23, Q42).

Prior to sailing on the outward and return journeys, all those to travel on the *lagatoi* were obliged to meet together and confess any personal bad feelings that they might have had towards anyone else in the group (SH/Q18, Q40). Once all things had been straightened out, a communal meal was eaten by all.⁸ It was believed that the ancestor spirits were present at this meal and that they would be happy because the earthly side of the family were now at peace or reconciled with each other.

Much effort was put into ensuring continuity of relationship between the *irutahuna* of the house of the *baditauna* and *doritauna* and the *irutahuna* of the *lagatoi* (SH/Q14, Q23). These two men took their mats from the *irutahuna* of their houses on which they had been meditating during the construction of the *lagatoi*, and placed them in the *irutahuna* of the vessel when it was ready to sail. There were two fires within the *irutahuna* which were kindled from fires back in their two homes.

Continuity was striven for at the homes of the *badi* and *doritaudia* even after the *lagatoi* had sailed, with the wives never allowing their fires to go out and each of them spending long hours in meditation on their sacred mat⁹ on the floor at the *irutahuna* of the house (SH/Q42).¹⁰ All major social and economic undertakings were only commenced after appropriate communal meals at the *irutahuna* of the house. The *lagatoi* voyage was initiated by an announcement at such a meal in the house of the *baditauna*. Finally when death came to any member of the family, the body would be laid on a mat at the *irutahuna* for a time, before burial close to the house.

Conclusion

The preparation for the voyage of the *lagatoi* and the voyages themselves are heavily steeped in traditional religious expression. The sacred space on the vessels, the *irutahuna*, was undoubtedly held to be the power for the *lagatoi*, where those in a high state of ritual potency, the *udiha*, performed their mediating function between the physical world and the realm of the spiritual.

The importance of ancestor spirits to the Motu can be clearly seen from the way in which they depended upon those

⁸The traditional Motuan confession and communal meal bears interesting comparison to the Christian rites.

⁹These mats (called *geda*) were made of woven pandanus leaves. They were approximately two metres long by one metre wide and were generally smaller than those used for burials.

¹⁰The European custom of the eternal flame at some war memorials bears comparison.

spirits for a successful trading expedition. The stress on continuity between the two 'worlds' and between ship and shore is also of interest to scholars of traditional religious beliefs.

There can be no doubt that economic considerations provided much of the motivation for the *hiri*. However, I do believe that, when further research is undertaken into the religious aspects of the *hiri* and other great trading cycles along the Papuan coast such as the *govi* of the Mailu¹¹ and the *kula* of south-eastern Papua, it will be found that religious considerations were indeed a major factor stimulating the continuation of the *hiri*, with the sea voyage being necessary for many in their personal discovery of the 'other lands' that lay within the realm of the spirit. The sago brought back from the Gulf tasted good and satisfied physical hunger, but the balancing of the general village economies and the strengthening of peaceful relationships with neighbouring tribes tasted even better and satisfied other desires and needs. New ideas, gained from travel abroad, were introduced into the life of the people, moral standards associated with reciprocity were maintained and a high value was placed upon personal skill and courage and the religious beliefs of the people were interwoven within all of these things.

¹¹From a long and intimate association with the Mailu of Papua, Saville (1926:253) was convinced that the festival and trading voyages of the *govi* alone gave to the Mailu people the satisfying assurance of the final departure of the spirits of their recently deceased relatives to the land of the spirits. Similarly Fortune (1932:205) was fully persuaded after going on a *kula* trading voyage in the south east islands of Papua, that their essential character was not economic. Griffin (1925:186) also stresses the importance of traditional religious beliefs for the operation of the *kula*.

In his work, *True Christian Religion*, Emanuel Swedenborg (1771) was led to a similar conclusion through his observation of trading:

Moreover, with the Dutch the love of money is subordinate to the love of trading, and this is a spiritual love... The love of trading is spiritual owing to its use for it contributes to the general good. The thought of the trader is no doubt concentrated on his own particular good, whenever he is thinking from his natural mind; but his own good is bound up with the good of the community, and this is the final end of his endeavours...the Dutch more than all others, have this spiritual love of trading.

Appendix 1

Interview with Seri Bodibo, Poreboda village

The following is a summary of several interviews with Mr Seri Bodibo (Rahobada) of Poreboda village National Capital District, Papua New Guinea from August 1976 to September 1977.

The location for interviews was my house in Port Moresby. The informant was relaxed having been a regular visitor to my home over a number of years. He often slept with us when he was ill and obliged to attend hospital or when he wished to visit relatives.

In addition to the house interviews we made one visit together with my wife Laka, who has been very helpful in translating parts of the testimony (which was all given in 'pure' Motu), down to the Cultural Centre at Konedobu, Port Moresby. We boarded a full-size outward going *lagatoi* and we were able to discuss at first hand aspects of life on board a *lagatoi*. We did this in September 1977. This exercise was extremely useful. However, the time was shortened by the intense emotions that the environment produced for the old man and some questions have remained unanswered.

Seri Bodibo has lived at Poreboda all of his life. His father was Koita whilst his mother was Motu. He was and is still renowned for having considerable traditional power and it was not until late in life that he became a Christian, some thirty years ago. He has been a very active member of the London Missionary Society/Papua Ekalesia/United Church ever since.

I estimate that he would be now in his hundredth year based on:

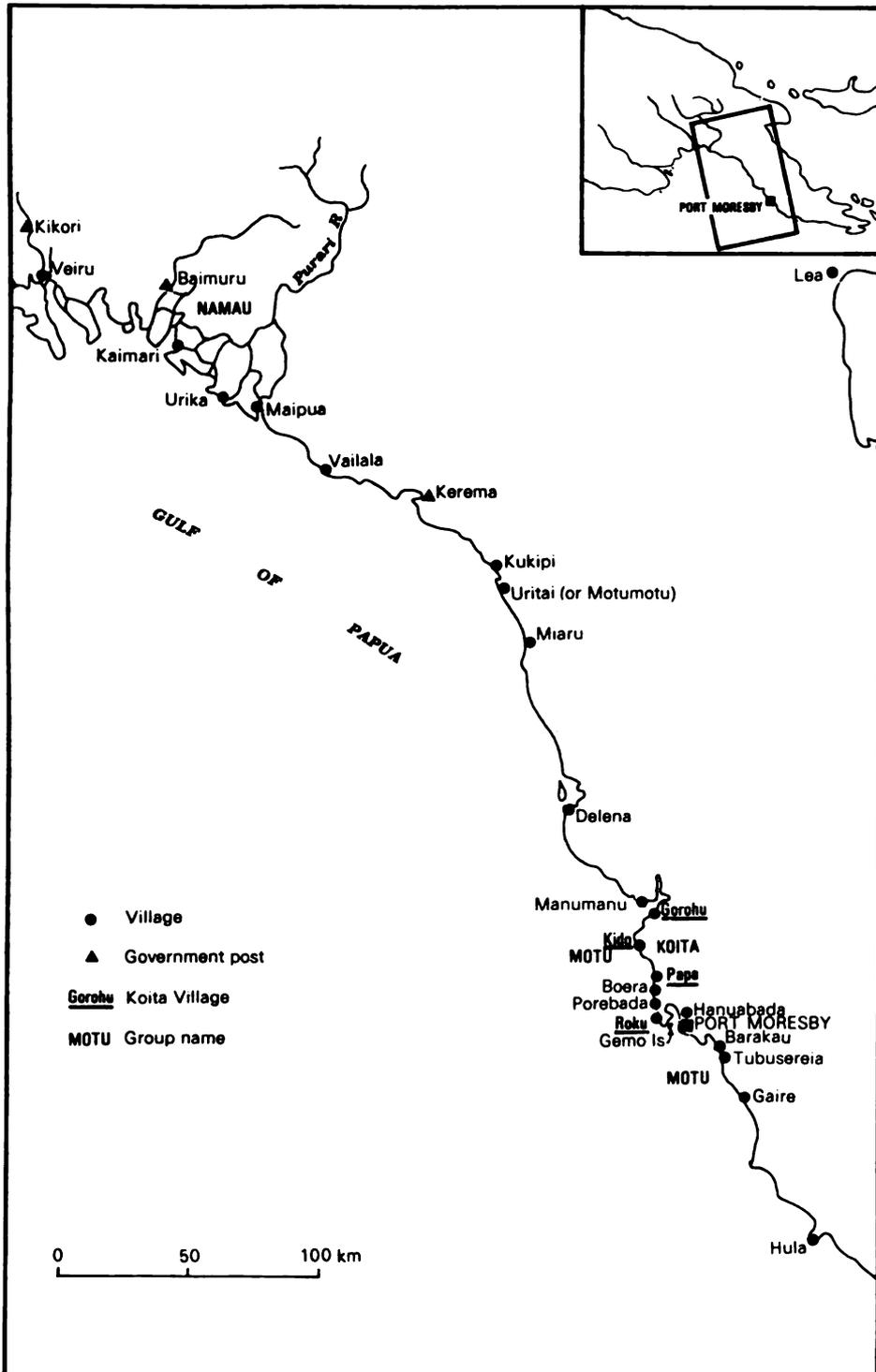
- (i) His vivid memories of the arrival of Pastor Koani Miki¹² in Poreboda village in 1888.
- (ii) That he was playing the game of shooting the coconut-husk when Koani arrived. This game is not usually started earlier than 7-8 years.

¹²Koani Miki was the first London Missionary Society pastor appointed to the village of Poreboda in 1888. His successful ministry of some forty years in this village became legendary.

Although he is thin Seri is well for his age. He has always eaten simply and will not eat sugar believing that it is a cause of shortening life. He walks long distances to his gardens and has a keen sense of humour displaying ready friendship to all whom he meets. His hearing is good, he is mentally alert and his eye-sight is reasonable for his age.

Interview

- Q1: Which places have you visited by *lagatoi*?
 'Many, for example, Maipua, Kaimairi, Kikori, Vailala, Kerema, Motumotu (Uritai).' [see Map 4]
- Q2: How many times have you been on *hiri*?
 'I cannot count them, some places I have been to several times. To show how many times I have been, my wife was so tattooed to show my *hiri* voyages, that tattoos covered the whole of her body including her eyelids. Only the palms of her hands and the soles of her feet had no tattoos.'
- Q3: What job did you do on the *lagatoi*?
 'A crewman in my early years but I soon became a *baditauna*. I am very proud that all of my voyages were a great success.'
- Q4: When did the women tattoo your wife? When you returned from the *hiri*?
 'No, as soon as the *lagatoi* left the village.'
- Q5: If your father was a Koita and even now you have many Koita friends and relatives, do you speak the language?
 'No, I can listen and understand it but I cannot speak it. I have been in a Motuan village all of my life.'
- Q6: Are Koita people *lagatoi* people?
 'No only those who have married with Motu, they sometimes went on *hiri*. Many of them were not happy in rough seas when the *lagatoi* rocked, as they are not good swimmers. Koita people are frightened of the sea, they are yam and garden people.'
- Q7: Seri, who was Edai Siabo?
 'Edai Siabo was a man from the old times. Edai Siabo is also a big hill near Boera. The two islands of Bava and Hidia were formed when part of that big hill called Edai Siabo threw itself out into the sea.'
- Q8: How did a *lagatoi* start? Who got the idea first to build a *lagatoi* in the village?



Map 4 The *hiri* trading area

'Any man respected by his friends and relatives could start the arrangements for the construction of a *lagatoi*. If a man wanted to make a *lagatoi*, he would first talk it over with his wife. If she agreed then she would make food and relatives from both sides of the family would come together. In front of all those present, the man would tie four knots in a piece of string as proof of the promise that he and his wife would stay apart, abstain from sexual relations, all physical contact, even visual contact, and that their desire that a *lagatoi* was to be made was real. They would then all sleep.

At first dawn the man would stand outside his house with a torch made from dried coconut leaves and he would light it. His wife had already made ready quantities of betel nut, lime¹³ and tobacco, for when the village people saw the lighted torch they would run to the man who would hand them betel nut, lime and tobacco handed to him by his wife. The light was a sign to the whole village that the man was going to make a *lagatoi*.

Each side of the family then set about building the *lagatoi*. Logs and other necessary materials would be obtained by the people of Porebada from Manumanu. Four logs were used and each side of the family built a small house on the *lagatoi* - at each end. Two masts (*autabua*) were made and sails (*lara*) of finely woven pandanus were made.'

Q9: What work did the *baditauna* and his wife do to help make the *lagatoi*?

'While all building activity was being carried out, the man and his wife must have no contact or communication with each other. If either heard the other coming then they must turn their head or if possible hide themselves. Each would spend the preparation time in a separate house sitting on a special mat reserved especially for them. Their chief occupation was to communicate with the spirits of the ancestors asking for their help and blessing on the building of the *lagatoi* and its future voyage.

They would each talk to an empty room saying words such as, 'Spirits, our men are helping to build the *lagatoi*, but we need your help too'.

The mats that each sat upon would not be touched by adults in any way but children were able to touch the mats.'

¹³Lime was, and still is, made from burnt, crushed sea shells or coral. It is an alkali which counteracts the acid from the betel nut and produces a pleasant taste sensation.

Q10: Why?

'Because children are clean and innocent they have not had sexual intercourse.'

Q11: Who looks after the *baditauna* and his wife during this time if they are confined to one place for long periods?

'The man and woman have their food cooked by single boys and girls respectively. They cannot touch the food with their fingers when they eat it but must use a spoon and they may only drink hot water never cold water. Neither are they allowed to bathe any part of their body by using any kind of water.'

Q12: The *baditauna* did not actually do physical work to help make the *lagatoi*?

'No, he stayed in his house. He could give orders, but he didn't work physically. His main work was to commune with the spirits.'

Q13: Were there any other holy men?

'Yes, during the preparations a second holy man (*doritauna*) would join in the preparations. He too had made the promise of sexual abstinence for four months. He could be a relative but need not be.'

Q14: Who were the *udiha* boys?

'The *baditauna* and *doritauna* would each take their young son with them on the *hiri*. They were little boys who had had no sexual intercourse experience. They would keep the big men company.'

Q15: What happened when the *lagatoi* was built?

'There was one week of feasting and dancing. When it was time for the voyage to start the *baditauna* would go to the *lagatoi* taking special care that no part of his body touched the salt water. The soles of his feet were not even allowed to get wet.

Arriving at the *lagatoi* the leader would hand out betel nut, mustard and lime to his crew. Then he would retire to his little house built for him in the space between the two masts (*irutahuna*).

There he would sit on his mat and in a voice loud enough for the crew and those staying behind to hear, he would speak to the ancestor spirits asking them to go with them on the voyage to quieten the big seas and ask some to stay behind to help those at home.'

Q16: What work did the holy men, *baditauna* and *doritauna* do then?

'Their only work was to talk to the ancestor spirits and also talk to the spirits of the places en route such as when the sea was too rough. The *baditauna* would also talk to whales if they were around. If he heard that the whales were close and might be a danger to the *lagatoi*, from his position on the mat, he would say words like the following: 'Whales this is your home, if you want to hurt us, please don't. We are doing all this because of our stomach, we are going to get sago.'

When big waves lifted the *lagatoi* up and down the leader would say in a loud voice, "I am here, I am here. I am not moving from my mat. I have tied four knots. *Heledaisi!* *Heledaisi!*"

Q17: What does '*heledaisi*' mean?

'*Edai* Siabo was the first *lagatoi* man. *Edai* means that. I would call out to make the *lagatoi* lively in the high seas. I always called my *lagatoi* '*Bogebada*'. I would talk affectionately to my *lagatoi*, praising it and encouraging it to overcome the big waves.'

Q18: How did the *baditauna* feel, did he sleep well?

'No. At night in good times and in bad, the leader did not sleep well. He was always alert to the words spoken by members of his crew especially about their inter-personal relations and their observations of the coastline and the winds and the currents. He was constantly communing with the spirits. He did not speak to crew members but could talk to the *doritauna* and the two *udiha* boys. He was not allowed to sight the sea and had to cover his eyes if he went to go to the toilet.

All the holy ones were under a very strong rule indeed that they could not wash any part of their body, yet the crew could wash whenever they wanted.

A *baditauna* was like the driver of a motor car. He had to concentrate on one thing only or the passengers would die. His work was to be in a holy state and carry on in that state successfully, by observing all the rules.

The *baditauna* and *doritauna* sat on their own mats, the *udiha* boys could sit on these mats but no member of the crew was permitted to, for they had not taken the promise to abstain from sex.'

Q19: When the *helaga-taudia* ate, what was the procedure?

'There were four fireplaces on the *lagatoi*, two inside the *irutahuna* area for the holy ones. The food would be cooked

by single young boys (close relatives). When it was ready, it was handed to the *doritauna* on a special plate, it was the best food available on the vessel. The *doritauna* would hand it to the *baditauna*.

When the two holy ones ate they were not allowed to sit cross-legged but had to sit upon their heels in a squatting position. They each had their own large ladle type spoon made from coconut shell. The hands of the holy ones could never touch the food.

The holy ones never drank cold water, all only drank the hot juice (*vasiahu*) from the cooking pot. Vegetables with coconut oil and/or fish helped to give body to the stock.

If the two young boys didn't want to drink the hot juice they sometimes were allowed to drink the green coconut which is not too soft and not too hard, the *gadu*, but if the father had made a hard rule the boy would only have what his father had – the hot juice.

The two holy men sometimes felt sorry for their two young boys who got tired of sitting around the *irutahuna*, and so they sometimes allowed them to stand up and look around but not too much. Their fathers tried to teach the boys self discipline.

As the *lagatoi* drew nearer to the destination, the holy ones would be alert to overhear the conversation of the crew. They never asked, 'Are we near land?', but they listened to others talking to obtain the information that they required.

Upon arrival at their destination the *baditauna* would leave his shelter and address the leader of the people who have come out to meet the *lagatoi*. Sometimes it would be the chief of the village who would come out to meet the new arrivals.

Sometimes the chief would send a reception committee. The *lagatoi* leader would ask the vital question. 'Do you have pigs?', "If you have pigs then you will have the contents of this *lagatoi*, if you have no pigs, then you will not have the *lagatoi*."

Q20: Why is pig meat so important?

'The crew would be very hungry for pig meat after their trip and they relish the thought of consuming large quantities of nice pig meat with the fat and the meat together and the delicious taste and the thought of the grease running down from the lips.

The feeling of the crew was like this: "We have worked very hard for him (the *baditauna*), he will reward us by arranging for us to eat pig. The pig meat when eaten by the crew would make them all feel really alive."

Q21: What happened then?

'The leader and the crew were then taken inside a spirit house where a feast was prepared for them. A human skull was placed in the centre of the food mat with the assurance that its presence would be a blessing for the visitors. There were lots of skulls and carved boards hanging around the walls of the spirit house.

During their stay the men would put their new logs (*asi*), hollowed out on either side of the original log. More would be placed on the outrigger side (*darima*) to allow for the counter balance needed because of the wind pressure on the sails. On the mast side (*enoeno*) the larger logs are positioned whilst on the outrigger side the smaller *asi* are placed.

Sometimes when all the work was finished and the crew were waiting for the sago the *baditauna* might say to his crew, "You boys are becoming tired, why don't you go and look for coconuts?" (meaning girls)

As he says this he knows that he is strong, he has kept his promise and he is inside the promise. He is a proud man.'

Q22: When the time had come for the loading of the sago were the holy ones subject to any rules?

'Yes, when the crew were putting the sago (*rabia*) on the *lagatoi* the *baditauna* observed all things closely and he didn't eat much. He did not sit at ease because he was anxious whether or not everything would go right for the return journey.

The crew were all happy the *lagatoi* was filling up with sago but the *baditauna* was still worried and so the crew wouldn't observe his doubts he would say that he was going off to pass urine but in fact he was taking time to look at the weather, the tide and to think things over pertaining to the return voyage.

He watched the marks on the logs to see how far they were down in the water because of the heavy sago which was really like wet sand - very heavy. He talked cheerily to his men not showing his inward fears.

The holy ones would take their place between the masts for the return trip.'

Q23: Should the *baditauna* become sick or die on the voyage who would take over his spiritual duties?

'The *doritauna*.'

Q24: Where were the cooking fires positioned on the vessel?

'There were four fires. Two inside for the holy ones and on the forward journey two outside on the catwalk about one metre wide running along both sides of the *lagatoi*. However on the return trip as the craft was so low in the water because of the heavy sago, the waves might put the fires out so they were placed inside the vessel.'

Q25: What would happen if the wind dropped altogether?

'The crew would put the anchor down and then they would go to sleep, but not the holy ones and certainly not the anchor-man who would remain very much alert and wait for signs of the wind coming.'

Q26: Is there anything the holy ones or the anchor-man could do to whistle up the wind?

'Yes the anchor-man would talk to the shell baskets at the top of each mast like this, "What are you doing? It is a matter of life and death that we have wind. We are not moving. Hurry up wind, the crew will become very tired and they will be lazy."

When the wind blows, the anchor-man will call out, "Boys, get up! The wind is coming! Quick *doritaudia* put the sail up! Quick *baditaudia* put the sail up! Hurry up you people pull the ropes!"

Some pulled the anchor up, others would help pull up the sails. The holy ones would sit very still, they would not move, but they would have great inward joy that the wind had arrived.'

Q27: Why were the sails of a *lagatoi* shaped like a crab's claw?

'Because like as our body we have two arms which help us to keep balance, so does the sail. Also the two top flaps help to catch the wind better.'

Q28: What decorations did the *lagatoi* have on it?

'On the forward journey banana leaves were tied to the mast, but on the return journey back from the Gulf these were replaced with branches of the sago-palm.'

Q29: If holy ones were cold, could they wear anything other than their girdle?

'They could use the wide pieces of soft material obtained from the sago tree. The crew would bring these back, quite an amount in fact to use as blankets in the village.'

Q30: On the return journey would the *badi tauna* still address the spirits in a loud voice, loud enough for the crew to hear?

'Yes, he would say "Lift up my canoe faster, faster!"

(*Heledaisi Kevaubada, heau, heau!*). He would also encourage the *lagatoi* to be strong "Can't you see the other *lagatois* are going faster? Go faster! Faster!"

Upon safely arriving back at a spot off the coast between Manumanu and Porebada, with the hill called Lagava near Boera coming up in the distance, the crew would become very happy and they would run to the *irutahuna* and drag out all the holy ones and in fun push them and pelt them with betel nuts and throw the two holy ones and the two *udiha* boys overboard which would immediately end their state of sacredness, their special power coming through holiness-obeying all the rules.

While the *baditauna* and *doritauna* and their two boys were hanging on to the side of the *lagatoi*, the crew would splash them and push their heads under the water.

No one would become angry, everyone was enjoying themselves. They were doing this because they were close to their home village.

The crew hit the holy men on the back-side and pretended to fight them - everyone was happy. The holy ones were then, in fun, pushed to the back steering platform and told in these words to steer the vessel as their hands were placed on the big oars. "Now is the time for you to do some work. You people steer the *lagatoi!*"

So far on the voyage back, the crew nor the holy ones have been allowed to eat sago. They have eaten bananas and a type of taro, and sweet potato.

The *baditauna* and *doritauna* give sago to the crew to cook and eat, and they issue betel nut from their stocks which are larger than the crews, as a present for their crew. The *baditauna* would then stand up on the *lagatoi*, and springing up and down exclaim "Ah! Ah! Ah!, we are here, we are nearly home now."

Doing this he was talking to the spirits that travelled with his *lagatoi*. He also called out to the place spirits. When the *lagatoi* had been sighted by people watching from the two hills near Boera, the conch shell would sound. Identification was made by the flags that the *lagatois* flew.

At Porebada, the *baditauna*'s wife who had been staying mostly inside her house sitting on her mat whilst her husband had been away, was dragged from her house, taken to the sea and pushed under a few times. This was the first water that had touched her skin for many months.

She was very happy and she danced while she was still wet. The other women took coconut oil which they rubbed on her skin. They adorned her with grass skirts and *toea* necklaces and tied on to her arms perfumed leaves. Everyone

started dancing and everyone was very happy at the arrival of the *lagatoi*.'

Q31: Why did the men go on the *hiri*?

'To carry out an old custom which was part of our life. It was a service to our women who have worked hard to make the pots. The women have done their part and the men must do theirs. Because of women the men go on the *hiri* to sell the pots.'

Q32: Were people kinder in past time?

'Yes, in the old time within the tribe there was a lot of love and mercy shown for others. Now our children are not as good. Before the people didn't know the laws of God yet they showed love, but today they know the laws but they don't show love. Now is a silly time. The old time before was really wonderful. Now people are very selfish. There was real love before not now.'

Q33: You seemed to have enjoyed your days spent on *hiri*. Why?

'The whole *hiri* including the preparation was a most satisfying experience. The school of life for men was the *lagatoi*. The important thing in life was the *lagatoi*.

It was very hard work, very tiring work, but oh! so satisfying. A *lagatoi* to me was like a son. There was an immensely strong feeling between a man and his *lagatoi*. You made it. It belonged to you. About the *lagatoi* there is happiness everyday — all the time. I have love for a *lagatoi*.'

Q34: Upon your return to the village what would happen then?

'Everyone was very happy. We would all be able to eat sago with our fish. Many Hula people would come to barter their fish for our sago, and many inland people would come bringing their vegetables to exchange for sago. Porebada would be full up with visitors.'

Q35: What parts of the *lagatoi* were specially holy?

'The *irutahua* (between the masts), the *autabua* (masts), especially the root section of the mast (*tanotano*). "*Tanotano baiahanomoa*." Let us praise the base of the mast.

At meal times the older men on the *lagatoi* would take the day's rations and place at the *tanotano* and ask a blessing on the food.

The anchor (*dogo*) was especially holy as was the rattan cane rope tied to it. No one could walk over the anchor rope. The anchor-man (*dogotauna*) had to be responsible for

it, and in certain circumstances whilst at anchor, he had to leave the rope in his hand with one man on either side of him.

The baskets on the top of each mast were holy and were symbols of holy presence. The anchor-man would speak to them when the craft needed wind for the sails. They would be spoken to as people - close relatives.'

Q36: What about the string bag that each holy man had?

'Like all things belonging to the holy men it was considered to have ritual potency. No one would touch them but the *udiha* boys could because they had not known women.'

Q37: Was the string bag held in a fixed position?

'No.'

Q38: Did the holy men have a little pot in which they burnt 'medicine'?

'Yes, the *baditauna* and the *doritauna* each had their own little pot. The "medicine" in them helped the *lagatoi* to go fast and well. The *baditauna* would say to his pot, "*Sivio, heamu eiava lasi?* (Sivio, are you fast nor not?)"

Wild ginger was wrapped in dried leaves and burnt inside the pot, dried banana leaves. Sometimes the leaves were steamed on top of hot stones.'

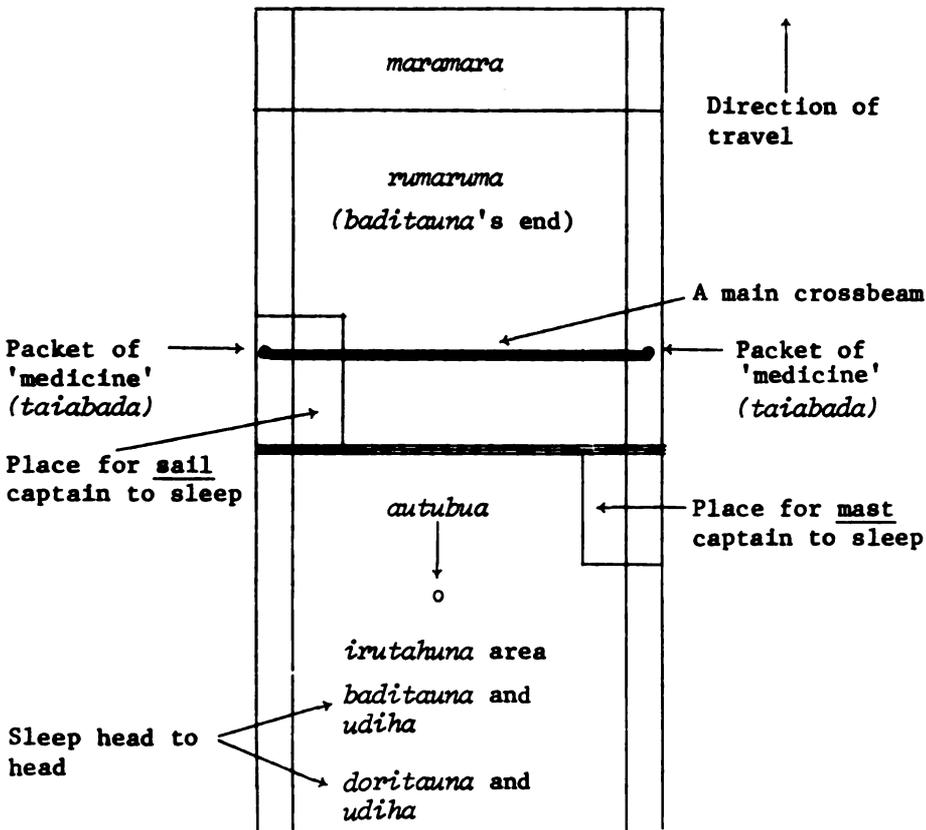
Q39: Were packets of medicine placed in any other part of the *lagatoi*?

'Yes, a carefully rolled packet of dried banana leaves enclosing wild ginger was inserted with magical words in the spot known as the *taiabada* (lit. ear big). This place was called this because ears can hear everything so everyone must say the right things because the "medicine" is listening.'

Q40: Where is the *taiabada*?

'It is at the *baditauna*'s end of the *lagatoi*, on the starboard side in the hole of the log where the main cross beam is situated that ties all the logs together. It is usually the second cross beam back from the wall of the crew's shelter (*rumaruma*), closest to the *irutahuna*. A packet of "medicine" is also inserted in the corresponding position on the port side. (See diagram, p.53).

That same "medicine" on the return journey would be taken out and put in similar positions in the log of the *doritauna*'s end. For his end would become the bow for the return journey.



The old packet of "medicine" would stay in the log for a long time. If the log was worn out then the packet would be taken out and used again in a new *asi*.'

Q41: What relationship had the *patapata*, or *dubu* (religious platform in the village) to the *lagatoi*?

'Not that much really. The women sometimes watched for the return of the *lagatoi* from the platform, and when sighted they would dance on it and they would run around dancing near the posts.'

Q42: Some of the posts of this *patapata* (*dubu* in Konedobu cultural centre), three out of the four in fact, have a carved top similar to the crab's claw, is that a connection with the *lagatoi* sail?

'Probably, but remember that these posts are primarily intended to represent the respective clan groups (*dubu*).'

Q43: What about those white cowrie shells hanging down from the front of the *dubu*?

'Yes, they are the same type of shell that is used for the

holy ornaments that hang down from the woven basket at the top of each mast.'

Q44: These two main horizontal beams on the *dubu*, what do the carvings represent?

'A crocodile or a snake.'

Q45: What are your feelings about a *dubu* compared with a *lagatoi*?

'I don't have love for a *dubu*, I have love for a *lagatoi*. A *dubu* doesn't make me happy — but a *lagatoi* has happiness — everyday — all the time.

A *lagatoi* is more important than a *dubu* because lots of people from other villages come to get food from it and enjoy it, making feasts that last a long time. Lots of fruit (good things derived from effort) come from a *lagatoi*.'

Appendix 2

Interview with Siaka Heni, Hanuabada village

The following is a record of the main points from a five hour conversation held at the home of the Rev. Siaka Heni on 29 October 1977. We were seated on two chairs on a newly woven mat in a room overlooking the harbour. There were many fishing nets and lines hung around the room.

Rev. Siaka Heni was born in 1915 at Elevela. He spent most of his working life as a Pastor of the London Missionary Society serving in a number of villages along the coast of Papua. His father's name was Heni Mamina. His mother was from Hula village. Rev. Siaka Heni is now retired but believes that a minister can never be said to have retired in the same way as other occupations. He is a most active man spending much of his time these days making canoes for people.

Interview

Q1: Which places did you visit on *hiri*?

'Mostly villages around Namau. This is the area name for villages around Kikori-Veiriu. Hanuabada, Porebada, Boera, we mainly went to Namau and Kaimari.'

Q2: Why was this so?

'Because the Motu and the Namau peoples loved each other, just like we were from the same mother and father. There were plenty of good sago and logs at that place. We trusted each other. They knew us, we knew them. Sometimes if they came to Moresby they would sleep in our houses at Hanuabada, here at our village.'

Q3: Did a *lagatoi* go back to the same place each time?

'Very often yes. Once a good trade contact was made it was wise to keep it.'

Q4: Why?

'Because people would be ready for you and they would be angry if you traded with others. Sometimes if a *lagatoi* was making a new contact for itself and it sailed into a

river which had a village on either side of the river, and if it started to deal with one village, the opposite village would be very angry – not with us Motuans but with the neighbouring village. Sometimes they would actually fight each other using arrows and spears, but we would stop the fight.'

Q5: How?

'Either the *baditauna* or the *doritauna* would tell a crewman to take one large pot and, in clear view, hold it up and dash it on the deck, completely breaking it. The fighting would now stop because it showed that we would really break all the pots and nobody would get anything, if they didn't stop fighting.'

Q6: In a 1929 copy of the *Papuan Villager* I read that Koita villages such as Gorohu, Kido, Papa, Roku made their own *lagatoi*.

'Yes, but they copied the Motu. For some years prior to the 1920s, some Koita had sailed with the Motuans, they learnt how to sail. In the early thirties some Koita villages made their own *lagatoi*. Villages such as Gaire, Barakau, Tubuseria are other villages that copied *lagatoi*-making from us.'

Q7: I believe that you sailed as a *lagatoi udiha* boy?

'Yes a couple of times I held this position. My uncle, Dikana Uda of Botai, was the *doritauna*. It was around 1929-30 I was in standard four. Percy Chatterton was my Cub Master, I didn't want to lose my place in the Cubs for that was the rule, if you missed some meetings your place was given to someone else. Many boys wanted to join as there could only be twenty-four in the Cub Pack at a time. Mr Chatterton said that I could go on the *hiri* and that he would keep my place.'

Q8: How old were the *udiha* boys?

'Oh, about 10-15 years. They had never slept with a woman. If the *baditauna* or *doritauna* had no children then a man could perform the same functions, but mostly it was the young boys.'

Q9: What happened at their place the *irutahuna* on the *lagatoi*?

'The two mats were placed down. They were very holy. They were carried on board by the *baditauna* and *doritauna*. At the same time they both carried on board their holy string bag. Both the mats and the string bags were holy and only the *baditauna* or *doritauna* and their *udiha* could touch them.'

A dividing line made by a thin stick tied to the deck divided the *lagatoi* into the two halves, the *badi* end and the *dori* end.'

Q10: Why was this?

'It was mainly useful for loading purposes, pots on the forward journey, sago on the return could be stowed or stacked from the ends of the *lagatoi*, under the crew quarters in all the logs right through to the centre of the *lagatoi* to the dividing line.'

Q11: Tell me more about the two mats.

'Well they were holy, both had the same degree of holiness. The *baditauna* and the *doritauna* had exactly the same amount of holiness each also.'

Q12: How were the mats used?

'The *baditauna* and *doritauna* could never sleep on the mats. They could sit on the mats and when the *lagatoi* was sailing, they were expected to sit in a squatting position on their heels facing the direction of travel. As a concession they could sit on the mat with their knees up and together with their arms around their legs, and hands clasped in front of their knees. If it was calm and the *lagatoi* was not running, then the *baditauna* or *doritauna* could sleep, but only on the bare boards alongside their mat.'

Q13: Where did the *udiha* sleep?

'They could sleep on the mat of their father, but if they were sick then they had to sleep on the bare boards.'

Q14: What else did the *udiha* do?

'They had to take the place of their father if he left his position on the mat at any time. Someone, either the father or the boy, had to be on the mat at all time. This applied to the *baditauna* and his *udiha* and the *doritauna* and his *udiha*.'

Q15: What was the position of the string bag?

'It hung dead centre over the mat of each *badi* and *dori*. It was very holy and contained lime pot,¹⁴ betel nut, tobacco,

¹⁴A lime pot was a container for holding powdered lime. It was usually made from a gourd or large empty seed case about 25 cm long. An essential part of the pot was a spatula or stick which was used, when suitably moistened with saliva, to extract the lime from the pot and to transfer it to the mouth.

eating fork and spoon. The *badi* and his boy could only touch their string bag, not even the *dori* or his boy certainly no member of the crew.'

Q16: Does that mean that the crew of the *badi* and the crew of the *dori* had to stay at their respective ends?

'No, the crew were free to move around anywhere on the *lagatoi* to talk with and to help each other. As a lot of steering had to be done at the *dori* end, the *badi* men would go back to do their share of the steering. Any fish caught were shared by both ends of the *lagatoi*.'

Q17: What other work did the *udiha* have to do?

'Nothing just to sit on the mat and eat food.'

Q18: What about the small pot of 'medicine' that the *badi* and *dori* had?

'By the 1930s this practice had stopped but the new logs were still fumigated with "medicine".'

Q19: How was this 'medicine' made?

'From the ashes of mangrove and/or some other trees and dried weeds. These weeds were actually dried leaves of a small banana called *unauna*. It is the species of the banana that always bears fruit first.

Today every man before he takes his canoe out fishing will place a powdered milk tin with ashes in it, in the bow of his canoe to bring his trip good fortune.'

Q20: Were prayers made on the voyage?

'Yes, every morning and evening the whole crew would assemble in the area of the *irutahuna*. If the *badi*- or *doritauna* was a Christian he would say the prayer. If not, then a Christian crew member would say the prayer.

Rev. Rea Tau, after he left Poreporena Church (Hanuabada) and went to Porebada to be the Pastor, became the first Pastor to become a *baditauna*. He was on a *hiridudu* which could happen sometimes if a man was considered to be very strong in holiness then there would only be one man who would fulfil both functions as *badi*- and *doritauna*.'

Q21: The word *udiha* means what?

'*Geda tauna be udiha tauna.*' ('The mat person is the *udiha* person.')

Q22: How did a man learn about the making of a *Lagatoi*?

'Each father must teach his son. It takes some years. They also teach them about navigating by the stars such as the

morning star, afternoon star and the small cluster of stars called *nohobo*. Also the landmarks had to be learned.'

Q23: How did a person become a *baditauna* or *doritauna*?

'A father who is a *badi-* or *doritauna* would say to his son: "One day my boy you will take my place." The boy would remember this and one day would become what his father was, he will be accepted by others for that role because of what his father was in his life.

'If a man and his wife agree that a *lagatoi* will be made, then they will promise not to sleep together for some months. The longer that they can remain separate the greater will develop the degree of holiness that they will possess. Four months at a minimum but several months preferred.

A widower could also become a *udiha* in place of a boy, but this was not often done.'

Q24: Who were the main people on board the *lagatoi*?

'The *baditauna*, *doritauna* each with their own *udiha* and their own mast captain and sail captain.'

Q25: In ordinary sailing who would give the orders to the steersmen?

'Any of the senior respected members of the crew.'

Q26: What about the *baditauna* or *doritauna*?

'No, however, in times of difficulties then they could be asked questions which they would answer.'

Q27: There were two kinds of *lagatoi* weren't there?

'Yes, the single mast *udatamona*, and the double mast *lagatoi udarua*.'

Q28: Which was the fastest?

'I can't say. Sometimes the *udarua* was, sometimes the *udatamona* was, it all depended upon the strength of the wind and its direction. In recent years the *udatamona* more often used calico sail cloth.'

Q29: What were the time lengths of the *hiri*?

'The longer *hiri* voyages called *hirilata* left in September, October or early November. The shorter *hiri* voyage, the *hirilou* left in November or December.'

Q30: Were the pots in great demand in the Gulf?

'Most certainly yes! Even though we had our objective, as we passed close to some villages they would paddle out in

fast canoes and try to make us go to their village so that they could take our pots and give us sago and timber. But the *baditauna* and the *doritauna* would confer together and say, "No we must go on to the village we have already decided upon because we have called its name".'

Q31: Were pots your only cargo?

'No, in the thirties besides pots our women made clay plates and dishes. The names of these were: *nau*, small plate; *kibo*, dish; *tohe*, big pot (could boil ten sticks of sago); *uro*, small pot.'

Q32: How did you keep account of the trading obligations?

'We used a book and a pencil but our fathers had used small sticks made from the rib of the coconut leaf.'

Q33: Did the men who worked for money in town feel sad because they could no longer go on *hiri* and take their relatives pots to exchange for sago?

'No, because as they worked, they had money which they could use to buy bags of rice, and tobacco, and fishing lines and hooks. All of these items could be sent out to the Gulf by relatives or friends going on *hiri* or they could send it with a crewman of one of the coastal commercial ships going up to the Gulf or Delta.'

Q34: I have noticed in the *Papuan Villager* that the people in the Delena area also went on *hiri*.

'Yes, they too knew how to make pots, but they only went on short *hiri* voyages to the Konebada area — Lese villages, Miaru, Motu Motu. (Konebada means "big beach", i.e. the beach from Iokea to Kukipi.)'

Q35: When the several *lagatoi* of Elevala and Hanuabada were ready, did they leave together or any time individually?

'Usually together but sometimes one by one. Women and crew would cry much and some people would accompany on board each craft as far as Gemo Island (at the mouth of the Port Moresby Harbour). There they would jump over into the sea and swim to the mainland and walk back to Hanuabada.'

Q36: Was there ever a fleet captain?

'No, each *lagatoi* had only its *baditauna* and *doritauna*.'

Q37: At their destination did the *baditauna* and *doritauna* of each of the vessels meet together at times to talk?

'Yes'.

Q38: Were their *udiha* boys with them at these meetings?

'No, they had to stay behind in the small sacred house (*gogobi*) built by the Motuans. Each boy had to sit on his father's mat. Each *udiha* was perfectly covered so that no rain could fall on him nor on to the mat.'

Q39: In your opinion, which spirits were regarded by your people as being the strongest, place spirits or ancestor spirits?

'Ancestor spirits.'

Q40: If there was anger, bad feeling or fighting on board the *lagatoi*, how was it put right?

'By talking and by prayer. Everytime before the *lagatoi* left Hanuabada or left the village in the Gulf for the return voyage, everyone going on the *lagatoi* had to meet together and make confession of any feelings of ill-will towards any others. Their friends would then counsel them to make friends, for everyone knew that trouble would come whilst the *lagatoi* was at sea if there was any bad feeling not put right. At the end of the meeting everyone would eat food together.

When we made a new *lagatoi* we would all remember the story of Kaimi-Gore and Ido-Gore, two brothers who started off well, but because of their crews fighting, the two *lagatoi* on their return voyage were made to drift apart and the *lagatoi* of Ido-Gore and his crew was never seen again.'

Q41: What customs had to be observed regarding eating within the *irutahuna*?

'The *udiha* boys ate first. They had their own little dish about a handspan wide. If they left any food in their dish then the father would eat it. Whenever the dish was washed out the cleansing had to be done gradually, putting some water in to the dish and taking it out with a spoon, never could the water be just tossed out. The *baditauna* and his *udiha* could not eat at the same time. The boys ate first because they had not known a woman sexually. If food was left on their father's plate the *udiha* could eat it if they wished. Never could the crew eat the food of the *irutahuna* people nor could the *irutahuna* people eat of the crew's food from their big pots.

It was a tradition that the dishes of the *udiha* boys and the plates of the *baditauna* and *doritauna* should never be placed upside down.'

Q42: Were the fires on the *lagatoi* kept burning all the time?

'Yes, and also the fires of the households back in the village of the *baditauna* and *doritauna* were never allowed to go out the whole time that the *lagatoi* was away from home.'

Q43: Could the holy people wash?

'No, when the new *lagatoi* was being made in the village for the outward journey, as soon as the tying operation started—lashings etc. the holy people stopped washing.

When they safely arrived at their destination in the Gulf, they could wash in water, but as soon as the new larger *lagatoi* was starting to be made for the return voyage home, and tying and lashings were commenced, all washing or contact with water on the skin of the holy ones had to stop.'

Q44: Could oil be applied to the skin?

'Yes, but it was thought much better not to.'

Q45: Where did the Hanuabada people obtain building materials for the outward journey of the *lagatoi*?

'From Manumanu, Vemaui, but mostly from Doura-inland.'

Q46: The *lagatoi* had different length flags didn't they?

'Yes, the *Kevaubada* had long flags while the *Bogebada*¹⁵ had short flags — ten or twelve of them representing black birds with a white neck.'

Q47: Was only fresh sago brought back?

'No, sometimes hundreds of sticks of sago that had been roasted were brought back. They were about two feet long called *dikea*. They were stacked in a cupboard inside the crew's quarters at each end of the *lagatoi*.'

Q48: Did the *badi* end stay at the bow on the return run also?

'Yes, the anchor was always the responsibility of the *doritauna*'s side. However, for wind changes and the necessary tacking, temporarily the *dori* end would become the bow.'

Q49: As far as the pots were concerned, were they only stowed inside the logs?

'No, the logs would be filled, but then narrow vertical holding stacks would be made. The crew would each stack up their pots carefully, packed with dried banana leaves. These stacks were called *daiutu* (a small room).'

Q50: Where did the *baditauna* and the *doritauna* stow their pots?

'In the logs of the *irutahuna* and also within their shelter.'

Q51: Do you see any ways that the *irutahuna* on the *lagatoi* is like the *irutahuna* of the house?

¹⁵These are names of *lagatoi* sponsored by different clan groups.

'Yes, it is also like the place made by our people when we make a garden. In the centre of our garden we have the *ihuna*, a place that we respect for our ancestors.'

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Towards a history of the *hiri*: some beginning
linguistic observations

Tom Dutton

Introduction¹

The history of such an important recurring event as the *hiri* can only be built up slowly and by appeal to evidence provided by different disciplines since there are no indigenous written records to provide the basis of such a history. Linguistics has, potentially, an important part to play in this building-up process since it studies languages, which, because they are used by people to describe events in which those people are, or were, involved are themselves repositories of historical information. Linguists attempt to gain insights into those events by comparing the languages of the speakers concerned and by accounting for their similarities and differences – any regular correspondences in both form and meaning between two or more languages must have an historical explanation, either through inheritance from a common ancestor, or by borrowings from one another, or from a common source.

In this paper I look briefly at a number of linguistic features that involve similarities and differences between Motu and unrelated Gulf languages which ultimately must have something to do with contact between speakers of different languages and therefore with the *hiri*. Because of limitations of time, space, and available materials, however, it is not possible to consider other possible cases which may be just as important, if not more important, than those considered here.² I hardly need point out, therefore, that as such this paper is very much a beginning and exploratory study, but one which I hope, nevertheless, will help

¹I should like to thank Nigel Oram, John Lynch, Ken Petrie and Bert Brown particularly for commenting on various aspects of an earlier draft of this paper and/or for providing additional information which has been incorporated into this version.

²I am thinking here of such features as loan words in Motu, and the word for 'pig' in Magori at the eastern end of the Central Province, Papua New Guinea (Dutton, 1969:619) and in languages west of the Gulf of Papua (Ray, 1907:404, 496), which suggest contact with the Motu.

to stimulate interest in the problems examined and to promote further research in this area, both geographically and linguistically speaking. Nor can I emphasise too much that as a method of proceeding we shall be working from the linguistic evidence to history, and not the other way around, since we are, after all, seeking to gain insights into history that are contained in the linguistic record and not using history to gain insights into the linguistic record. This does not mean, however, that we do not take what is known of the history of the event under consideration into account at all. We do, but that comes later when any results that we may obtain have to be assessed in the light of the historical record.

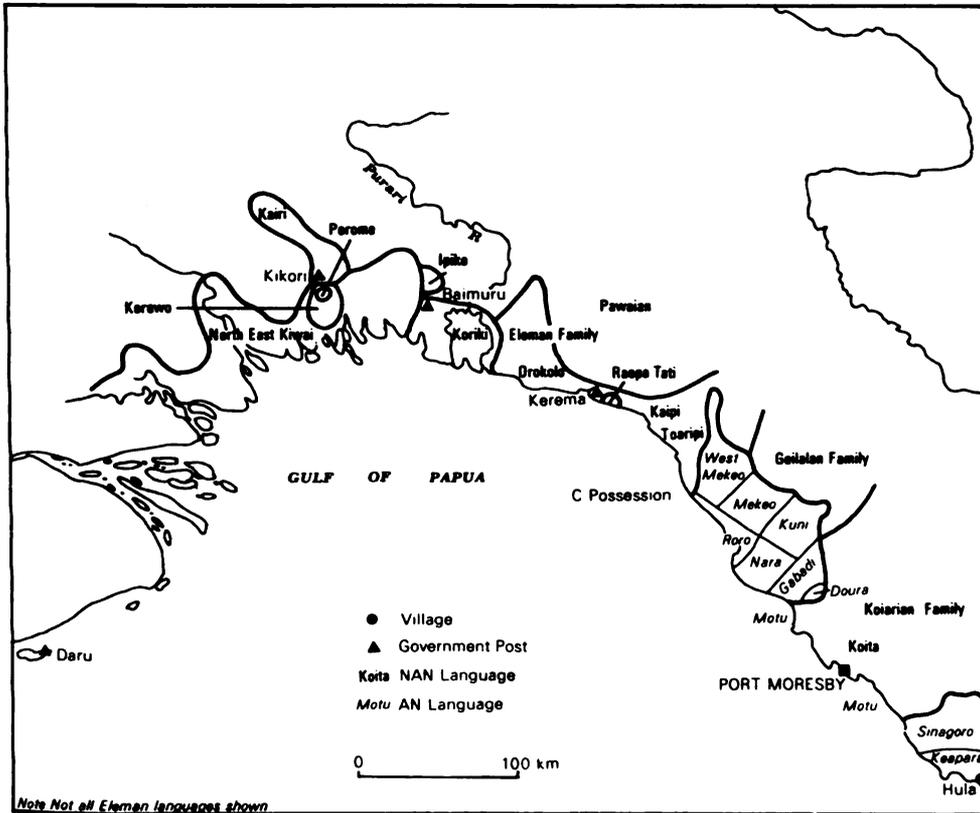
Linguistic setting

At the point of European contact the *hiri* encompassed peoples living between Port Moresby in the east and the Purari River Delta in the Gulf of Papua in the west (see Map 5). This area is occupied by, linguistically speaking, two different groups of people. Austronesians (AN) and non-Austronesians (or Papuans) (NAN). AN speakers occupy the area between Port Moresby and Cape Possession and NAN ones the area west and inland of that, except around Port Moresby where NAN speaking Koita are intermingled with AN speaking Motu (Dutton, 1969). The AN languages are (from east to west): Motu, Doura, Gabadi, Nara, Kuni, Mekeo, West Mekeo and Roro. Motu, Nara and Roro are of particular interest because they are today the major coastal groups and because the Motu, and to a lesser extent, the Roro, were both sea-going traders (Haddon, 1900:275 and *passim*). The Nara are of interest too because reference is made to them in oral traditions concerning the origin of one of the NAN speaking groups, the Raepa Tati, near Kerema, more of which will be said later.

The NAN languages of most immediate concern are those referred to in Brown (1973) as the Elema, Raepa Tati, and Namau, although in this paper the latter will be referred to as the Koriki since that is the name that I have used in other relevant accounts to which I shall refer later.

There are eight Eleman languages the speakers of which occupy the area between Cape Possession in the east and the Purari River delta in the west, save for a small area around Cape Cupola occupied by some 250 or so Raepa Tati, an intrusive group who claim to have originally come from amongst the Nara further east but who now speak a language that looks distantly related to the Eleman languages (Brown, 1973). The eight Eleman languages are (from east to west): Sepoe, Toaripi, Kaipi, Uaripi, Opao, Keuru, Orokolo, and Aheave. They are closely related and fall into two groups: Eastern Elema and Western Elema, with the dividing line between them occurring just west of Kerema, the provincial headquarters. The Western Elema includes Opao, Keuru, Orokolo and Aheave speakers who number

about 14,000. There are about 23,000 Eastern Elema speakers including the largest and most prestigious language, Toaripi, with about 14,000 speakers. The Eleman family is named after the term 'Heleva' used by the Eastern Elema to refer to the Western Elema.



Map 5 Sketch map of languages of the *hiri* area

There are now approximately 6600 Koriki who speak closely related dialects of a single language. The language is thought to be (although not yet adequately proven to be, a point to which we return later) most closely related to the Eleman languages and upon which it has also had some influence (Brown, 1973:284-8). It is surrounded by other NAN languages – Ipiko in the north, and dialects of the North-East Kiwai language to the west, and Pawaian to the north-east – which belong to other families, stocks, and/or sub-phyla more distantly related to it, if they are related at all. Together Koriki and the Eleman languages and Raepa Tati form what is currently called the Elema-Purarian Stock (Franklin, 1973: 861).

By definition Motu and Eleman-Koriki are unrelated and mutually unintelligible languages. Contact between the Motu and their Elema and Koriki trade partners therefore posed a communications problem which resulted in the development of pidginized versions of the languages of their trade partners. These two languages we shall refer to as the Hiri Trading Language, Eleman Variety, or HTL(E), and the Hiri Trading Language, Koriki Variety, or HTL(K), after the two different groups of NAN speakers involved. These languages are described in a number of papers that are in various stages of publication or preparation (Dutton and Kakare, 1977; Dutton, 1978; 1980b,c;1982).

Other languages that are of lesser interest to the forthcoming discussion are those spoken between the Purari River and Kikori Station in the western part of the present Gulf Province of Papua New Guinea. They are all NAN languages and include North-East Kivai already mentioned, Kerewo, Porome (or Kibiri) and Kairi.

Kerewo and North-East Kivai are related and belong to the Kiwaian Family. Kairi is presently classified as a family-level isolate called the East Kikorian Family but is distantly related to the Turama-Omatian Family (Franklin, 1973:264).³ It is spoken by about 650 people in and around Kikori Station and along the Kikori, Sirebi and Tiviri rivers. Porome (also known as Kibiri) is spoken by some 1000 people living around and to the south of Kikori Station. It is a linguistic isolate with no obvious linguistic connections in any part of Papua New Guinea (Franklin, 1973:273-4). It is surrounded by Kerewo speakers.

Some linguistic evidence considered

In this section four linguistic 'facts' are considered. One of these has to do with the nature and relationship of the trade languages HTL(E) and HTL(K) to one another and to their source languages; two have to do with borrowings of Motu and/or other AN words into NAN languages in the Gulf; and the fourth with the word for 'sago' in Motu which is not the same as that in Koriki and Eleman languages.

(1) The trade languages HTL(E) and HTL(K). The very existence of these pidgin languages and their nature raises various sorts of expectations about their evidential value for historical purposes. The fact that there are two raises the question of why there are two and not one, for presumably the trade did not arise at two points at once but spread from one point to another as different groups of people were encompassed within it. In other words why was one language not spread by the Motu as they came

³Kairi shares about 16 per cent basic vocabulary with Omati, the geographically closest language of the Turama-Omatian Family.

into contact with new traders, or, alternatively, if the Motu 'felt' they needed two languages why did the one not serve as a model for the other and into which new vocabulary was simply inserted? Or again, given that there are two languages, which one is the older? Is it possible to date them in any way or to give any indication of their age?

Unfortunately there are no clear-cut answers to any of these questions at the moment. There are no obvious reasons why one language was not a lexical variant of the other or why one language was not spread to other areas. Clearly the reason why none of these events occurred has something to do with the manner in which contact with these two different language groups occurred, but just what that something is, is difficult to say. Nor is it possible to suggest how old either is, or whether one was developed first. The reason for this is that neither has diversified into dialects or related languages and we need dialects or related languages to compare for dating purposes. The HTL(E) is, however, the better developed of the two structurally, which might suggest that it is the older. On the other hand its development may simply be a reflection of frequency of use.⁴ Even if that is so

⁴Although there is no evidence, and there is never likely to be any, on the frequency of contact between the Motu and various *hiri* ports, if we assume that the number of recognised ports of call in the Eleman and Koriki areas is more or less proportional to the number of *lagatoi* visits to each area then, using Chalmers' (n.d.: 10) listing as a base, it would appear that approximately twice as many *lagatoi* visited Eleman ports as Koriki ones. Thus Chalmers gives the following ports which I divide into relevant sections:

Eleman		Koriki
Oiabu	Uamai	Maipua
Jokea	Silo	Ukerave
Lese	Pisi	Kailiu
Motumotu	Kerema	Koropenairu
Moveave	Keuru	Kabiurave
Karama	Vailala	
	Herau	
	Orokolo	

From this list we can justifiably exclude Oiabu and Jokea (now Iokea) as true *hiri* ports since they are beach villages with no suitably safe large rivers into which *lagatoi* could enter and anchor. They were popular *hirilou* ports (or short voyage, see Oram, this volume), however, because the canoes used on those voyages were lighter, and so could pull into the beach, and were not dismantled and reassembled – see Oram's paper this volume for further details.

it is not possible to go beyond that at the moment since the composition of the vocabulary has not been fully analysed. A preliminary analysis of it suggests, however, that the bulk of it that is Eleman in origin (which is about 80 per cent of the total vocabulary) is from Eastern Eleman languages and the rest from Western Eleman ones, but that analysis needs looking at again now that additional comparative materials have been collected. If this preliminary analysis turns out to be confirmed then that would probably suggest that the trade was concentrated in the Eastern Elema region, at least most recently. Whether this in turn would mean that this was always so or whether there was a shift in concentration of the trade from this area to the west or vice versa is not possible to say on the basis of this evidence alone. On the other hand if the preliminary analysis is not confirmed then some other hypothesis must be put forward to 'account for' the evidence.

About the only observation we can make with any confidence about these two languages then is that, because they are the sorts of languages they are, they must indicate that the contact (or contacts) that first gave rise to them was a purposeful, probably trading one, otherwise that contact would not have been repeated and no trade languages would have been developed. Not only that but, given the composition of the languages (with Eleman and Koriki aspects predominating), it would appear that the initial stimulus for trade did come from the Motu as the tradition has it. But they evidently did not approach their Elema and Koriki counterparts as equals or as superiors in any way for otherwise the resulting languages would have been of a different kind. Rather the present composition of the languages reflects the weak or inferior position of the Motu vis-à-vis their hosts. They were strangers in a foreign port, heavily outnumbered and had no way of forcing their Elema or Koriki hosts to accept their cargoes and/or exchange canoe logs or sago, or anything else for that matter, for them.

(ii) Hiri associated words in Eleman and Koriki languages.

In his 1973 account of the Eleman languages Brown includes a survey of the cultural and linguistic influences that the Motu and the various peoples and languages of the Gulf have had on each other in the past. The study stops short, however, of attempting to answer such questions as: Does the evidence indicate whether the Motu were in contact with the Elema before the Koriki? Was Motu really the origin of the relevant AN vocabulary in Gulf languages or was some other AN language, and if so, which one? What was the direction of borrowing of Motu or other AN vocabulary? Is it possible to date (relatively or absolutely) any aspect of the borrowing and loaning? etc. It is the purpose of this section to examine these questions to see what is involved and what directions a more detailed study would take.

Before beginning, however, it is perhaps only right that a little time be spent for the sake of the non-specialist, showing

that such a study is not just a matter of looking for vocabulary in some language or languages that resembles, for instance, Motuan, and then saying, 'Ah this comes from Motu' etc. One really has to *prove* that it does, either by showing that the particular word in question can only have come from a certain source and could only have entered a certain language by a particular path, or if that is not possible, to do so by eliminating other possibilities. In either case the desired result can only be achieved by appealing to established sound laws that predict how words will be pronounced when they are borrowed from one language by another, which in turn depends on knowing how, or if, the languages in question are genetically related to one another. To illustrate: Suppose we have a set of vocabulary in which we find the word *uro* 'pot' occurring in Koriki, all Eleman languages as well as Motu, what can we say about it historically — is it a borrowing in one or more languages (and if we claim that we must be able to say from where to where), or is it an inherited word in one or more languages? We cannot begin to answer these questions until we know whether Motu, Eleman languages and Koriki are related to one another for otherwise we cannot say which words are inherited, and therefore which ones are borrowed. If none of them is related to any other then *uro* must be a borrowing in at least two of them. If two are related (e.g., Koriki and Eleman languages) then it may be inherited in those two and borrowed in Motu — we cannot tell until we have checked further afield.

Fortunately, and as already indicated, we know that Motu is not related to either Koriki or any of the Eleman languages, so any common vocabulary must be borrowed one way or the other. To tell which way it has been borrowed we normally attempt to eliminate the Motu-to-Eleman/Koriki cases first by looking for similar forms in other AN languages to see if the word (or words) is a long-standing AN one that has been inherited by Motu (or some other AN language in the area) or is an innovation in the Central Papuan AN languages. We do this by checking lists of reconstructions that are available. These reconstructions are formulae expressing the fact that certain related forms appear in significant distributions throughout Oceania. There are then other decisions depending on what is found, or not found, in those lists.

In the Gulf languages case there are more difficulties since it is not clear that the languages that interest us, viz. Koriki and Eleman languages, are related, even though they are thought to be as already indicated. Thus they have not been 'proven' to be related by the normal methods of comparative linguistics. In particular no set of reconstructions which capture consistent correspondences in sound and meaning between the languages and attest their common origin has yet been established and establishing such a set is the principal step in 'proving' the genetic relationship of any set of languages. Brown's conclusion is that the languages concerned are related but I am

not so sure as I could find only a maximum of thirteen out of approximately 200 basic vocabulary items that appear to be related (either genetically or by borrowing), i.e., about 7 per cent — see Appendix 1. But many of these are doubtful either because of their form (e.g., forehead, black, crooked, louse)⁵ or because they are suspected of being borrowings because they are so-called 'cultural' items (e.g. taro, banana). That leaves only six items, or 3 per cent, which is less than the figure that linguists agree as probably representing chance correspondences between any two languages, especially since these particular languages have similar phonologies, as is indicated below. Brown's results are a little better (but not much) as he finds 8 per cent basic vocabulary correspondences between Koriki and the most easterly Eleman language, Toaripi, and 11 per cent with the most westerly one, Orokolo. More important, however, is that even these results suggest that borrowing is the most likely explanation of the higher percentages obtained for the nearest language, Orokolo.⁶ What this means then for this study is that we shall have to exclude some words that might otherwise have been useful from consideration till later when the relationship question has been resolved (if it can be, and I doubt very much that it can be given the small numbers of apparent cognates involved and the similarities between the sound systems of the languages concerned).

But to return to the borrowings problem. Not every word we might find in Eleman languages and/or Koriki that is traceable to Motu or some other AN language is going to be useful for determining direction of borrowing. In fact only those that show some sort of sound change will be useful. And here we can predict what those are likely to be by comparing the sound systems of the relevant languages, but especially the consonant systems, as all the languages have five vowels in common and the Eleman ones have an extra one, *e* [ɔ]. The consonants (with significant allophones shown in

⁵Thus, for example, if Maipu'a and Kaimare 'forehead' is related to Toaripi and Kaipi *harihari*, Maipu'a and Kaimare *k* and *e* correspond to Toaripi and Kaipi *h* and *i* respectively and Maipu'a and Kaimare initial *i* corresponds to \emptyset (or absence of sound) in Toaripi and Kaipi. But 'afraid' and 'louse', for example, show other correspondences which suggest that some or all of these are either chance correspondences or that borrowing is involved, or both.

⁶This is in spite of the structural similarities between Koriki and Eleman languages that Brown (1973:286-8) discusses. These features are not particularly indicative of genetic relationship because most do not rely on a phonological form-meaning correspondence but on an abstract form-meaning one only (e.g., items (1) genitive marker, (2) compound postpositions, (3) dual pronouns, (4) verbs, and the infinitive discussed on Brown's p.288).

square brackets) for Motu, Koriki and two representative languages of Eastern and Western Eleman languages respectively, are as follows:

Motu	Toaripi (Eastern Eleman)	Orokolo (Western Eleman)	Koriki
<i>p</i> <i>t</i> [<i>t,s</i>] <i>k</i>	<i>p</i> <i>t</i> <i>k</i>	<i>p</i> <i>t</i> <i>k</i>	<i>p</i> [<i>p,f</i>] <i>k</i> '
<i>b</i> <i>d</i>	<i>h</i> <i>f</i> <i>s</i> <i>h</i>	<i>h</i>	
<i>v</i>	<i>g</i>		<i>v</i> [<i>b,v</i>]
<i>m</i> <i>n</i>	<i>m</i> [<i>m,v</i>]	<i>m</i> [<i>m,v</i>]	<i>m</i> <i>n</i>
<i>l</i>	<i>l</i> [<i>l,r,n</i>]	<i>l</i> [<i>l,r,n</i>]	
<i>r</i>			<i>r</i> [<i>r,l,d</i>]

From this we can predict that any Motu word containing any of the sounds *b*, *d*, *g*, and *g*, for example, will have to have those sounds replaced by something else in the other languages, e.g., *t* in Motu will have to become something else in Koriki (in fact it becomes *k* which is the 'nearest' stop-like sound to *t* in that language); so will *b*, *d*, *g* and *g*, and the same holds true for borrowings between Eleman languages and Koriki although not amongst the Eleman languages themselves where another factor comes into play as described below. But it is not quite as simple as that either as it depends on how these sounds (technically phonemes) are pronounced in different positions. So, for example, *t* in Motu is pronounced as *s* before *i* and *e* so any word with *t* in it in this position could be taken over into Toaripi as *t* or *s* but not in Orokolo or Koriki — they still substitute the 'nearest' sound. So on this basis (but without going into every sound) some words will be more diagnostic of origin and direction of borrowing than others. For example, words containing *p*'s, *k*'s, *m*'s, *l*'s, and *r*'s will be of no use whatsoever and so the *uro* case mentioned above is quite useless (except that we know it is of AN origin) even though it was the principal item of *hiri* trade. The best words will be those containing either *t*'s, *s*'s or *h*'s in any of the languages listed. Note also that it will be very difficult to detect any Koriki-to-Eleman borrowing without other evidence because all Koriki sounds except glottal stop (') have Eleman counterparts but not vice versa.

Finally there is one other consideration that was alluded to above and which has to be taken into account, and that is what happens to sounds in Eleman languages. Because the Eleman languages have a large number of words in common it is possible to reconstruct their proto-sound system. This is done tentatively in Appendix 2. This system is useful for deciding not only which words are inherited in Eleman languages, but also, by implication, for determining which words are borrowings and the probable direction of borrowing. We can do the latter, however, only if the relevant words contain *t*, *f*, *s*, or *h* because these are the sounds that show differences in corresponding sounds, e.g., *t* in Eastern Elema corresponds with *k* in Western Elema; *f* to *h* etc. and any

words which do not conform to this pattern must have been borrowed either from one another or from different sources.

We turn now to the application of these principles to the words discussed by Brown (1973) and some additional ones that occur in my own data.

There are two sets of words which are of some use historically in so far as they indicate a point of origin and suggest a direction of borrowing: a larger set and a smaller set. The larger set contains AN words that have been borrowed by Koriki and/or Eleman languages. These are words for: wallaby, fence, platform/table, tie/bind canoe, to, finger/feather/fur, butterfly, fishhook, dugong, chief, perineal band, flag, hot, four, jaw/chin—see Appendix 4. Of these only three, *makani* 'wallaby', *pakara* 'platform', and *piri* 'tie/bind canoe', and possibly a fourth *-a'i* 'at, to', appear to have been borrowed direct from Motu by the Koriki probably at different times. Of these *piri* is particularly interesting as it shows that the Motu were in contact with the Koriki at a time when they, the Motu, had no *h* in their language—see Appendix 4, Item 8 for discussion. Another item *bara* 'fence' is of uncertain AN origin in that language although it is clear that it does not come via Eleman languages. 'Butterfly', 'fishhook',⁷ and 'dugong' occur in both Koriki and Eleman languages but the point of entry and direction of borrowing are indeterminate as is their origin in the first and last cases. Five of the remainder, 'chief', 'perineal band', 'flag', 'hot' and 'four', are found only in Eleman languages and entered those at different points, and the origin of 'flag' is unclear. Three of these, notably *lohia karu* 'chief', *sii* 'perineal band' and *siahu* 'hot' were borrowed by the Eastern Elema direct from the Motu. *Hari-la* 'four' is found only in Orolo and was also borrowed direct from the Motu. In addition, Orolo *hiri* 'perineal band' was either borrowed direct from the Motu or indirectly via their Eastern Eleman counterparts. Nothing concrete can be said about the words for 'feather/finger/fur' and 'jaw/chin'.

The smaller set of words referred to above contains only five items, the Motu forms for which are given in brackets after each: 'armshell' (*toea*), 'water pot' (*hodu*), 'axe' (*ira*), 'beads' (*ageva*), and 'outrigger' (*darima*). Although smaller in number this set is much more useful for historical purposes than the larger set discussed above. Each item below is taken in turn and a borrowing hypothesis based on the available evidence is presented and justified. In this presentation EE = Eastern Eleman (i.e., Kaipi and Toaripi); WE = Western Eleman; PCP = Proto-Central

⁷*Kimai* 'fishhook' is probably a post-European contact borrowing which therefore does not indicate the direction of contact of the *hiri* so much as the direction of European contact.

Papuan; POC = Proto-Oceanic; → 'becomes in' or 'is borrowed from' or 'is loaned to', as in Appendix 4.

Item 1: 'armshell' (toea)

(a) Available evidence

Koriki	<i>mapua</i>	Roro	<i>hoea</i>
Orokolo	<i>huaeā</i>	Nara	<i>koea</i>
Kaipi	<i>soea</i>	Gabadi	<i>koea</i>
Toaripi	<i>soea</i>	Motu	<i>toea</i>
Raepa Tati	<i>hoe</i>	Hula	<i>raula</i>
Mekeo	<i>ao'ao</i>		

Reconstruction: Nil, but undoubtedly PCP *toea 'armshell'

(b) Borrowing hypothesis

Either 1. Motu → EE → WE
or 2. Motu → EE, and Roro → WE

(c) Justification

Motu *toea*, Gabadi *koea* and Roro *hoea* are undoubtedly reflexes of an earlier PCP form *toea 'armshell'. Since all of the Eleman languages have *k*, Gabadi cannot be the source of any of the present-day forms found in those languages. That leaves only Motu and Roro as possible sources. There is no clear-cut evidence to discriminate between these two as the most probable source, but the *s* in the EE forms would seem to suggest Motu as the most probable source. This is so because Motu *t* has *t* and *s* allophones. It is not clear, however, why the EE would borrow Motu *t* as *s*, since they have *t* themselves, unless Motu *t* was once *s*, or some *ts*-like sound.

Item 2: 'water pot' (hodu)

(a) Available evidence

Koriki	<i>ho'u</i>	Roro	<i>puou</i>
Orokolo	<i>hohu</i>	Nara	<i>vodu</i>
Kaipi	<i>foeu</i>	Gabadi	<i>vougu</i>
Toaripi	<i>posu</i>	Motu	<i>hodu</i>
Raepa Tati	<i>fohu</i>	Hula	<i>kwagu</i>
Mekeo	<i>ona</i>		

Reconstruction: Nil, but probably something like PCP *poDu 'water pot'.

(b) Borrowing hypothesis

Unclear but probably multiple borrowing at different times.
Thus:

Either 1. Early Motu *podu → EE → WE → Koriki
or 2. Early Motu *podu → EE and later Motu
hodu → WE → Koriki.

(c) Justification

The Motu, Nara and Roro forms (except for the loss of a medial consonant in Roro) would appear to reflect a PCP form **poDu* 'water pot'. This should have been reflected in Roro as *potsu* which would have given us the best source for the origin of *posu/fosu/fohu* form in EE. However, since we know from other evidence — see Appendix 4, Item 8 — that Motu *h* is descended from an earlier *p* the most likely source of the EE forms is an earlier Motu form **podu*. The WE and Koriki forms then would manifest later borrowings of Motu *hodu* or represent derivations from EE *posu/fosu*, although there are difficulties with both these possibilities, viz. why do Orokolo and Koriki have medial *h* corresponding to a medial *d* in Motu *hodu*, and why do Orokolo and Koriki have initial *h* corresponding to initial *p/f* in EE languages?

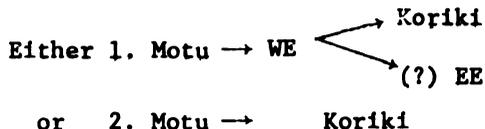
Item 3: 'axe' (ira)(a) Available evidence

	<u>Stone axe</u>	<u>Steel axe</u>
Koriki	<i>rore'ira</i>	<i>ira</i>
Orokolo	<i>ila</i>	<i>ila</i>
Kaipi	?	<i>nao itja</i>
Toaripi	<i>ita</i> [but Sepoe nearby has <i>oakei</i>]	<i>nao ita</i>
Raepa Tati	<i>nao</i>	<i>nao</i>
Mekeo	<i>ineina</i>	?
Roro	<i>wapira</i>	?
Nara	<i>ale'o</i>	<i>ila</i>
Gabadi	<i>ira</i>	<i>ira</i>
Motu	<i>ira</i>	<i>nao ira</i>
Hula	<i>koko</i>	<i>auri kokona</i>

Reconstruction: POC **kiRam* 'axe'.

(b) Borrowing hypothesis

Complex with multiple borrowing involved.

(c) Justification

The Motu form is a reflex of the POC form **kiRam* 'axe' therefore is inherited and must be the source of the forms in Orokolo, for example, and not vice versa. Orokolo *ila*, moreover, is the expected form of Motu *ira* in Orokolo if borrowed direct from Motu but the *t* in the Toaripi form *ita* is not: it is one of two possible reflexes of Orokolo *l*, the other being *k*. So we deduce that EE *ita* probably represents a borrowing from WE in which special condition-

or 3. Motu/Nara/Roro → EE and Motu/Nara/Roro/
Gabadi → Koriki

(c) Justification

Although the Orokolo omission restricts our interpretation it is clear that EE *tariva* must derive from either Motu, Nara or Roro in which it is an inherited word. Koriki *karima* is derivable from these sources also as well as from Gabadi and from the EE form so no decision can be made about its origin. If the WE form turns out to be *karima* this must have come from EE or Gabadi; if *tarima*, then from Motu/Nara/Roro directly.

In review then we have the movement of words thus:

1. Armshell

Either 1. Motu → EE → WE

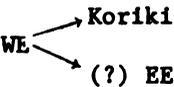
or 2. Motu → EE, and Roro → WE

2. Water pot

Either 1. Early Motu **podu* → EE → WE → Koriki

or 2. Early Motu **podu* → EE, and later Motu *hodu* → WE → Koriki

3. Axe

Either 1. Motu → WE 

or 2. Motu → Koriki

4. Beads

Either 1. Motu/Hula *gema/kema* → WE → Koriki

or 2. Motu/Hula *gema/kema* 

or 3. Motu/Gabadi *ageva/rageva* → WE → Koriki

5. Outrigger

Either 1. Motu/Nara/Roro → EE → Koriki

or 2. Motu/Nara/Roro → EE, and Gabadi → Koriki

or 3. Motu/Nara/Roro → EE, and Motu/Nara/Roro/
Gabadi → Koriki

That is, 'armshell', 'water pot', and probably 'outrigger' moved in an east-to-west direction generally; 'axe' and 'beads' moved in a more complex way but with the centre of distribution in WE. 'Water pot' moreover suggests that contact was established with the EE before Motu had an established *h* in their language. 'Armshell', 'beads' and 'outrigger' also suggest that other language groups may have been the source of some borrowings in Eleman languages

and Koriki but, given that no items occur exclusive of Motu, it would seem that Motu is probably the real source, a conclusion that is confirmed when the ethnographic record is taken into account.

Now what does all this mean for the history of the *hiri*? Assuming that borrowing patterns indicate patterns of trade historically (and this would seem to be a reasonable assumption given that the names of things are usually (but not always — see Dutton, 1973) passed along with the goods themselves) it would appear from the little evidence we have discussed so far that:

- (i) The Motu were indeed the main source of borrowings in Gulf languages;
- (ii) There was a complex pattern of contact between Motu and Gulf peoples but that the centre of distribution (though not necessarily the first) of Motu words (and therefore of goods and ideas) was Eastern Elema;
- (iii) There is no evidence as to where the Motu made first contact with Gulf peoples or how long ago that contact was established. The 'tie/bind canoe' and 'water pot' evidence discussed above shows that contact was established by the Motu with both the EE and Koriki peoples some time before Motu *p* changed into present-day *h*. On the other hand this evidence does not indicate which group was the first to be contacted nor how long ago that was. This leaves us with the problem of trying to determine if the weight of evidence for contact with the EE is greater than that with the Koriki, or of such a kind, as to indicate that one or the other was not only the main point of contact but also the first. Other evidence which may turn out to be useful in such an exercise, though it does not appear to contain much of value at the moment, follows.

It is well known that the Motu call all Eleman speakers 'Elema' even though they recognized that there were at least two different linguistic groups involved — those they called the Konekone language speakers and those they called Marea ones, the former occupying the area between Cape Possession and Silo just east of Kerema, and the latter the remaining Eleman area. Where did they get this name 'Elema' from and why did they continue to use it? One possibility is that they got it from the Eastern Elema as this was their name for the Western Elema (Brown, 1973: 282), although their pronunciation of it was 'Heleva' which should have been copied as 'Heleva' or 'Helema' by the Motu also. Alternatively they got it from the Koriki who called the Western Elema 'Eremai' (lit. 'at Erema') (Mari'a & Kolia, 1977:4). If the former they must have had contact with the Eastern Elema before the Western Elema; if the latter then with the Koriki before the Western Elema. But why did they continue to use this name after they made

contact with those it so designated, especially when they had another name for them, Marea?

Then there is the word Marea itself. Strangely enough the Raepa Tati call the Motu 'Marei'a' and the Western Elema 'Nama'u'. The Koriki also call the Motu 'Mairi'a' or 'Maireia', and one group of Koriki (namely those of the Baimuru tribe) call the remainder, but especially the Iare tribe (i.e., the Maipua, the closest neighbours of the Western Elema), 'Nama'u' (Mari'a and Kolia, 1977:5) which is what the Motu call all the Koriki they traded with (viz. Maipua, Koriki, Iare, Kaimare). So the question arises, is there an historical connection between these names, and if so what is it?

Then there is the Raepa Tati themselves, who are an intrusive group within Eastern Elema. In Brown's (1973:304) estimation the Koriki share, inexplicably, 15 per cent basic vocabulary with these people, or in other words, higher than they do with any Eleman language (their highest there being 13 per cent with Western Elema). Could these Raepa Tati then have originally been related to, part of, or neighbours of the Koriki at some time in the past? If so it must have been so long ago that they have forgotten about it as they claim to have come from the Nara area east of their present position, not west of it. But does 'Nara' really mean present-day Nara or the Motu, for curiously enough the Motu are called *nara karu* or *lalaē* in the HTL(E). Present-day informants relate these terms to Motu *lara* 'sail' but is that only a modern rationalization or is the similarity in names historically connected, or merely a coincidence?

Finally, there is the name Motu Motu which is the closest *hiri* trading point for the Motu. In present-day Motu this means 'island' and the present-day referent is the mouth of the Lakekamu River. It is conceivable, given the prograding of the coastline in this area, that there was once an island there that perhaps provided a convenient anchorage for the trading *lagatoi* or, for some other reason, was important to the Motu. But if so it has long since disappeared. The fact that the Roro call the Toaripi, who inhabit the so-called Motu Motu area, 'Mohu Mohu' (Haddon, 1900:273)⁸ would seem to indicate that it is an old term since *h* in Roro corresponds to *t* in Motu in inherited words and/or in very old borrowings which act like inherited words. It cannot therefore be a recent borrowing from Roro into Motu for otherwise it should have been 'Mohu Mohu' in Motu as both languages have *t*'s and *h*'s in them.

⁸I would like to thank Nigel Oram for drawing my attention to Haddon's note.

(iii) Motu words in the Kikori area before European contact. In 1890 Theodore Bevan published his *Toil, Travel and Discovery in British New Guinea* in which he recounts (among other things) his visit to the Kikori area of the Gulf of Papua in 1887. At the village of Tumu he recorded a wordlist of some 100 items (pp.314-7) and the expression *narmo*, which he said the Tumu called out to him on different occasions as he says 'to show their intentions were friendly' (p.192) or 'in token of the good feeling that existed between us' (p.194).⁹ As Tumu was a communalect of what we now call the Kairi language spoken around the junction of the Kikori and Sirebi Rivers (a conclusion that is justified in Appendix 5), and as Bevan was the first known European to have visited these people¹⁰ the interesting and potentially significant thing about the expression *narmo* and several other items that occur in the vocabulary he recorded is that they look unmistakably like Motu words (once his English-based orthography is allowed for). Thus there are, for example:

English	Bevan's words	Motu
'friendly intentions'	<i>narmo</i>	<i>namo</i>
good	<i>narmo</i> or <i>narto</i>	<i>namo</i>
cloth	<i>taboora</i>	<i>dabua</i>
throw it	<i>tiyo</i>	<i>negea</i> (but cf. <i>diho</i> 'down')
bad, vexatious	<i>deeka</i> ['Boys said "Deeka, Deeka" when the dog in their canoe howled. They took it ashore and came off again.']	<i>dika</i>
butterfly	<i>boiboi</i>	<i>bebe</i>
son	<i>natuna</i>	<i>natuna</i> (= his son)
man	<i>taunama</i>	<i>tau</i> (but cf. <i>taunimanima</i> 'people')

The question then arises, are some or all of these really Motu words; or are they merely accidental correspondences which derive from the structure of Kairi; or have they been imparted to these particular words by Bevan who misheard them, or who, for

⁹I would like to thank Jim Rhoads for first drawing my attention to Bevan's vocabulary.

¹⁰Captain Blackwood of the HMS *Fly* had some thirty years earlier penetrated an estimated fifteen miles inland up the Kikori River (Jukes, 1847:226) but could not make friendly contact with the local (presumably Kerewo or Porome) people and so never recorded any of their language. Kairi territory begins about twenty-five miles inland.

some other reason, wrote down a Motu-looking equivalent? Clearly if the answer to the first question is affirmative it has important implications for the history of the *hiri*. At the moment, however, we cannot answer these questions on purely linguistic grounds, although we can make certain observations that show the direction that further investigation must take.

One of these observations is that the set of items itself is unusual as a set of borrowed items if they have anything to do with the *hiri*. Thus not even the Koriki nor the Elema with whom the Motu were known to have traded and were in close and frequent contact borrowed this set of words. In fact they relied on trade languages for communication purposes as already described. Consequently if these items represent borrowings in Kairi they must imply that not only was there contact of some kind (either direct or indirect) between the Kairi and the Motu but that that contact was also of a radically different kind from that of Motu-Koriki and Motu-Elema contact. Such a proposition is, however, hard to entertain given the socio-geographical position of the Kairi, who were, and still are, further inland than any other known port visited by the *hiri lagatoi* elsewhere; who were, and still are, separated from the coast by three other language groups, the North-East Kiwai, the Kerewo, and the Porome; and who were, and still are, more than 100 kilometres beyond the traditional end point of the *hiri*.

Not only that but the form of all but two of the items on the list (viz., 'good' and 'butterfly') suggests that these items could only have been obtained by direct contact with the Motu or by indirect contact with them through some other group or groups who were in direct contact with them and who have similar sound systems to the Kairi, or, at least, who have *t*'s and *d*'s in their language. Porome, Kerewo and North-East Kiwai satisfy the latter of these conditions but not the former, at least not as far as is known. Thus although we know that some North-East Kiwai speakers, notably the Urama, traded with the Koriki of the Purari Delta, the traditional end point of the *hiri* (Kakare, 1977:60),¹¹ they do not seem to have traded with the Motu directly for it is reported that it was only after European contact that the Motu went to Urama and then they had to stop off 'at Maipua ... to find a man ... to translate their language into Urama' (Kakare, 1977:60). If that is true then the Motu could hardly have known the Urama very well and vice versa, and it follows therefore, for reasons already given above, that it is most unlikely that the Urama would have borrowed the set of words listed above and passed them on to the Kairi, either directly or through such intermediate groups as the Kerewo and Porome.

¹¹Williams (1924:3, 125) also refers to Urama trading dogs for pots and prostituting women for the same reason in the Purari Delta but it is not clear from his description whether this was a pre-European contact activity or not.

Finally, it is a curious thing that Bevan did not comment on these words himself. This is so as he apparently knew enough Motu (having been in the Port Moresby area on previous occasions and having commented on his knowledge of the language in various places in his book)¹² to recognise at least some, if not all of them (if they are indeed Motu words). For the same reason he is not likely to have written down these particular items as Tumu ones knowing them to be Motu ones. Nor can the results be blamed on a Motu interpreter as, on this occasion, Bevan had come straight over to the Gulf of Papua from Thursday Island off the Queensland coast and as far as is known did not have a Motu interpreter on board with him. Besides, if, as the Motu claim, they were only familiar with peoples as far west as the Purari a Motu interpreter would hardly have been of any use to him in this more western area anyway. How then are we to interpret Bevan's silence? Did he recognise that the words above were not really Motu words even though they may look like them in his orthography? Or is his silence to be attributed to his deciding simply not to comment on them in his book? We will never know the answer to these questions unfortunately unless Bevan commented on them in some as yet unconsulted manuscript. But the fact that he did not comment on them, especially when taken together with the points discussed above, would seem to suggest that the correspondence between these forms and Motu ones is probably not to be attributed to contact between the Kairi and Motu in any form, but to some other process. In other words it is most unlikely that these are in fact Motu words but chance correspondences with them. But we will not really be able to make a final decision about that until we have looked further and attempted to answer such questions as those already discussed as well as the following: How did Bevan collect his vocabulary? What are the present-day Kairi equivalents of these items? If different from those Bevan gives what do the Kairi think of Bevan's vocabulary, in particular, what do they

¹²For example he knew *dika* 'bad' (as he says in his book p.42 in reference to a visit to Quibo in the Rigo area 'There is some "jabber" between the two parties of natives, and I begin to fear a hitch has occurred as the word "*deeka*" (bad) is uttered') and by implication *namo* 'good' which is the most frequently used word in Motu being the universal greeting 'good day' irrespective of time of day. Then again on p.43 he gives the words *baubau* 'bamboo pipe', *karvee* [= *gahi*] 'club', *eelar* [= *ira*] 'tomahawk', *keytch* [= *kesi*] 'shield', and again on p.47 he gives *Beritani luiabata* [= *Beritani lohiabada*] 'British chief'; p.55 *kuku* 'tobacco'; p.56 *baubau* 'pipe' again; and on p.146 when speaking of two Motu helpers on board his 5-ton *Electra* 'I called them ... and gave positive instructions in their own tongue (neither of them could speak a word of English, for it is mission policy not to train them to render any assistance to Europeans) to call me at daybreak.' He evidently knew some Keapara (a language related to Motu) also for on p.42 he also gives *eikena* [= *aikina*] 'not'.

think Bevan was writing down? What do Kairi oral traditions say about Bevan's visit and what do they say about contact with the Motu? It is only when we have the answers to these sorts of questions that we will be able to comment further on the implications, if any, of this material for the history of the *hiri*.

(iv) The word for 'sago' in Motu. The word for 'sago' in Motu is *rabia*, which is a reflex of POC **rampia/rumpia*. The words for 'sago' in Eleman languages and Koriki are *poi* and *pu* respectively, which are obviously related to one another, although whether genetically or not is uncertain.¹³ Irrespective of that question, however, it is clear that neither of these forms has anything to do with the Motu one, nor vice versa. Given that the Motu word is a reflex of a POC one then it must mean that the ancestors of the Motu came to Central Papua with a knowledge of sago that they had inherited elsewhere. Not only that but given that the word persisted in Motu must mean that the Motu used sago as a food source after their arrival in Central Papua otherwise they would surely have lost that word. For the same reason that use must have preceded their contact with the Gulf peoples and their trade in the commodity. It is interesting to ponder why and how the trade in sago developed. Was it because the Motu were ousted from an area in which they were once settled, where sago was more plentiful than it is around Port Moresby, and where they came in contact with Gulf peoples? That is, were they once settled in some part of the Gulf as some origin stories suggest they (or some of them) were? Or was it that having kept the taste for sago as it were, by finding small stands of it in the Port Moresby area, they searched for more plentiful supplies? Linguistics, unfortunately, can provide no answers to these questions.

Conclusion

In this study we have considered four pieces of linguistic evidence that have some bearing on the history of the *hiri*. It is to be regretted that, either because of a coincidence in the nature and structure of the languages concerned or because of the influence of one or more languages on the others, so much of potential value turns out to be unusable or uninterpretable and raises many more questions than it answers. The exercise is not without some merit, however, since it at least shows the problems and limitations of the linguistic data and methods involved, and

¹³I assume also that *poi* in Eleman languages and *pu* in Koriki are accidental correspondences with *poi* the common Polynesian name for a popular pudding of pounded starchy foods such as taro, bananas, and breadfruit (Tregear, 1969: see entries under 'Poipoi'), since no related form occurs, as far as is known, in non-Polynesian AN languages of the Papua New Guinea area.

gives those working in other disciplines some guidelines as to what sorts of questions are raised by linguistic investigations. Looking at the present evidence more positively, however, the following are at least some observations that we can make about the *hiri* from a linguistic point of view:

- (i) The contact (or contacts) that gave rise to the *hiri* was purposeful in nature, not casual, the initial stimulus for which came from the Motu and not from Gulf peoples, an observation that is supported by observation 6 below;
- (ii) Motu is the principal source of *hiri* related vocabulary in Gulf languages;
- (iii) There was a complex pattern of contact between Motu and Gulf peoples but that the main centre of distribution of Motu words (and therefore of goods and ideas) was Eastern Elema, although this does not necessarily imply that this was also the first point of contact;
- (iv) There is no evidence of where the Motu made first contact with Gulf peoples nor how long ago that contact was established;
- (v) There may have been contact, either directly or indirectly, between the Motu and peoples (specifically the Kairi of the Kikori area) further west than their historically documented trading points suggests;
- (vi) The trade for sago was not motivated by an introduction of this product to Motu tastes but by some previous knowledge of the product by the Motu themselves, an observation that supports observation (i) above.

It remains to be seen if the consideration of a wider range of data can elaborate on or negate these observations and/or clarify questions raised.

Lexical correspondences in basic vocabulary between Koriki and Eleman languages

This list is taken from my own field notes and was collected using S.A. Wurm's (1961:125) modified TRIPP list 'Lexicostatistical Comparisons, Highlands Districts Languages, TPNG'. Numbers in brackets before the English items identify the relevant items on Wurm's list and those following the language material identify apparent cognates.

English	Eleman Languages			Koriki Dialects		
	Toaripi	Kaipri	Orokolo	Maipu'a	Kaimare	
(27) forehead	<i>harihari</i> (1)	<i>harihari</i> (1)	<i>oropape</i> (2)	<i>ikare</i> (1?)	<i>ikcre</i> (1?)	
(33) jaw, chin	<i>huare</i> (1+1)	<i>uhare</i> (1+1)	<i>au hare</i> (1+1)	<i>au'ene</i> (1+2)	<i>au'ane</i> (1+2)	
(34) throat	<i>kavore</i> (1)	<i>kavore ku</i> (1)	<i>kavave</i> (1)	<i>inamako</i> (2)	<i>kawmari</i> (1)	
(63) sun	<i>sare</i> (1)	<i>sare</i> (1)	<i>hare</i> (1)	<i>rare</i> (1)	<i>rare</i> (1)	
(69) rain	<i>lai</i> (1)	<i>nai</i> (1)	<i>lai</i> (1)	<i>ra'i</i> (1)	<i>ra'i</i> (1)	
(100) taro	<i>soera</i> (1)	<i>soera</i> (1)	<i>hoera</i> (1)	<i>omera</i> (1?)	?	
(102) banana	<i>meae</i> (1)	<i>meae</i> (1)	<i>meae</i> (1)	<i>katvaea</i> (2+1?)	?	
(115) wing	<i>awaiko</i> (1)	<i>maho</i> (1)	<i>maho</i> (1)	<i>va'o</i> (1)	?	
(121) butterfly	<i>pipi</i> (1)	<i>keave</i> (2)	<i>pipi</i> (1)	<i>pipi</i> (1)	?	
(139) black	<i>uru</i> (1)	<i>uru</i> (1)	<i>uruka</i> (1)	<i>moroa</i> (1?) ^a	?	
(179) afraid	<i>tore</i> (1)	<i>aseo</i> (2)	<i>uaka</i> (3)	<i>kore</i> (1)	?	
(211) crooked	<i>kaiai</i> (1)	<i>kaiai</i> (1)	<i>haeae haeae</i> (1)	<i>kat'kakao</i> (1?)	?	
(249) louse	<i>lia</i> (1)	<i>nia</i> (1)	<i>lia</i> (1)	<i>kari'i</i> (2+1?)	?	

^aThis corresponds better with *murru* 'dark' in Eleman languages.

Appendix 2

A tentative reconstruction of Elema proto-sounds

This reconstruction is based on words given in Brown (1973) supplemented by some additional material collected by me. In addition it takes into account the 'Sound Change Rules 1-4' (connecting Toaripi and Orokolo words) given by Brown (1973:347-9). Correspondences on which reconstructions of individual sounds are based are given in brackets following each proposed proto-sound and separated by a dash: the sound, or sounds, on the left of the dash indicating the Eastern Elema form and that on the right of it the Western Elema form. In a few cases variants in Eastern Elema languages are separated by slashes. In these *c* represents the sound [tj] and \emptyset represents zero. Phoneme inventories for Toaripi and Orokolo are given on the right hand side for comparative purposes. In these \emptyset represents [ɔ].

<p>*p(p-p)</p> <p>*f(f-h)^c</p> <p>*v(v-v) (m-m) (e/v-v)</p>	<p>*t(t-k)^a (l/t/c-l)^b</p> <p>*s(s-h)^c (s-t)^d</p> <p>*l(l-l) (r-r)</p>	<p>*k(k-k)</p> <p>*h(h-h)</p> <p>*u(u-u) *o(o-o)^e</p> <p>*a(a-a)</p>	<p><u>Toaripi phonemes</u></p> <p>p t k</p> <p>f s h</p> <p>m</p> <p>l</p> <p>i u</p> <p>e o</p> <p>\emptyset</p> <p>a</p>	<p><u>Orokolo phonemes</u></p> <p>p t k</p> <p>h</p> <p>m</p> <p>l</p> <p>i u</p> <p>e o</p> <p>\emptyset</p> <p>a</p>
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^aThis correspondence covers Brown's (1973:347) Rule 1, which says: 'Cognate words with an initial /t/ in Toaripi, or with a /t/ preceded only by a vowel, are replaced by /k/ in Orokolo.'

^bThis is a conditioned variant expressed as Rule 2 in Brown *op. cit.* as follows: 'Preceding a final syllable the /t/ in Toaripi becomes /l/ (or r) in Orokolo.'

^cThese correspondences cover Brown's (1973:348) Rule 3, which says: 'The phonemes /f/ and /s/ in Toaripi become /h/ in Orokolo, except for /s/ as described in Rule 4.'

^dThis is a conditioned variant expressed as Rule 4 in Brown (1973:349) as follows: 'Where in Toaripi /s/ is preceded by a stressed /i/, /ai/ or /ae/ and followed by /e/, it is replaced by /t/ in Orokolo.'

^eToo few correspondences involving the rare vowel phoneme \emptyset in Eleman languages have been noted to suggest what this phoneme derives from and it is therefore ignored here.

Appendix 3

Main reflexes of Proto-Oceanic consonants in Motu and
other relevant Central Papuan AN languages

This table, adapted from Pawley (1975:19) are corrected for typographical errors,^a serves as a convenient display of word initial and word medial consonant correspondences in Motu and other Central Papuan AN languages in which we are most interested in this paper. Gaps in the table indicate that there is no evidence presently available.

POC	*p	*mp	*t	*nt	*k	*ŋk	*q	*s, *ns	*d
PCP	*p	*b	*t	*d ^b	*∅	*g ^b	*∅	*D	*r
Roro	v	p	h	k ^b	∅	∅ ^b	∅	t, ts	r
Lala (or Nara)	v	b	k, s	t ^b	∅	∅ ^b	∅	d	l
Motu	h	b	t, s	d ^b	∅	g, k ^b	∅	d	r
Keapara (Hula dialect)	v, ∅	p	t, ∅	r ^b	∅	g, k ^b	∅	r	l

POC	*nd	*R	*l/-{ ^a o}	*l/-{ ^a o}	*m	*n, *ŋ	*ŋ	*w	*y
PCP	*r	*r	*l	*∅	*m	*n	*ŋ	*w	*y
Roro	*r ^b	r	∅	∅	m	n	∅	*b, w	e
Lala (or Nara)		l	l	∅	m	n	n	v	l
Motu	r ^b	r	l	∅	m	n	∅	v	l
Keapara (Hula dialect)	l ^b	l	∅	∅	m	n	∅	w	∅

POC	*ŋm
PCP	*m
Roro	
Lala (or Nara)	
Motu	m
Keapara (Hula dialect)	m ^b

^aFor example, the *n* shown in Pawley's table as the Roro reflex of POC **t* has been corrected to *h*, and the POC **n* with PCP reflex **ŋ* has been corrected to POC **ŋ*.

^bThis reflex is tentative, resting on a very small number of attestations.

Appendix 4

AN borrowings in Koriki and/or Eleman languages

In this listing words of AN origin are determined by appealing to reconstructions given in Wurm and Wilson (1975) or Ross (1979), and the derivational sound laws for languages of Central Papua as represented by the chart of reflexes given in Appendix 3. In using these references I cite Proto-Central Papuan (PCP) and Proto-Oceanic (POC) reconstructions, if available, in preference to Proto-Eastern Oceanic (PEO) ones, in preference to Proto-Austronesian (PAN) ones as this order reflects the ascending order of subgroups which include the relevant AN languages. Question marks in the lists indicate that I do not know whether a form exists or not in the particular language indicated and → in the 'conclusion' sections means 'becomes' or 'loans to' (or reading the arrow in the reverse direction, 'is borrowed from'). In this listing also Orokololo is taken as representative of Western Eleman (WE) languages and Kaipi and Toaripi as representatives of Eastern Eleman (EE) ones. Hypotheses concerning the origin and direction of borrowing are given after each item as 'conclusions'.

1. Wallaby

Koriki, *makani*; Orokololo, *haiaru*; Kaipi, *fitjoru*; Toaripi, *pisoru*; Raepa Tati, *havaro*; Mekeo, *ponu*; Roro, *itavara*; Nara, *labama*; Gabadi, *vaiaru*; Motu, *magani*; Hula, *mani* 'fish' (also Keapara, *mahani* 'fish').

Reconstruction: PCP **magani* 'fish'

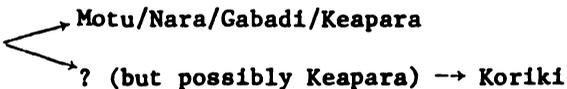
Conclusion: PCP → Motu → Koriki

Makani in Koriki must be a borrowing from Motu because it is the expected form — Motu *magani* is not derivable from Koriki *makani*. Moreover, the Motu form is of Central Papuan origin.

2. Fence

Koriki, *bara*; Orokololo, *kora*; Kaipi, *kora*; Toaripi, *kora*; Raepa Tati, *kara*; Mekeo, *vanapu*; Roro, ?; Nara, *ala*; Gabadi, *ara*; Motu, *ara*; Hula, *kana* (but cf. Keapara, *pala* 'fence').

Reconstruction: POC **mpaa* 'fence' and PAN **paʔa* 'fence'

Conclusion: POC 

Bara in Koriki, *ara* in Motu and similar forms in Central Papuan AN languages are all AN in origin. However, the

origin of *bala* in Koriki is problematical and is not necessarily derived from Keapara *pala* for example, as similar forms occur in Kiwai languages, for example, to the west of Koriki (Dutton, 1973).

3. Platform, table

Koriki, *pakara*; Orokolo, *haha*; Kaipi, *fosa*; Toaripi, *posa*; Raepa Tati, *faha*; Mekeo, *pava*, *avu*; Roro, *ma'o*; Nara, *vakavaka*; Gabadi, *varana*; Motu, *pata*; Hula, *kolekole*.

Reconstruction: POC **para* 'platform'

Conclusion: POC → Motu → (?) Koriki

Koriki *pakara* is clearly AN in origin, most probably from Motu because it is the expected form since Motu *t* → Koriki *k* although the *-ra* is unexplained unless it is a derivation of the Motu possessive suffix *-na*.

4. Butterfly

Koriki, *pipi*; Orokolo, *pipi*; Kaipi, *pipi*; Toaripi, *pipi*; Raepa Tati, *vaovao*; Mekeo, *veve*; Roro, ?; Nara, *ebabelo*; Gabadi, *boio'o*; Motu, *kaubebe*; Hula, *pepe*.

Reconstruction: PEO **bebe* 'butterfly'

Conclusion: PEO → Motu/Nara/Mekeo/Hula → one of EE/WE/Koriki → remaining two of EE/WE/Koriki

Pipi is definitely of AN origin so has been borrowed by both Koriki and Eleman languages from some AN language, probably either Motu or Hula. However, the *i*'s in the Eleman and Koriki forms suggest that two of these were borrowed from a third – it is too much to expect three independent identical sound changes Motu/Hula *e* → EE/WE/Koriki *i*. Who borrowed from whom is unclear, however.

5. Fishhook

Koriki, *kimai*; Orokolo, *kimai*; Kaipi, *forova*; Toaripi, *forova eite*; Raepa Tati, *farava*; Mekeo, *naku*; Roro, *naku*; Nara, *naku*; Gabadi, *kapona*; Motu, *kimai*; Hula, *kau*.

Reconstruction: POC **kima* 'fishhook'

Conclusion: Either 1. Motu → WE → Koriki

or 2. Motu $\begin{cases} \rightarrow \text{WE} \\ \rightarrow \text{Koriki} \end{cases}$

or 3. Motu → Koriki → WE

Kimai in Motu is definitely of AN origin and has been borrowed by Orokolo and Koriki most probably from Motu although it is not possible to tell whether it entered Orokolo or Koriki first or independently in each case as there are no sound changes involved.

6. Dugong

Koriki, *ru*i (whale (?)); Orokolo, *namai*, *ru*i; Kaipi, *lavai*; Toaripi, *lavai*, *lui*; Raepa Tati, *lui*; Mekeo, *itjunaiporo*; Roro, *isunaiporo*; Nara, *i'amana*; Gabadi, *ru*i; Motu, *ru*i; Hula, *lui*.

Reconstruction: PAN **ḍujuŋ* 'dugong'

Conclusion: Either 1. Motu/Gabadi/Hula → EE/WE/Koriki

or 2. Motu/Gabadi/Hula → one or more of EE/WE/Koriki → remainder of EE/WE/Koriki

or 3. Motu/Gabadi/Hula → WE

Koriki

Rui is definitely AN and is therefore a borrowing in Koriki and Eleman languages. Neither entry point, direction of borrowing, nor source language is indicated by the evidence, however.

7. To, at

Koriki, *-a'i*; Orokolo, *-kai*; Kaipi, ? ; Toaripi, *-tai*, *-voa*; Raepa Tati, *-ma*, *-voa*; Mekeo, ? ; Roro, *-ai*; Nara, *-ai*; Gabadi, ? ; Motu, *-ai*; Hula, *-ai*.

Reconstruction: POC **q(a)i* 'at'

Conclusion: ?1. ROC → Motu/Roro/Nara/Hula → Koriki

??2. POC → ? → EE → WE

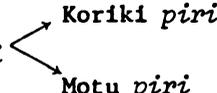
-ai in Motu, Roro, Nara and Hula are definitely AN in origin. If *kai* and *tai* in Eleman languages are borrowings the *k* and *t* are unexplained at the moment; if not, they are chance correspondences. *-a'i* in Koriki could either be a borrowing or a chance correspondence. If a borrowing it must be direct from Motu or Roro or Nara or Hula. The glottal stop is explained by rules internal to Koriki.

8. Tie/bind canoe

Koriki, *piri*; Orokolo, *haha*; Kaipi, *elodi*; Toaripi, *fasai*; Raepa Tati, *fahai*; Mekeo, *mova'ina*, *monope*; Roro, *virina*; Nara, *liao*; Gabadi, *bodina*; Motu, *hiri*; Hula, *vavepinu*.

Reconstruction: POC **pidi* 'plait, weave' (see Dutton, 1980a) for further details).

Conclusion:

Either 1. POC **pidi* → Motu *piri* 

or 2. Chance correspondence.

Either *piri* in Koriki is a reflex of POC **pidi* or it is a chance correspondence with similar forms in AN languages in Central Papua. That the former is the strongest hypothesis is determined by two other facts:

- (a) Koriki contains other AN borrowings and so the chances of Koriki *piri* being a chance correspondence with similar forms in AN languages in Central Papua is less likely than it would normally be, thereby weakening that hypothesis;
- (b) there is independent evidence that Motu phonology has gone through a sound change POC **p* → Motu *p* → Motu *h* so that Koriki *piri* most likely represents a borrowing from Motu at a time when the Motu form was *piri*. This independent evidence is Koiari *foi* 'to sell, buy'. As this form can only be a borrowing from Motu when the Motu form was *poi* 'to buy, sell'^a it must mean that Motu *hiri* was once *piri* and hence that Koriki *piri* was borrowed from Motu at a time when Motu had *p* where it now has *h*.^b Just how long ago that was, however, cannot even be guessed at now for sounds can change either slowly or quite rapidly depending on social conditions. Consequently we cannot appeal to any constant to get some perspective on this. It may be possible to suggest a date later once other Motu sound changes have been taken into account (e.g., Motu *y* → *ɺ* - Lynch (1978) and once Motu's place within the Central Papuan AN languages has been more clearly determined, but that is well beyond the scope of this paper.

^aKoiari could not have acquired this form *foi* from any other languages except perhaps Mekeo, Kuni or Roro since these are potentially the only ones to have *poi* 'to buy, sell'. Since they do not in fact have this form and since the Koiari are an inland group who are known to have been in close contact with the Eastern Motu (Tupuseleia to Gaire) historically - many sections now have relatives in Eastern Motu villages - it is clear that the Koiari must have obtained *foi* from the Motu when their word was still *poi*. This is so because the Koiari sound system is such that when it borrows words containing *h* these should also contain *h*. On the other hand words containing *p* will be borrowed as ones containing *f*. Sinagoro, the closest AN language to Koiari on the eastern side is also discountable because it has *voivoi/goigoi* 'to buy, sell' which would not be borrowed as *foi* by the Koiari.

^bAny other hypothesis (e.g., that Koriki *piri* derives from one of the Central Papuan AN languages) involves sound changes of an unpredictable kind which makes the hypothesis weaker.

9. Feather, finger, fur

Koriki, *uru*; Orokolo, *orikoro*; Kaipi, *moikehe*; Toaripi, *orimehe*; Raepa Tati, ? ; Mekeo, *ineipuina*; Roro, ? ; Nara, *'olu'olu, vu'ina*; Gabadi, *idunana*; Motu, *hui* but also *urumourumo* 'leafy'; Hula, *lamulamu*.

Reconstruction: POC **pulu* 'feather'

Conclusion: Either 1. Some AN language → Koriki

or 2. Chance correspondence

Koriki *uru* and Orokolo *koro* are either derived from some AN source or are chance correspondences with similar forms in AN languages in Central Papua. The borrowing hypothesis is the stronger given the similarity of these forms to POC **pulu* and reflexes in Central Papuan languages and given also that other AN loans occur in these languages. At least it would seem that the Koriki form is not derived from the Orokolo form, that is, is not a borrowing of it, since both have *k*'s in their inventories and the expected Koriki form of *koro* is *kuru* if borrowed from this source.

10. Chief, headman

Koriki, *amua vaki*; Orokolo, *amua haela*; Kaipi, *lohia karu*; Toaripi, *lohio*; Raepa Tati, *lohio*; Mekeo, *lovia va'a*; Roro, *ovia*; Nara, *lovi'a*; Gabadi, *ovia*; Motu, *lohia*; Hula, *vele*.

Reconstruction: Nil

Conclusion: Motu → EE

Assuming that the Motu and other forms are AN in origin (although this needs to be established) EE *lohia* is a borrowing from Motu as this is the only form that will give the expected form *lovia* in Toaripi.

11. Perineal band

Koriki, *ore*; Orokolo, *hii*; Kaipi, *sii*; Toaripi, *sii*; Raepa Tati, *amoa*; Mekeo, *ipi*; Roro, *ihavuri*; Nara, *sivi*; Gabadi, *sivira*; Motu, *sihi*; Hula, *ivi*.

Reconstruction: POC **tipi* 'native cloth'

Conclusion: Either 1. POC → Motu → EE → Orokolo

or 2. POC → Motu $\begin{matrix} \rightarrow & \text{Toaripi} \\ & \searrow \\ & \text{Orokolo} \end{matrix}$

Orokolo *hii* could be derived from either EE or Motu but is most likely derived from EE *sii* otherwise we have to explain the loss of Motu *h* twice – the expected form of a direct borrowing of Motu *sihi* in both is *sihi* in EE and *hihi* in Orokolo. The Motu form is a reflex of POC **tipi* 'native cloth'.

12. Flag, decoration (on canoe)

Koriki, ? ; Orokolo, *pepe*; Kaipi, *pepe*; Toaripi, *pepe*;
Raepa Tati, *falake* (← English); Mekeo, *kaŋakaŋa*; Roro,
pepe; Nara, *pepe*; Gabadi, *pepe*; Motu, *pepe*; Hula, *pepe*.

Reconstruction: Nil

Conclusion: Motu/Roro/Nara/Gabadi/Hula → EE/WE

Assuming that *pepe* is native to Motu and other AN languages of Central Papua (though it may well not be) it is clear that both EE and WE have borrowed from one or the other of these AN languages. The origin and direction of borrowing in each case is unclear, however.

13. Hot

Koriki, *iva*; Orokolo, *ahea*; Kaipi, *hahea*; Toaripi, *hehea*,
siahu; Raepa Tati, *oro'oro*; Mekeo, *japu*; Roro, ? ; Nara,
siavu; Gabadi, *siau*; Motu, *siahu*; Hula, *iavu*.

Reconstruction: PCP **siavu* 'hot'

Conclusion: Motu → Toaripi

Motu *siahu* must be the source of Toaripi *siahu* because this is the only form that provides the expected form in Toaripi and this form is native to Central Papua. Note that *siahu* occurs in the HTL(E) as 'food, sago soup' and was the expressed reason for wanting *hiri* trade by Gulf peoples (Chalmers, n.d.: *passim*). The corresponding HTL(K) word was *pei*.

14. Four

Koriki, *de'ere'emo'ude'ere*; Orokolo, *hari-la*; Kaipi,
oralerale; Toaripi, *orakaraka*; Raepa Tati, *u'uka u'uka*;
Mekeo, *pani*; Roro, ? ; Nara, *vani*; Gabadi, *vani*; Motu, *hani*;
Hula, *vaivai*.

Reconstruction: POC **pati* 'four'

Conclusion: Motu → Orokolo

Motu *hani* must be the source of Orokolo *hari-la* as this is the only form that gives the expected form in Orokolo (remembering that Orokolo /r/ (or /l/) has *n* as an allophone) and the Motu form is an aberrant reflex of POC **pati* 'four'. Nara and Gabadi *vani* and Hula *vaivai* are excluded because Nara/Gabadi/Hula *v* → Orokolo *m*.

15. Jaw, chin

Koriki, *au'ane au'ane*; Orokolo, *auhare*; Kaipi, *uhare*;
Toaripi, *huale*; Raepa Tati, *nao'o nao'ofa*; Mekeo, *ake*;
Roro, ? ; Nara, *ade*; Gabadi, *na'ina'ina*; Motu, *auki(jaw)*,
ade (chin); Hula, *are*.

Reconstruction: POC **kami* 'chin' and POC **anse* 'jaw, chin'

Conclusion: ?

Koriki and Eleman forms are suspect of being complex forms derived from Motu *auki* 'jaw' and *ade* 'chin' but the loss of *-ki* in 'jaw' and the unexpected *n* in Koriki (if derived from Motu *ade*) make this of low probability. The Koriki and Eleman forms are related but it is not clear whether by borrowing or by being inherited from a common ancestor.

Appendix 5

Comparison of the basic vocabulary in Bevan's (1890:314-7) Tumu list with that of present day languages in the Kikori area

Comparative materials are taken from Franklin (ed.) (1973:541-92) and the codes F2, I1 etc given below identifying the source list used. Cognates are indicated by identical numbers in brackets after each word (reading across). (M) after words indicates a borrowing from Motu.

English	Bevan's Tumu	Kairi (F2)	Porome (I1)	Kerewo (E6)	N-E Kiwai (E11)
1 man	<i>taunama</i> (M)	<i>uki</i> (1)	<i>mo</i> (2)	<i>dubu</i> (3)	<i>dubu</i> (3)
2 woman	<i>wop</i> (1)	<i>wo</i> (1)	<i>eri</i> (2)	<i>obo</i> (3)	<i>o:bo</i> (3)
8 hair	<i>oubardi</i> (1)	<i>pate</i> (1)	<i>kimi:kuro</i> (2)	<i>no'obo</i> (3)	<i>epu miho</i> (3)
9 eye	<i>eē</i> (1)	<i>ihta</i> (1)	<i>ipiri</i> (2)	<i>idamai</i> (3)	<i>itomai</i> (3)
10 nose	<i>yū</i> (1)	<i>yu rapo</i> (1)	<i>urubi</i> (2)	<i>wodi</i> (3)	<i>wodi</i> (3)
11 ear	<i>kuōparti</i> (1)	<i>kupate</i> (1)	<i>ebori</i> (2)	<i>hepato</i> (3)	<i>hepa:to</i> (3)
12 tooth	<i>maryōō</i> (1)	<i>mahu</i> (1)	<i>koropi</i> (2)	<i>tyopai</i> (3)	<i>giri</i> (4)
15 mouth	<i>ōtēē</i> (1)	<i>o</i> (1)	<i>arunai</i> (2)	<i>palu'o</i> (3)	<i>pu'o</i> (3)
16 arm	<i>eē</i> (= hand) (1)	<i>hs riki</i> (1)	<i>iri</i> (2)	<i>tu golo</i> (3)	<i>tu</i> (3)
19 leg	<i>dar</i> (= foot) (1)	<i>re riki</i> (2)	<i>kapui</i> (3)	<i>komo</i> (4)	<i>hairo</i> (5)
21 skin	<i>sevuštow</i> (1)	<i>heitau</i> (1)	<i>napori</i> (2)	<i>tama</i> (3)	<i>tama</i> (3)
27 sun	<i>narvar</i> (1)	<i>eho</i> (2)	<i>eri</i> (3)	<i>hevito</i> (4)	<i>hivito</i> (4)
33 water	<i>ōō</i> (1) <i>narvar</i> (4)	<i>u</i> (1)	<i>ubi</i> (2)	<i>obo</i> (3)	<i>obo</i> (3)
34 water	<i>seppōō</i> (1)	<i>hapu</i> (1)	<i>ei</i> (2)	<i>hopu</i> (1)	<i>hepu</i> (1)
38 fire	<i>sebanī</i> (1)	<i>i</i> (1)	<i>elēt</i> (2)	<i>kupo</i> (3)	<i>miho</i> (3)
42 tree	<i>eē</i> (= wood) (1)	<i>i</i> (1)	<i>kubi</i> (2)	<i>nu'a</i> (3)	<i>nu'a</i> (3)
45 dog	<i>kar-kar</i> (1)	<i>ka</i> (1)	<i>kapui:harī</i> (2)	<i>kaukau</i> (3)	<i>umu</i> (4)
47 bird	<i>kar</i> (= duck) (1)	<i>ka</i> (2)	<i>barikere</i> (3)	<i>phakagama</i> (4)	<i>momo'o</i> (5)
50 fish	<i>narimo</i> (1)	<i>namu</i> (1)	<i>koribi</i> (2)	<i>na:</i> (3)	<i>na</i> (3)
53 good	<i>naritō</i> (1 or M)				
	<i>narimo</i> (M)	<i>kahau</i> (2)	<i>opano</i> (3)	<i>meha</i> (4)	<i>mi'aha</i> (4)
64 eat	<i>kayee</i> (1)	<i>nato</i> (2)	<i>ko</i> (1)	<i>iho</i> (3)	<i>iho</i> (3)
65 drink	<i>ōōborra</i> (1)	<i>u nato</i> (2)	<i>ubi ko</i> (3)	<i>ido</i> (4)	<i>ido</i> (4)
69 walk	<i>tōō-hōō</i> (1)	<i>us</i> (2)	<i>pe</i> (2)	<i>o'o</i> (3)	<i>odaora</i> (3?)
70 give	<i>terema terema</i> (= give me) (1)	<i>tato</i> (2)	<i>apa wau</i> (3)	<i>imairo</i> (4)	<i>ha</i> (5)
71 sleep	<i>kidar</i> (1)	<i>hitato</i> (1)	<i>i'ōoa</i> (1?)	<i>wao</i> (2)	<i>uro</i> (2)
76 come	<i>ōōmweya'</i> (1)	<i>yato</i> (2)	<i>pou</i> (3)	<i>o'uro</i> (4)	<i>ōwa</i> (4)
91 kill	<i>wōtōō</i> (= kill or club) (1)	<i>rato</i> (1?)	<i>do okoa</i> (2)	<i>aro</i> (3)	<i>wadomōdi</i> (3?)
93 leaf	<i>keawar</i> (= leaves) (1)	<i>ipate</i> (2)	<i>ori</i> (3)	<i>paha</i> (4)	<i>paha</i> (4)

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The importance of being earnest in archaeological investigations of prehistoric trade in Papua

Jim Allen and Owen Rye

Introduction¹

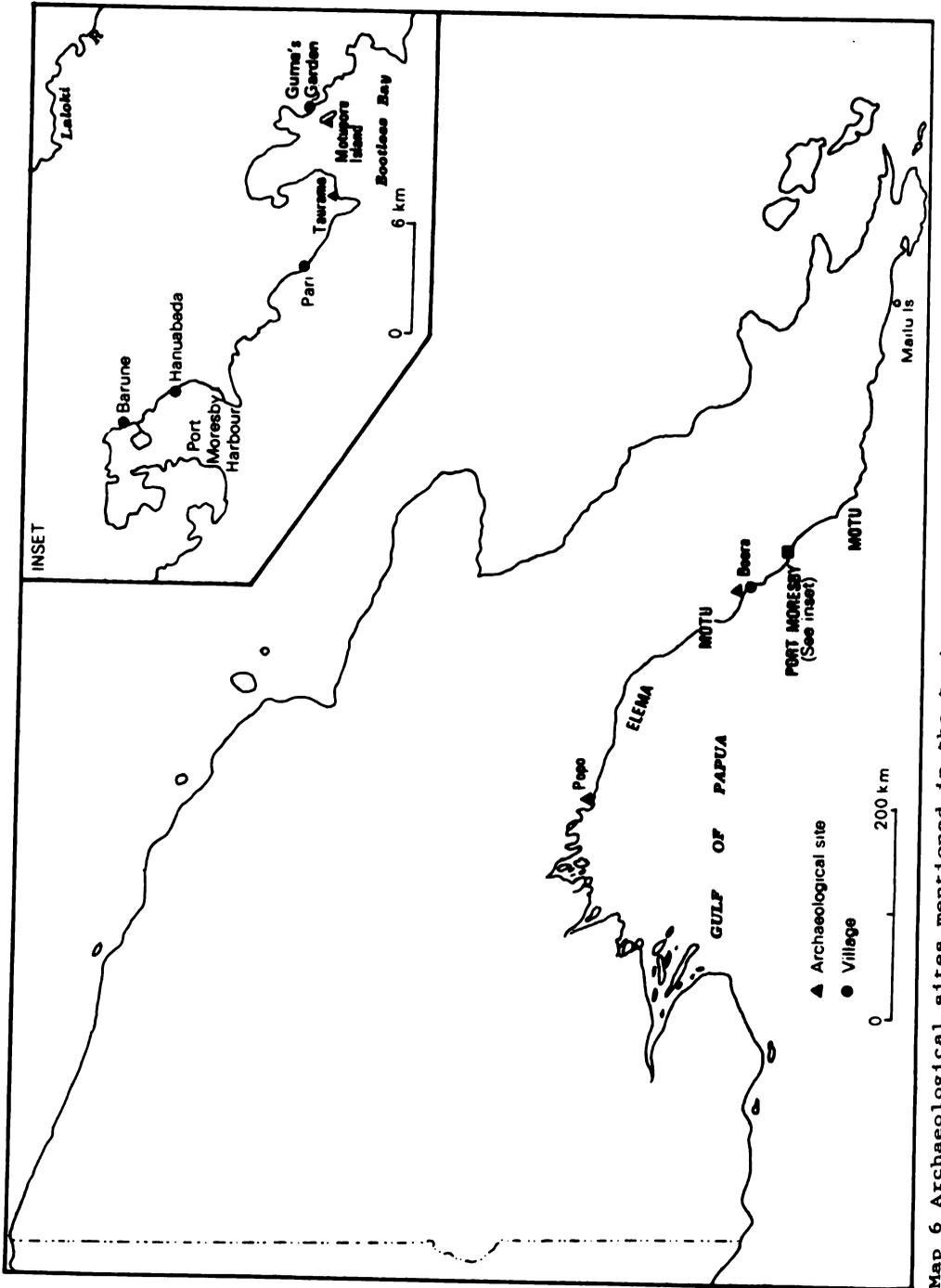
Archaeological contributions to the study of the *hiri* are at present virtually non-existent. Work on sites relating to the Gulf end of the trade has been made by Rhoads (pers. comm. and this volume) and Swadling (pers. comm.) and has consisted of surface collecting and limited excavation. A date of c.400 BP has been obtained for the Popo site (see Map 6) which contains pottery from the Port Moresby area (see Rhoads this volume), and the surface collections contain pottery which stylistically can be associated with Motu pottery. A further concerted effort on sites in the Elema region was carried out by Vanderwal and Frankel at the end of 1980 and analysis of this material is presently underway.

In the Port Moresby area, work by Susan Bulmer (1978, 1979) and ourselves has looked at the definitions and archaeological signatures of trade in the area of initiation of the *hiri*. This present paper reviews (1) the research strategy initiated by Allen, and (2) the solution of some of the problems of this strategy as conceived of and implemented by Rye in respect of studying the origins and evolution of this trade. While our work remains incomplete we put it forward here because we believe that ultimately the evidence to answer these questions will derive in the most part from archaeology.

Archaeological considerations

Functionalist shortcomings. The principal aspects of the *hiri* are well known from the early ethnographies. At the waning of the south-east trades a fleet of perhaps twenty *lagatoi*

¹Funds for PIXE analysis at Lucas Heights are provided by the Australian Institute of Nuclear Science and Engineering. Roger Bird, Peter Duerden and Laurie Russell are responsible for analysis and computing of raw data. The WHERE program was written by Monica Omodei. Maureen Johnson processed the paper through its many manifestations on the DEC-10.



Map 6 Archaeological sites mentioned in the text

carrying en masse perhaps 20,000 clay pots and other items for trade journeyed to villages in the Gulf Province to exchange these items for sago and canoe hulls, these goods being returned to Port Moresby villages usually in January, where the sago in particular provided basic carbohydrate until local gardens produced at the end of the wet season. Despite this massive influx of sago on this and reciprocal trips, the government reports for the twenty years around the beginning of this century indicate that 'famine' was endemic, occurring perhaps more frequently than one year in three in the Port Moresby villages. Thus the *hiri*'s role in providing food was stressed: because of the infertility of local soils and the vagaries of rain in Port Moresby, so the argument went, the local inhabitants were forced to trade in the west for food.

As has been previously argued (Allen, 1977) this functionalist explanation, while perhaps an accurate description of the *hiri* when Europeans settled Port Moresby, has no explanatory power when dealing with questions of origin and evolution of the trade. We can hardly credit a scenario which involved a sudden corporate decision among several villages (themselves each without a corporate leader) along the lines: we are starving, let us build and man twenty large canoes and fill them with clay pots which we will take 200 miles west and persuade the people there to take them in exchange for sago and our problems will be solved.

Even as a description of the *hiri* of the turn of the century, the food stress model needs closer examination. If we allow that Barton's figures were in any way accurate we can calculate a return, just for the *hiri* alone, of 500-600 tons of sago in twenty canoes (B.N.G.A.R. 1901-1902:20; Barton, 1910:114-5). A reasonable population estimate for participating villages is 2000 people (Oram, 1977:96). Allowing three pounds of sago per person/day, 600 tons would feed these people for between eight and nine months. Clearly this sort of scale indicates something beyond famine stress response. We know of course that much of the sago was distributed inland and further east, a fact which merely underlines a point previously made by us, that the *hiri* has to be viewed as an integral part of the Western Motu annual economic round. Yet even when this is done we must still explain the central nature of the *hiri* in Western Motu socio-religious life.

An attempt to seek an alternative series of explanations has been made by one of us (Allen, 1977) and will not be reiterated here. Crucial to these explanations is the hypothesis that specialised trade has a long history among past Motu, and the attempt to demonstrate this for one known ancestral site, that of Motupore Island. It is to this question that we now turn.

Archaeological reflections of trade. A case can be convincingly argued that some of the antecedents of the Western Motu of Port Moresby can be traced by archaeological techniques backwards through the sites of Taurama, Motupore and Boera to about

800AD. While precise histories and mechanisms and dynamics of change might be argued, this view is probably acceptable to most researchers in the field. Thus it seems reasonable, in attempting to model the archaeological correlates of Western Motu trade, to draw upon the ethnographic and historical evidence available. The salient point in this exercise (see Allen, 1977) is that manufactures, such as stone axes, shell jewellery and valuables, and pottery (i.e. those durable items likely to remain in the archaeological record) either go out from, or pass through the Motu trading villages. Of those that pass through, only a small percentage appear to be retained by the Western Motu themselves. The items against which they are traded are predominantly perishable food and raw material items which leave little or no trace in archaeological deposits.

This is bad news for archaeologists working around Port Moresby, for even a passing acquaintance with the literature of archaeological trade studies indicates that for the most part archaeologists do not really study trade; more accurately they document the presence of exotic (i.e. foreign to the locality of the site) artefacts in their sites and attempt to pin down the most likely source(s) of the raw materials involved. At a more general level archaeologists will also often pinpoint generalised centres, or 'cultural provinces' based on morphologies and decorative elements of tools and utensils and document their presence away from their general centre of concentration and call that trade. Such statements are usually general in the extreme, and say nothing about mechanisms, evolution or organization of trade, and even less about volume, regularity or associated social institutions. At this level we can already document something of the *hiri*. We can say that stylistically, pottery collected from a number of Gulf sites probably originated around Port Moresby.

But to return to the point. Given the above facts, a trade model based on the ethnography will logically predict the absence of trade evidence of the most obvious sort (i.e. stone axes from foreign places). The model is therefore of little use archaeologically in Port Moresby sites because whether or not the prehistoric Motu were specialised traders, the archaeological record is likely to look pretty much the same, at least in respect of the 'hard' evidence of exotics.

In her recent article, Susan Bulmer (1979) went to some length to point out this absence of clear trading indicators in Port Moresby sites, and appeared to reach the general conclusion that such an absence indicated that the prehistoric Motu, and particularly those on Motupore, did not engage in specialised trade, as we have previously claimed. We do not wish to pursue here the many errors of fact and logic which appear in that paper (see Allen, 1980), we wish merely to emphasise our logical demonstration that the absence of exotic items in the Motupore deposits,

taken by Bulmer to deny that these people were specialised traders, could equally support a diametrically opposite conclusion.

Archaeological evidence for specialised trade on Motupore.

Having failed (predictably) to produce first order evidence of trade in the Motupore deposits, much of the analysis so far completed has been directed to the question of whether an *a priori* case can be made for the likelihood that the inhabitants of Motupore were trading specialists. We incline to the position that they were, and list below the various summary arguments on which this opinion is based. It should be observed that taken individually none is conclusive. Taken collectively, we at least find them more persuasive.

- (i) The location of the site on an offshore island. This location, together with the strong likelihood that the earliest houses on the site were built below the high tide mark, indicates a marine adaptation of some extremeness which certainly involved reasonable canoes. The site possesses ready accessibility to the sea (bay and ocean) during all or most tidal conditions, but whether this offset living on a waterless islet can only be conjectured. Defensively the island is a better location than the adjoining mainland, and defence may be a factor of importance to trading groups whose manpower is depleted when trading expeditions are being undertaken. In support of this view we may cite other specialist trading groups who occupy offshore localities, viz. the Mailu, the Titan of Manus and the Siassi. It is clearly not a hard and fast rule, but rather a point for consideration. The location *suggests* a specialised economy. Bulmer's recent *contra* argument (1979:23), made presumably to indicate that the economy could have been more general — that the Motuporeans could have maintained mainland gardens — can be dismissed. Several lines of evidence suggest they did, but so did the ethnographic Western Motu, and other groups whom we would call specialised traders.
- (ii) The faunal repertoire. In keeping with the idea of marine adaptation the majority of the faunal remains are from fish, turtle and dugong. Of the land fauna, including the probable domesticates pig and dog, the agile wallaby constitutes by number and weight about 90 per cent of the identifiable bones, while other land animals are negligible or absent. As previously argued by us generalised hunting by the inhabitants of Motupore would predictably result in small quantities of the bones of these animals being present. Thus, applying Occam's Razor, this faunal assemblage is most economically explained as the archaeological reflection of a known ethnographic pattern in the region — the seasonal trade

of quantities of these animals by mainland and inland groups to coastal villages. We reject, on this basis, Susan Bulmer's suggestions (1979:19) that the Motuporeans might have caught and eaten other animals on the mainland, bringing only the wallaby carcasses onto the site, or that wallabies might have been preferred for 'ritual or technological uses', particularly since a recent study of the age structure of the Motupore wallaby assemblage indicates a very low proportion of very young and very old animals. The absence of the latter is in keeping with any natural population which is being heavily predated. The absence of the former is more puzzling since their capture as pouch young or as free-running animals is likely to have been high (particularly given the indiscriminate hunting techniques of fire-driving into nets — if this indeed was how they were captured). Selective spear hunting might produce such a pattern, but we consider more likely the explanation that being traded, the transport over any distance of very small carcasses would not have been economical, and that their absence is further support for the trade explanation.

(iii) Motupore as a manufacturing site. There is ample evidence that the Motuporeans produced vast quantities of pottery. As Susan Bulmer points out (1979:23) this may have been only for internal use — obviously pottery traded out would not appear in the site. The answer to this problem clearly lies in sourcing Motupore pottery and locating it on recipient sites, a question which is dealt with in the remainder of this paper. Here we merely reiterate the points which indicate pottery manufacture on the island:

- (1) the presence of unfired clay, not local to the island itself, in the deposits;
- (2) the discovery of a probable firing area in the site, consisting of a roughly circular area of thick white ash with a diameter of c.3 metres;
- (3) the presence of firing wasters (remains of vessels damaged in firing) in the deposits and
- (4) the huge volume of pottery on the site.

A second relevant point concerning Motupore pottery is the collection of

- (1) rim sherds of pots bearing small distinctive decorative devices on one area of the rim;
- (2) the presence, in small quantity, of very large vessels (wall thickness up to 4 cm, distinctively larger rims).

On the basis of analogy with ethnographic Western Motu pottery, the latter large pots, called *tohe*, are used for sago storage (Groves, 1960:10), and the former devices are regarded as 'trade marks' to enable the identification of individual potter's pots where male affines take them in quantity to trade (Groves, 1960:11, 13). Groves's long description of *siaisiai* transactions (1960:19-21) where one man may be responsible for the pots of a dozen or more women makes the necessity for identification obvious. Groves reported that while in 1954 potters were using their initials, traditionally they used simple geometric figures as trade marks.

Elsewhere (Allen, n.d. (1978)) we have argued the justification of using ethnographic analogy in the case of Motupore where the independent evidence of linguistics and oral history identify Motupore as an ancestral Motu site. Therefore we see no reason not to assume

- (1) that the devices found on pottery at Motupore are trade marks, which in turn implies pottery trading into or out of Motupore by people other than the makers themselves, and
- (2) that the large pots in the site were made to store sago. These pots may have been manufactured to trade to sago users, or made for internal site use. If the latter is indeed true we can posit the use of sago on Motupore. Oram (1977:84) and Susan Bulmer (1979:9) refer to the presence of sago in the Port Moresby area at Taurama and Barune and inland near the Laloki River. These stands no longer exist and appear likely to have been too small to have provided local sago in any quantity. If the Motuporeans did eat sago it seems likely that it must have been imported from some distance.

The various possibilities discussed here can be further tested if we can determine the locality of manufacture of the pots in question. For the present these various possibilities are again indicative of trading activities.

Putting pottery aside for the moment, there is also ample evidence for the manufacture of shell jewellery, including armshells, disc beads and a variety of other ornaments. The evidence comes from the objects themselves, manufacturing waste, and numerous stone drill-points. Here we can identify unfinished objects, and those broken in manufacture more clearly than with pottery. In the case of the disc beads for example these constitute some 70 per cent of the recovered items. We can therefore postulate that either the Motuporeans were hopeless at this task, or, more likely, that many finished items were leaving the site.

- (iv) Population in Bootless Bay. Although we have not yet calculated any population sizes for Motupore, it is in terms of the volume of its remains, a large site. Similarly the contemporaneous period at Taurama would seem superficially to represent a substantial occupation. In addition we have located evidence from around another dozen sites in the bay which date roughly (by comparing the pottery styles to the Motupore sequence) to the 16th and 17th centuries AD. While not all these sites are thought to have been permanently occupied, at present it seems reasonable to assume a significant concentration of people in the bay area at this time. Such a focus of population concentration does not sit well with the expected settlement patterns of largely autonomous groups with generalised economies; such groups tend to disperse more evenly across the landscape. We can note in the case of two ethnographic trading centres on this coast, Mailu and the Hanuabada complex, that both places had significantly higher populations than their surrounding and related villages. This tendency – for trading centres to grow in size, often at the expense of surrounding villages or towns – has been remarked upon elsewhere in the world, e.g. for the Lowland Maya. We do concede that trade may not be the only reason for such growth, and that until quantified more accurately for the Bootless Bay region, such an argument has to be used with caution. However, where populations with a given extractive level of technology exceed the extractive potential of their environment, either the (increased) importation of food or population dispersal must follow. That we know population dispersal from the Bootless Bay region took place between c.1700 and 1900 does not preclude the possibility that significant levels of food importation existed and possibly increased before that event. While we require a better assessment of both population levels and potential local availability of food in order to evaluate this factor properly, nevertheless the current evidence is suggestive.

Taken collectively, these four points seem to us to support the view that Motupore was a specialised trading site. Having arrived at that conclusion we felt justified that more time and effort should be spent in providing more concrete proof. The obvious archaeological evidence at our disposal was pottery. Amongst its properties we could consider (1) it is a specialised manufactured item, (2) it is a low value item and therefore common, (3) it is a durable item likely to remain in various archaeological contexts, and (4) at least ethnographically it has had considerable use in the area as a trade good, a fact highly likely to pertain in the past.

In order to implement the ultimate test, of whether we can find Motupore pottery in other and distant archaeological sites, a number of preliminary steps have had to be determined. The most basic of these is, is it possible to isolate pottery made on Motupore from other, contemporaneous pottery from other Bootless Bay sites and other sites in the Port Moresby area?

The remainder of this paper is given over to a description and discussion of a new method of precise sourcing of prehistoric ceramics developed to answer this and other basic questions. The paper concludes with a discussion of how this technique will be more widely applied to questions of long distance trading. For the moment, however, we begin by outlining the questions already asked.

We are satisfied that no analysis of shape and decoration will allow the identification of the manufacturing location of prehistoric Port Moresby ceramics at a specific site level. It is likely that as more sites are dug, and a ceramic typology is agreed upon for the area as a whole, some styles will appear more frequently on one site or another. Even if this is so, it will be an insecure basis on which to attribute manufacturing location. For this reason we were persuaded that more high powered physical and/or chemical analyses were necessary. A number of these already exist. Most are costly and all are time consuming. Had we attempted to pursue any of these, the major drawback would have been that at best we could have analysed about 100 sherds. The archaeological investigation of Motupore has dealt with perhaps 1 per cent of the site, and this sample has produced some 500,000 sherds. While 100 of these could have been chosen, their representativeness could in no way be vouchsafed and their usefulness in answering our questions seriously weakened by this, and by the additional problem of small sample sizes when broken down into categories.

Specifically, what we asked was:

- (i) How many different clay sources/compositions are represented on Motupore?
- (ii) How many of these sources/compositions can be identified specifically by location?
- (iii) Is there any correlation between clay sources/compositions and specific shape and/or decoration categories?
- (iv) Is there any correlation between clay sources/compositions and manufacturing techniques (which have already been defined for the site)?
- (v) What changes (if any) are there in the proportional use of different clay sources/compositions during the lifetime of the site?

Sourcing techniques

Chemical analysis. Thin section studies of sherd mineralogy have been proven inadequate for differentiation of clay sources within Bootless Bay, so chemical compositional data have been obtained for sourcing the Motupore pottery.

The problem encountered by most archaeologists contemplating a chemical analytical approach to sourcing, is that either suitable analytical facilities are not available, or that only small numbers of samples can be analysed, with ensuing statistical unreliability. Extrapolating from a small number of analyses to a large number of sherds may at best be misleading.

PIXE. The PIXE (proton-induced x-ray emission) analytical system developed at the Australian Atomic Energy Commission Research Establishment (Lucas Heights) is ideally suited to artefact studies, primarily because relatively large sample numbers can be processed. The present working report outlines the progress of a joint project between the Department of Prehistory, ANU and the Nuclear Techniques Section, AAEC, on sourcing Papuan coastal pottery.

The PIXE analytical technique has been discussed in detail (Cohen and Duerden, 1979; Duerden *et al.*, 1980; Scott *et al.*, 1978) and requires only brief outline here. Pellets about 12 mm diameter pressed from powdered samples, are mounted on an aluminium 'stick' which holds forty-five pellets. The stick is mounted in a sample tube and, between analyses, is moved automatically by computer control.

A proton beam, from the 3MeV Van de Graef accelerator, is incident on the sample at 90 degrees to the face of the pellet being analysed. The beam can be focused to cover an area of the sample between one and five millimetres diameter, a three millimetre spot being used in pottery studies.

Bombardment by the proton beam causes emission of x-rays from the sample. These are counted by an Ortec Si(Li) detector, in a series of 'windows' or x-ray energy ranges, each range characteristic of a specific element. This produces a count spectrum.

The spectrum is recorded on paper, by a PDP15 computer, and also on a visual display unit. Each spectrum is stored in an archive which can be transferred to disc or tape file for further calculations.

The original spectrum of raw counts must be corrected for background effects and overlapping peaks. Several programs are available to complete the necessary calculations. Each spectrum fitting takes about one and a half minutes CPU time which places some restraints on the total number of analyses. The resulting

corrected peak area counts can be converted into element concentrations (percentages) provided reference samples with known concentrations of elements are available. Conversion factors are obtained from these standards, which are analysed in the same runs as a series of unknowns for which concentrations are desired. In the present study, the basic data used are peak area counts, although concentration units may be used in future work.

In practice, the slowest part of the procedure is sample preparation. Sherds are cleaned to remove any surface contamination, and any slip or painting on the surface of the sherd is ground off before sampling (using a non-contaminating boron carbide abrasive disc). Several sample pieces, each about one gram, are removed from each sherd, and crushed together in a tungsten carbide mill to produce a powder finer than 150 microns. About one gram of powder is then placed in an aluminium cap and pressed into a pellet. Total preparation time for each sample is about fifteen minutes.

Each analysis takes between five and ten minutes counting time, but once the sample stick is loaded, analysis of forty-five samples can proceed unattended. With longer counting times it is normal to analyse ninety samples per day; with shorter counting times and a longer sample holder up to 150 analyses per day are feasible. Each analysis provides count data for twenty to twenty-five elements.

Application of PIXE

Sherds and sources. There have been two basic approaches to pottery sourcing in the many previous studies:

- (i) Compare the composition of sherds with sherds known to be *in situ* from the manufacturing viewpoint (i.e. firing-wasters).
- (ii) Compare the composition of sherds with that of clays known or thought to have been used for pottery manufacture. The location of the clay is then taken to be the source of materials for pottery of the same composition.

The latter approach, with considerable modification, has been used in the present study. Analyses of clays alone are considered to be inadequate for sourcing Motupore pottery because Worthing's unpublished study of thin sections of pottery shows that all sherds were tempered with beach sand (with the possible exception of sherds originating from Boera). Also, there is no evidence in the ethnography of Motu potters using untempered clay to produce vessels. The standard procedure of recent Motu potters (Groves, 1960) is to prepare a body by mixing clay, beach sand and seawater. Both sand and seawater can be expected to be significantly different in composition from clay, so tempering clay can be expected to produce compositions distinct from untempered clays.

A further result of tempering is that the *proportions* of clay, tempering sand, and seawater can be expected to vary from batch to batch, even though the potter may consider the mixtures 'identical'. The method of mixing used by modern Motu potters does not suggest great compositional consistency. So at the commencement of this study, it was considered necessary that 'sources' be regarded as a series of compositions (mixtures of clay and sand in varying proportions), rather than single compositions (such as a clay) which have been used in previous studies. If compositions of prehistoric sherds can be related to a point on the range of compositions for a specific mixture, the analysis will provide not only a 'source' but also the composition (in terms of clay and sand) of the sherd.

Knowing the clay-sand proportions in bodies used for making the prehistoric pottery is useful because if compositional changes are found these may be correlated with other technological and stylistic changes in the pottery enabling explanation of the changes rather than the customary description. Compositional and other technological changes in the pottery may correlate with other changes in material culture in the site.

Bootless Bay pottery sources have been characterised using clay and sand samples obtained in a field survey by Rye. Body mixtures of clay and sand have been used to represent sources. In the present study a 'source' is defined as a series of mixtures of one clay and one sand (in proportion ranging from 100% clay, no sand, to 60% clay, 40% sand, at 5% intervals). A source is therefore chemically a series of related compositions, rather than a single composition (with a normally distributed variation) as used in all other previous pottery sourcing studies.

Analysis of the data thus has required the development of a different statistical approach than those used in previous studies. Conventional statistics used in most pottery sourcing studies requires source compositions to be normally distributed around a mean 'ideal composition' but the sources in the present study have a range of compositional variation which is obviously not normally distributed.

The nature of the basic data also imposes limitations on statistical processing. As noted above, peak area counts can be used to characterise sample composition. It has not always been possible to normalise counting conditions for each analysis, so peak area counts are not directly comparable for all analyses. Peak area *ratios* are comparable and have been used as the data in the WHERE program developed for this study.

For the sources, peak area ratios for various element combinations are plotted against composition. Ratios determined for prehistoric sherds can then be plotted against the source references. Allocation of sherds to sources is made according to

most frequent occurrence of intersection with a source plot, over about twenty element combinations.

The original composition of the sherd (expressed as percentages of clay and sand) can be determined from the peak area ratio versus composition plots. This enables study of changes in body composition through time.

It should be noted that not all elements determined in the PIXE analysis can be used for sourcing. The elements normally found are: Mg, Al, Si, S, Cl, K, Ca, Ti, V, Cr, Ba, Mn, Fe, Ni, Cu, Zn, Ga, As, W, Pb, Br, Rb, Sr, Y, Zr, Nb.

The following elements are not used for sourcing because peak area counts are normally too low to allow statistical counting reliability: Ba, As, Pb, Y, Nb. Control experiments have shown that elements whose concentration varies with firing temperature are: Zn and Cu, which are lost increasingly at temperature above 850 degrees centigrade. Elements which vary in concentration according to whether freshwater or saltwater is used to wet the clay before forming, are S, Mn, Cl, Br, and to a slight extent Fe. Elements rejected because of inhomogeneity of occurrence in pellet samples (and hence high variability of occurrence) are Rb, Zr, Cr. Tungsten (W) is found in many samples in random amounts and may be due to contamination from the tungsten carbide mill in which samples were ground to powder, so is also rejected from sourcing calculations.

The remaining elements, used for sourcing, are:

major elements: Mg, Al, Si, K, Ca, Ti

trace elements: V, Ni, Ga, Sr

Results. At the time of writing, 158 sherds excavated on Motupore have been analysed. The results are summarised in Table 1. Of these, four cannot be attributed to any known source. Fifty-seven correspond to a mixture of Motupore Island beach sand with clay from the nearest point on the mainland (Guma's Garden), so are of 'Motupore' origin. Seventy sherds are consistent with clay and sand deposits at Taurama, and the remaining twenty-seven correspond to materials found at Boera. Several other potential sources around Bootless Bay were included in the study, but were not matched to any sherds.

It should be noted that the compositions of Taurama and Guma's Garden clays are almost identical. Although most allocations of sherds to sources are reliable, about 5 per cent of sherds allocated to one of these sources could belong to the other. Recent analyses have shown that clay from Pari is very similar to the Bootless Bay clays also. Sherds from the Boera source are compositionally distinct from the Bootless Bay sources.

In terms of the *hiri* trade, this indicates that sherds from Gulf sites may be reliably sourced as originating in Bootless Bay, and slightly less reliably allocated to Taurama, Motupore (and/or Pari?) sources. The distinction between these sources and Hanuabada and Manumanu sources was made during 1980 and these latter sources are now being employed in current analyses.

Table 1
Sources of pottery excavated at Motupore

Source	Site level										Totals
	2	3	4	6	8	11	13	14	15	16	
Taurama	2	6	14	17	10	15	0	0	4	2	70
Boera	0	1	6	4	4	4	0	0	3	5	27
Motupore	0	8	9	13	7	13	1	3	1	2	57
Unsourcesd	0	0	1	1	1	1	0	0	0	0	4
Totals	2	15	30	35	22	33	1	3	8	9	158

Painted and unpainted pottery was excavated at Motupore. Both types of ware have been attributed to each of the three sources, in the following proportions:

Taurama: 31% painted, 69% unpainted

Boera: 78% painted, 22% unpainted

Motupore: 60% painted, 40% unpainted

This compares with the original sample selected for analysis which was 50 per cent painted sherds, 50 per cent unpainted.

To a degree this shows a relationship between source and decorative style, which will be more fully investigated with larger sample numbers in the future.

At this stage relationships between the manufacturing techniques for vessels, and source of the vessels, have not been investigated.

The initial results indicate changes over time in the relative proportions of sherds from different sources. In general, there are relatively more Boera clay sherds in the *lower* levels and fewer in the upper levels of the site. The proportion of Taurama clay sherds stays relatively constant through the site, whilst the proportion of 'Motupore' sherds (i.e. Guma's Garden clay) increases with time. Further investigation with larger sample numbers will be required to confirm this trend. However, these results raise some new problems. Most important among them at present is the high proportion of sherds (44 per cent) sourced to the two Taurama clay sources. What we do not know is whether the Motuporeans were transporting clay from Taurama or whether pots themselves, made at the Taurama site, were coming onto

Motupore. This question is currently being pursued by examining the sources of firing wasters on Motupore, the hypothesis being that if all wasters source to the Guma's Garden source, then the Taurama material most likely arrived as finished pots. Conversely if wasters are also sourced as Taurama clay we will posit the transportation of clay to Motupore, although this will not rule out the possibility that Taurama-made pots also came onto Motupore. Although results in either case will not be conclusive they will at least potentially clarify a puzzling situation and perhaps provide insights into the structuring of the prehistoric Bootless Bay communities.

Conclusions

Given that we can now begin to answer the five questions on p.107, that is, that we can identify with some certainty pottery made on Motupore, there are three major implications for trade studies:

- (i) We will be able to isolate Motupore wares where they occur on other sites even when no visual distinctions in the ceramics are apparent. Conversely we will be able to isolate Motu style pottery on Motupore which was not made there. Thus *within* the Motu-Koita-Koiari domain we will be able to begin to look at interaction spheres within a single or related cultural region. To our knowledge this has not previously been achieved with any high rate of success elsewhere in the world.
- (ii) We are now able to handle problems such as those raised earlier concerning the originating source of sago storage pottery and trade marked items. These questions are now being pursued in the current program.
- (iii) By the same set of identification processes we will be able to recognise Motupore wares in more distant sites. Success with Motupore has increased our confidence that the technique might be applied with equal success to other Motu potting villages, and will warrant similar programs of ceramic identification being initiated for other sites in the Motu domain. Ultimately, as *hiri* sites in the Gulf are excavated, the sourcing of the trade pottery to specific Port Moresby sites and villages should be entirely feasible.

In regard to these considerations the sourcing techniques outlined by Rye has two principal advantages. First, the precision of the technique makes us optimistic that we will be able to distinguish between pottery made on sites only short distances apart — something not always possible with other sourcing techniques.

Second, this method has a present preparation and analysis time of about twenty-five minutes per sample, which allows us to process several hundred samples per month. This overcomes the major difficulty associated with other sourcing techniques, namely the limited number of samples which can be run.

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West of Bootless Inlet: archaeological evidence for
prehistoric trade in the Port Moresby area and the
origins of the *hiri*

Susan Bulmer

Introduction

One of the central interests of Pacific archaeology in recent years has been trade and exchange (Specht and White, 1978). The evidence for prehistoric trade is typically elusive. However, in spite of the important contributions of oral history, linguistics, ethnography and history, all of which bring their own kind of evidence to bear on the subject of the *hiri*, the archaeological evidence is central as data directly related to the past.

It will be argued in this paper that the archaeological evidence available is more extensive than has previously been indicated; although our archaeological knowledge is at present inadequate to the task at hand, there is nevertheless a variety of evidence, mainly indirect, of prehistoric trade and its correlates in the Port Moresby area. It will also be argued that there is a consistency between the available archaeological evidence and the traditional explanation put forward by the Motu people themselves that the *hiri* had its origins at Boera (Oram 1977 and this volume), in the uncertain and relatively poor ecological circumstances of the Western Motu. While this interpretation is not inconsistent with the interpretation of Motupore as a community of specialised traders, it is not necessary for them to have been specialised traders and it is not necessary to search beyond the immediate Port Moresby area or further back in time than the past three to four hundred years to find the origins of the *hiri*.

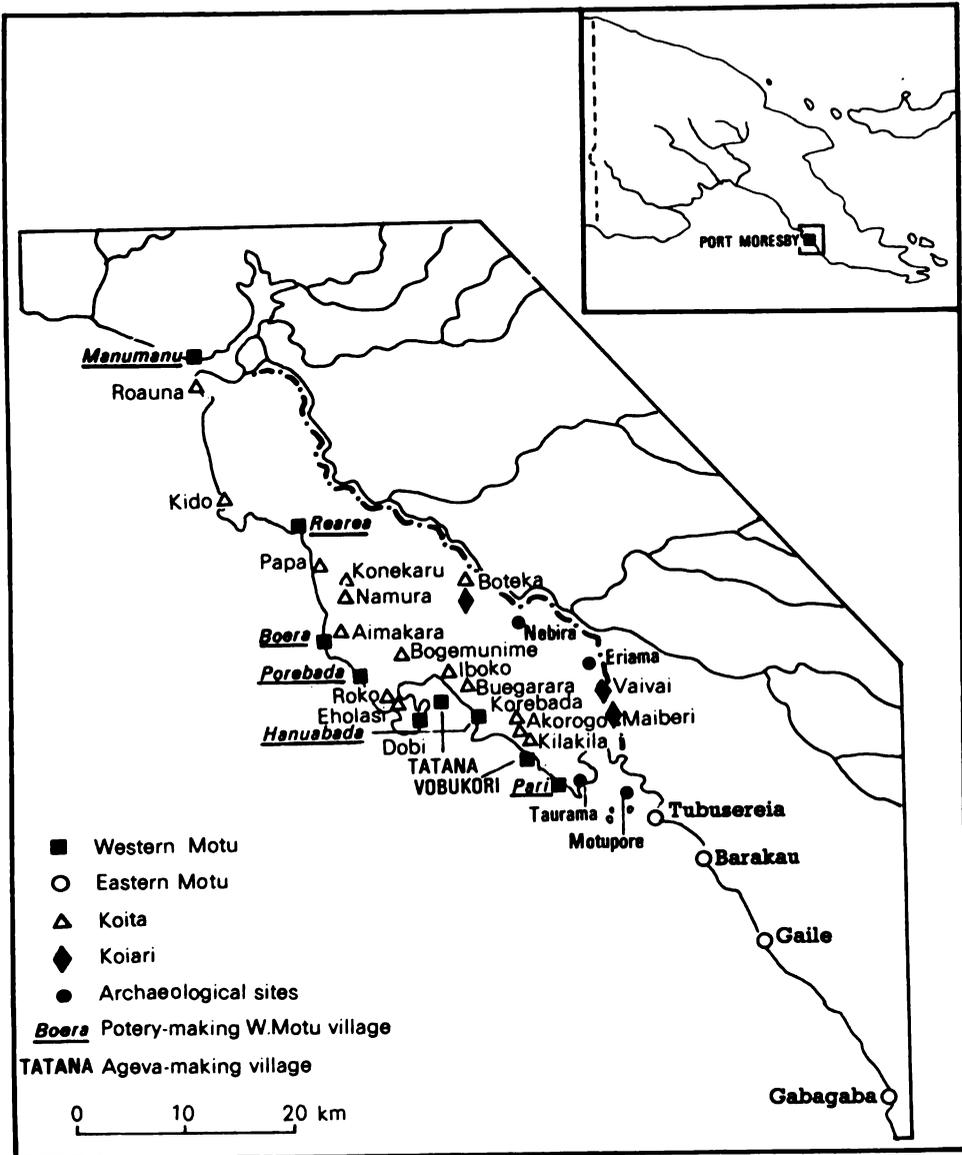
Allen repeats, in his contribution with Rye to this volume (pp.103-4) the three arguments that, in the absence of clear indications of trade in the Motupore deposits, the characteristics of the Motupore community of living on an offshore island, making pottery and shell ornaments, and eating wallabies, fish and shellfish, support an interpretation of the residents as specialist traders (Allen, 1978). I would still assert that this is faulty use of ethnographic analogy; there are people in Melanesia who have these characteristics who are not specialist traders, and equally there are Melanesian specialized traders who do not have these characteristics.

However, I do not believe that this proves that the people of Motupore were *not* specialised traders, any more than I think the absence of evidence of trade proves they did not engage in trade. 'Motupore does indeed stand apart in terms of its archaeological remains as a candidate for the role of a specialized trading community, but there is no direct evidence as yet for trading as such' (Bulmer, 1979:21). The unspecialized economics of three other large contemporary communities: Eriama, Nebira and Taurama (Map 7) on the mainland contrast with the special economic remains at Motupore and provide the best evidence for the unusual role that this community may have played. However, the proof of trade should be on other sites, the communities with which the Motupore people traded.

I cannot comment further on Allen's dozen additional sites in the Bootless Inlet area which he argues indicate a substantial population increase in the 16th and 17th centuries. However, the Motu villages do not fit easily into a development model of a 'central place', which was so successfully used by Irwin (1977) in documenting the evolution of the Mailu trading system. The *hiri* trading villages contrast with Mailu in that there was not, according to oral histories, a reduction in the number of villages involved in trade, but rather a marked increase in the number of villages during the 18th and 19th centuries, with a final total of ten. If Motupore was a specialist trading village like Mailu, with a monopoly on local pottery and shell ornament manufacture and trade, the evidence will be found in sourcing the pottery on nearby mainland sites, which Allen and Rye will hopefully do in due course.

Motupore is indeed a substantial site suggestive of a concentration of population, but it was only one of five contemporary large villages during its occupation between 1200 and 1700 AD. Its estimated site area of about 20,000 m² is somewhat less than Taurama at about 30,000 m² and much smaller than Boera, the main site of which is over 1000 m long (Bulmer, 1978:65-7). The site area covered by Nebira and Eriama villages is more difficult to estimate because they were located on steep ground, but the main areas covered would be at least 100,000 m² and 60,000 m² respectively. It is of course not possible to calculate from the area of midden scatter at a site what the actual village extent was, but it does give a rough comparison between different sites, and it appears that Motupore is not unusually large.

Allen has argued (1977) that a population build-up in the Bootless Inlet area led to the movement west into the Port Moresby area and the increase in long-distance trading to the west that had begun already at Motupore. This is inconsistent with the evidence for the more favourable ecological conditions in the Bootless Inlet area (Oram, 1977). If the people of Motupore were traders and did not have their own gardens on the mainland, they would have traded with people on the nearby mainland, not with



Map 7 Port Moresby area settlements, c.1870 (after Seligman, 1910:40, Dutton, 1969:27-31)

people in the Gulf of Papua. The Eastern Motu villages nearest to the Motupore site did not participate in the *hiri* but traded with neighbouring communities to the east, so it needs to be queried why the people of Motupore should have turned their attention to the west.

However, the purpose of this paper is not to pursue the questions about Motupore raised by Allen, in particular the issue of continuity with the other Port Moresby evidence, which cannot be adequately discussed until the reports of his excavations are available. The main task here will be to review the state of archaeological knowledge in the Port Moresby area, west of Bootless Inlet, where the people who participated in the *hiri* lived. The evidence will be discussed first in terms of the evidence for trade as such, and then in terms of other archaeological correlates of the *hiri*.

Prehistoric trade in the Port Moresby area

The prehistoric communities of southern Papua, for which we have as yet only a good archaeological record for the past 2000 years, exchanged a variety of raw materials and goods of restricted natural occurrence or manufacture. Long distance transporting of such trade goods has a history of at least 10,000 years in Papua New Guinea, so we have so far only discovered the final phases of southern Papua trade. Ambrose (1978) has reviewed the problems of the use of ethnographic analogy and the complexity of the problems of discovering the evidence for prehistoric trade, and the extent to which archaeologists have so far addressed themselves to the problem.

All archaeological investigations in southern Papua so far have brought to light some evidence of trade, and I will be referring below in particular to Vanderwal's (1973, 1978) study of the prehistory of the Yule Island area, to the west of Port Moresby, Irwin's (1977, 1978) investigations in the Mailu area, to the east of Port Moresby, and Rhoads's (1980) recent work at sites near Kikori in the Gulf of Papua, as well as my own research in the Port Moresby area.

Three kinds of evidence have so far been put forward as evidence of trade: (1) the presence of non-local or 'exotic' artefacts, raw materials or other commodities; (2) intersite similarities in the attributes of pottery, the commonest and most durable of trade goods found in the area; and (3) evidence of the manufacture of artefacts known to have been traded, and the distribution of these artefacts on living sites.

Rock sources and stone artefacts. Most southern Papuan living sites contain at least a small number of fragments of non-local rock, and some have a wide variety of artefacts made of

equally various types of rock, most of which naturally occur at some distance from the site. These include axe-adzes, flake-and-core industries based on chert and obsidian, and many other kinds of artefact, such as grindstones, pounders, club-heads, and files.

Preliminary sourcing of rock materials has so far been done for only part of the surface collections from one Port Moresby site (C. Pigram, pers. comm. 1978, referring to 150 artefacts from Taurama) but Rhoads's (1980) evidence from the Kikori sites indicates the variety that is likely to be found. All of these rock materials are 'exotic', except perhaps the cherts, which are found widely in the Port Moresby area. Rhoads's 'exotic' rock artefacts come from sources between 30 and 400 km away from the settlement sites excavated. It could be, of course, that the nearer sources were directly exploited by the community in question, but this cannot be known except through other lines of evidence. However, at least the sourcing of the rock is an essential beginning.

Obsidian is the one rock commodity that has been commented on in reference to the Port Moresby sites, largely because the sources of obsidian, the nearest of which is on Fergusson Island 550 km to the east, are well studied. However, unlike the relatively large quantities of obsidian found on sites in the Mailu area to the east, the Port Moresby sites contain only a few very tiny flakes of obsidian, so this has apparently never been imported to Port Moresby in any substantial quantity. Chert appears to have been generally used for the manufacture of scrapers, knives and drill points.

The numbers of other kinds of stone artefacts are generally relatively low on any given site, and patterns of stone trade are not yet well known. Several sources of rock for axe-adzes have been located, including one about 120 km to the north-west of Port Moresby (Rhoads, 1980:146), one inland from Mailu, and others in the Milne Bay Province, including the traditional source on Woodlark Island, from which axe-adzes traded in the *kula* exchange sometimes travelled to Port Moresby, and through the *hiri* to the Gulf of Papua.

Pottery. The analysis of prehistoric pottery trade has been pursued in a number of ways, including the study of intersite variation and change in decoration and shape, tempers, clay, and techniques and other evidence of manufacture.

The most convincing case of pottery manufacture and trade has been presented by Irwin (1977), based on archaeological evidence from a group of sites at Mailu. Examining clay from the known sources of the area and that in the pottery from a group of neighbouring sites, Irwin found a progressive reduction in the number of clay sources used, until only the Mailu Island clay was used. This correlated with changes in the decoration and

shape of the pottery and fits well with the Mailu monopoly of pottery manufacture and trade in the historic period.

Port Moresby pottery manufacture presents a different problem. All but two of the ten Western Motu communities made pottery for trade, as did at least some of the nearby Koita communities. The Motu villages used a number of clay sources, some of which were miles from the settlements (Bulmer, 1978:43-4), and it appears from the pottery used at earlier prehistoric sites that other as yet unknown sources were also used. Motu potters used shelly beach sand temper, but prehistoric potters used organic materials of some sort, black sand, and other tempers of contrasting appearance, only some of which have been investigated so far (Allen and Rye, this volume). The translation of clay and temper sourcing into information about trade will be further complicated by the knowledge that at least one Motu village, Pari, made pottery for trade from clay from one (distant) source, Tubuserela, and pottery for its own use from clay from a nearby source (Bulmer, 1978:43-4).

However, sometimes clay sourcing obligingly demonstrates trade, such as in the Mailu case, and at Kikori, where Rhoads (1980:132) excavated sherds of pottery made from clay that is likely to have come from 250-400 km away, probably the coastal area near Yule Island. However, raw materials can be transported by boat relatively easily, and there are cases of potters in other parts of Papua New Guinea who travelled some distance to obtain clay for potting, such as the Amphlett Islanders in the Milne Bay Province, so distance from clay source is not necessarily good evidence for trade.

One archaeological problem is the difficulty of establishing positive evidence for pottery manufacture. Large quantities of broken sherds on the village midden are no certain proof, for they could have been left by a large number of residents, rather than a smaller number of residents making a large amount of pottery. There are very rare examples of 'misfire' sherds or 'wasters' on sites, but these are so uncommon that they cannot be taken to show where pottery was *not* made, only where it *was*. Such sherds have been found at Nebira, Taurama and Motupore so far.

Pottery 'style', i.e. variation and similarity in decoration and shape of vessels, is another line of evidence that has been thought to constitute evidence for trade or absence of such and for other kinds of relationships between communities. Detailed studies (Vanderwal, 1973; Bulmer, 1978; Irwin, 1977) have established pottery style sequences in three areas in southern Papua (Yule Island, Port Moresby and Mailu), covering the past 2000 years, with less detailed evidence from particular sites in other nearby areas. These three sequences appear to be part of a general style province, in that similarities in the earliest pottery decoration has been established for all three areas, with a shared marked

change of style at about 1000 AD and a divergence following that into local apparently mutually exclusive sequences.

In order to systematically investigate the impressions of a number of commentators that certain pottery was 'similar' in style, pottery from four prehistoric village sites and a large number of minor sites in the Port Moresby area was studied (Bulmer, 1978) in terms of decorative techniques, motifs, composition and location, and rim shape. Questions raised in this study included whether pottery from particular sites could be recognised on the basis of decoration and form, and whether local trade in pottery could be supported by the evidence. Although this is not the place to go into the details of this study, it can be stated that it is definitely possible for the products of some communities in some periods to be distinguished within the Port Moresby area, and certainly possible to recognise marked differences between the Port Moresby pottery and that of other more distant areas that on simple impressionistic grounds, appears to be 'similar'.

The major problem with such intersite comparisons is the relatively small size of the samples of analysable sherds that are made available from stratified excavations, in spite of the tens of thousands of sherds present. Because of this, sampling error can only rarely be discounted as a possible cause of apparent differences. However, there are marked contrasts in the degree of similarity in different Port Moresby style periods and these can in some cases be taken provisionally as evidence for trade or lack of trade.

The Port Moresby pottery sequence can be described briefly in four style periods:

Style I: the Red Slip tradition, 50 BC to 1000 AD.

Styles II and III: Eriama styles, 1000 AD to 1200 AD.

Style IV: Taurama shell and comb decorated, 1200 AD to 1650 AD.

Style V: Taurama incised-punctate, 1650 AD to 1870 AD, (traditional Motu pottery).

The differences between the pottery of the two major early Style I-using communities of the Port Moresby area, Nebira and Taurama, and between these and the Yule Island pottery of the same period, are so great that there is no support for the interpretation of pottery trade between these communities. There is a long time-span involved, so some difference could be due to change, but each community has a long and distinctive sequence of style change. These are described in detail elsewhere (Bulmer, 1978).

The Eriama styles, found at Boera, Nebira and Eriama, but not at the eastern sites of Taurama (and Motupore as far as I am

aware) in contrast show relatively little intersite variation in decoration and shape. There is a consistency between communities in proportion of different decorative techniques used, the position of the decoration on the pots, lip shapes, and a high percentage of shared design motifs and low percentage of motifs unique to each community. This evidence could be used to support the interpretation of pottery trade between these communities.

The Taurama comb and shell decorated pottery also shows a consistency in the various decorative attributes amongst the four Port Moresby communities (Nebira, Eriama, Boera and Taurama), with the exception that Eriama and Taurama share the attribute of squared lip shape in contrast to the others. This suggests two or more manufacturing centres. This style of pottery is thought to be similar to the pottery of Motupore and to that of the Urourina site on Yule Island (Vanderwal, 1973:194, 236). Detailed comparison with illustrations of the latter (Bulmer, 1978:375-6), indicate that the Urourina pottery is markedly different from the Port Moresby equivalent and is not likely on this evidence to have been traded from one of the Port Moresby communities.

The Style V pottery, equated on a number of grounds to the traditional Motu pottery, is represented by only small numbers of sherds on all but the Taurama site, so it is not possible to comment on the possibility of local intersite trade. However, the few sherds of this style found in the foothills of the mountains inland from Port Moresby are consistent with accounts in oral histories of pottery trade with inland groups.

Motu pottery of the early 19th century was decorated only with geometric incised trademarks indicating their maker's identity (Bulmer, 1978:56). These have not yet been studied in detail, but they hold considerable potential in sourcing trade pottery, as it seems likely they are a simplification of the earlier more extensive incised and puntate decoration found on the Style V pottery.

When the Port Moresby Style I pottery is compared to the pottery of the Kulupuari site near Kikori (Rhoads, 1980: table 7.2), the clay of which was found to have probably come from the Yule Island area, the decorative attributes contrast markedly. For example, the Port Moresby pottery from the Daugo Island site has a high proportion of sherds on which comb impressing is commonly used; in the Kulupuari pottery this technique is not present. A high proportion of the Port Moresby bowls from Daugo Island have square lips, which is uncommon on the Kulupuari bowls. Of the thirty-five motifs present at Kulupuari, only eleven are found on the Daugo Island pottery which had another twenty-four different motifs. Although these findings are based on a relatively small number of sherds, there seems little basis for the assertion (Allen and Rye, p.102 this volume) 'We can say that stylistically, pottery collected from a number of Gulf sites by Rhoads and others probably originated around Port Moresby.'

Although still plagued by small samples of sherds, it now is possible to systematically describe the extent of similarity or difference between pottery on different sites and to move past general impressions. It also seems likely that as more evidence accumulates it will definitely be possible to begin to recognise sites of origin for some if not all pottery.

Shell ornaments. Another commodity central to trade is the variety of shell ornaments. These are much less common than pottery on southern Papuan sites, but they also reflect unambiguous evidence of manufacture in the sites in the form of 'blanks' rejected in the course of manufacture due to breakage, cut and flaked shell refuse from manufacture, broken finished ornaments, and tools associated with shell manufacture, such as drills, files and grinding slabs.

The sourcing of shells is difficult, but in some cases it can be indicated that shell used in manufacturing has come from some distance from the site. On the other hand, probably most shell manufacturing used locally available shellfish; at the Taurama site, a wide variety of species was used for manufacturing, but all were used for food first (on the basis of distinctive breakage attributable to opening the live shellfish) (Bulmer, 1978:288).

There are a number of different kinds of shell ornament, each of which has many varieties. There are different sizes and shapes of *Comus*, *Trochus*, and *Tridacna* rings, for example, and Vanderwal (1973) found the shell rings at the Yule Island sites seemed to change in fashion over time. However, the evidence from the Port Moresby sites is, as yet, too fragmentary to understand the possible patterns of variation and change, although it is evident that the Yule Island sequence is not the case in Port Moresby.

Another common and highly varied ornament form in Port Moresby is the shell disc (with a central perforation), which comes in many shapes and sizes. These were the commonest form of shell ornament in the Motupore deposits, and their great variety makes it likely that it will be possible to source these ornaments according to site of manufacture. Some of these are similar to the *ageva* discs made at Vabukori and Tatana in recent times, but many of them are different in size, shape and shell material (Bulmer, 1979:20-21).

Archaeological evidence for the *hiri*

Because there is little archaeological evidence directly related to the *hiri*, although there is some indirectly related, it is worth considering the kind of evidence that needs to be obtained. There are a number of tangible aspects of the *hiri*

that are testable archaeologically, notably the manufacture of pottery at the eight village sites (see Map 7) and the making of *Spondylus* shell *ageva* ornaments at the other two, the location of the ten villages on the coast and their arrangement internally in a variety of nucleated patterns, the presence of trade goods from the east in Motu villages, the presence of Motu trade goods in villages in the Gulf of Papua.

The paucity of archaeological evidence directly relating to the *hiri* is due to only one archaeological excavation having taken place at a *hiri*-making village, Boera, and only one at a village with which the Motu traded in the Gulf (Popo) (Rhoads, 1980:253). The investigation at Boera (Swadling, 1977), at a site called Ava Garau, is known so far only from preliminary reports. This indicates settlement at the site at a much earlier date (about 725 AD, P. Swadling, pers. comm., 1978) than the founding of the village by Edai Siapo in about the 17th century AD, the man who according to oral history began the *hiri*. There may be even earlier occupation at other nearby sites as well (Oram, pers. comm., 1980).

There is also archaeological evidence from two village sites (Taurama and Motupore) at which, according to oral histories, residents of all but two of the 19th century Western Motu settlements are said to have come. The first, Taurama, is well known in oral histories, settled from the east in about the 16th century and abandoned in the early 18th century due to conflict with the Eastern Motu. Archaeological excavations at Taurama (Bulmer, 1978) indicate the site has probably been occupied since about the birth of Christ, and probably continued to be occupied until the 17th or 18th century. There are no traditions, as far as I am aware, that the occupants of Taurama participated in the *hiri*, and in the absence of any positive evidence of trade one could draw the obvious conclusion that the *hiri* could have begun after the abandonment of Taurama and the westward movement to Pari and Hanuabada. This would fit with the ecological explanation of the origin of the *hiri*, for the Taurama people still had access to all-season gardens in the Bootless Inlet area, while following the conflict with the Eastern Motu and the move to Pari, they may not have.

Allen and Rye (this volume) state that the Western Motu can be traced by archaeological techniques backwards in time through Boera, Taurama and Motupore, to about 800 AD. I presume this is on the basis of pottery style analysis, but the data for this are not yet published. My own findings are that only the most recent pottery style at Taurama (Style V) can be associated with the Motu potters, dated on other sites to about the 17th century AD. Earlier archaeological evidence from Taurama contrasts with the Motu, in ornaments, economy, and pottery style. Although I have argued for continuity of settlement at Taurama over the period from about 2000 years ago until the 17th century, other evidence is needed to argue that the earlier inhabitants were Motu as such.

Other Motu villages seem on the basis of surface collections of pottery to have been settled for an equally long period as Taurama, or nearly so; Hanuabada, Vabukori, and Rearea all contain pottery of Style I, and therefore were occupied before 1000 AD and possibly much earlier. In spite of the fact that the sites so far discovered at these three villages are not extensive like those at Boera and Taurama, nevertheless the presence of pottery that has been dated on stylistic grounds to the later part of the archaeological sequence, including the Style V pottery associated with the Motu, indicates the villages were possibly occupied continuously throughout the sequence. Style V Motu pottery is in fact the commonest pottery in coastal sites other than Boera, Taurama and Ranvetutu (a late Style I village site), confirming the oral histories of the expansion of the Motu population in the 18th and 19th centuries. The two settlements on the inland plains attributable on grounds of oral history to the Koita were abandoned on both archaeological and traditional evidence in about the 16th or 17th century, also consistent with the traditional arrival of the Motu on the coast. The Koita moved to the coastal hills and then to the coast in order to dwell near the Motu, with whom they traded, and this is consistent with the traditional advent of the *hiri*, as the Koita moved from the inland area with good garden land, to the coastal hills with comparable resources to the Motu.

The archaeological evidence that seems to support the recent development of certain distinctive aspects of Motu culture related to the *hiri* includes patterns of settlement, economy, pottery style and shell ornaments. The details of the data have been presented elsewhere (Bulmer, 1978) and can be summarised as follows:

- (i) Settlement patterns. The distinctive coastal location of the ten Motu villages and the coastal movement of the Koita probably took place about the 17th century, on grounds of the analysis of the pottery sequence. This location implies the ecological conditions essential to the *hiri* and according to oral tradition its prime cause.
- (ii) Economy. The three substantial mainland villages so far studied archaeologically had 'broad-spectrum' un-specialised economies until about the 17th century, after which they were abandoned. Eriama, Nebira, and Taurama all contrast with Motupore in using a wide variety of food resources, including animals of the bush and grassland, shellfish from a variety of sources, and had artefact repertoires consistent with generalised Melanesian economies.
- (iii) Pottery. Pottery was made at one inland village; possibly both, until the final stage of occupation in

about the 17th century, well into the Motu style phase. Pottery was also made on the coast at Taurama until a similar period and at Motupore Island, where the Motu style of pottery, as defined on the mainland, may not be present. The significance of this is not known, but could indicate the traditional move to Taurama from Motupore may have occurred prior to this new style development. In any case, the general impression is that the establishment of the ten Western Motu villages post-dates the development of the Motu style of pottery, except for the settlements at Vabukori, Rearea and Hanuabada. That the Taurama Style V pottery traded by the Motu to the Gulf of Papua is supported by its absence at all early sites in the Kikori area. Rhoads (1980:170-1, 253) argues that the earliest probable occurrence of Motuan pottery in the Kikori area dates from about 1850 AD.

The distinctive pot forms associated with the *hiri*, i.e. the *uro* trade pot and the *tohe* sago storage pot, are difficult to pinpoint because everted rimmed pots were used in all style periods. The earliest decorative style on a markedly large pot is attributable to the Taurama shell and comb decorated Style IV, which makes it pre-Motu in the sense of the present analysis.

- (iv) Shell ornaments. The only mainland site at which evidence of shell manufacture has been found was Taurama, where there was an unspecialised shell industry, producing a wide variety of ornaments, until the 17th century. Vabukori could already have been making its *Spondylus* shell *ageva* ornaments but, if so, Taurama was making similar ornaments as well.

An indication of the recency of the typical Motu assemblage of personal ornaments was found with burials at Eriama, dated to the 17th century or later (Bulmer, 1978:217, 224-33). These burials were accompanied by the typical Motu range of nose plug, pearl shell gorget, wide *Conus* band with turtle shell suspension disc, *Spondylus* disc, small discs, in contrast to the earlier burials at Nebira, which had a more restricted range.

Conclusions

While the evidence is still fragmentary, it supports the recent development of certain distinctive aspects of Motu culture that can be linked to the *hiri*. These include the coastal focus of settlement and the spread of the population along the coast west of Bootless Inlet, the change in economy to the more precarious livelihood on the coast, the distinctive pottery style, and the characteristic suite of personal ornaments.

Earlier residents of the Port Moresby area engaged in trade, but their settlements were either located in proximity to good garden land on the inland plains or in the Bootless Inlet area, or were small in size. The exception is Boera, a very large settlement first occupied by at least 725 AD, which according to oral histories began the *hiri* trading in about the 17th century AD.

There is little doubt that the search for food was a prime mover in the practice of the *hiri* but that cannot of course be taken as the cause of the practice of the *hiri*; if people were short of food they could have moved elsewhere where food was more plentiful. People lived on the Port Moresby coast west of Bootless Inlet because it has positive attractions; plentiful shellfish and shell for ornament manufacture, sheltered harbours, clay and chert sources. But perhaps more important was its strategic position on a long stretch of protected coastline between other groups of people who were blessed with more bountiful gardens, and who therefore offered no territorial threat.

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Prehistoric Papuan exchange systems: the *hiri* and
its antecedents

James W. Rhoads

Introduction¹

Current ethnohistoric and prehistoric studies of the *hiri* suffer from two failings – geocentrism and historical particularism. While the major protagonists, Allen (1976, 1977b), Bulmer (1979) and Oram (this volume), acknowledge a role for the Papuan Gulf in this trading system, they appear to cast the peoples of that area as the chorus and the Motu as the leading actors. In other words, the Gulf's wealth, whether it be sago or canoe trees, was available and eagerly awaiting exchange for pots and shell ornaments. But why should earthen vessels replace bamboo in the preparation of meals, and armshells become a major component of bridewealth (e.g. see Williams, 1940:57-9) among lowland peoples living west of Cape Possession?

The charge of historical particularism is not so easily illustrated. Doubtlessly the three apologists would claim that they have sought to clarify only the development of the Motu *hiri*. However, the case presented below demonstrates this view to be short-sighted.

This paper discusses the results of recently completed research in the Papuan Gulf (Rhoads, 1980) and essays to portray traditional Papuan trade and exchange as a region-wide cultural

¹The primary data used in this paper were collected in 1976 and 1977 during field research for my PhD. thesis at the Australian National University. I am grateful to this institute for its sponsorship and to the Papua New Guinea Government for permission to conduct the fieldwork. Special thanks are extended to J. Golson and J. Allen for their patience and instructive insight while my ideas developed. There remain points upon which we disagree and I accept responsibility for their current presentation.

Wyn Mumford's skilful hand produced the maps, Elizabeth Brown typed the final draft and Jill Johnston the table. I am grateful for their assistance.

process lasting over a considerable period. To establish this point of view I first review previous prehistoric studies conducted in coastal Papua. I then discuss Gulf prehistory, paying particular attention to the sequence of land-use strategies employed by sago-using peoples of the middle Kikori River (Kairi) area and to the exotic goods preserved in the archaeology of the Gulf region. As this picture is revealed the consequences of this new information for a wider understanding of the development of Papuan exchange systems are highlighted. The paper closes with a brief discussion of the cultural processes which may hypothetically be involved in the evolution of Papuan societies.

Review of Papuan prehistory

The growth of well-defined communities along the Papuan coast began about 2000 years ago. From then until approximately 1200-1000 years ago the inhabitants of the area from Hall Sound to Amazon Bay shared a similar material culture, which is commonly denoted by *Comus* shell armbands and disc beads, obsidian and pottery styles, with one exception. The 'flamboyant' pottery style (Vanderwal, 1973:173), which is found in the most recent deposits for this period throughout the Papuan lowlands as far west as the Gulf, is notably absent in the Mailu sequence (Irwin, 1977:309) despite the presence there of its predecessors. The existence of exchange at this time is not questioned (White and Allen, 1980), though the occurrence of Fergusson Island obsidian is the only firm evidence for the movement of goods.

The archaeological record for Papua contains indications of cultural aberrations beginning about 1200-1000 years ago. In the Yule Island/Hall Sound area this is marked by a hiatus in the archaeological sequence between 1000 and roughly 700 years ago. After this break ceramic styles have altered drastically, chipped stone resources have changed and hilltop settlements have been abandoned in favour of those along the coast and inland fringe (cf. Vanderwal, 1973:166-98 for further discussion).

Archaeological investigations at sites further east reveal a less dramatic change. Based upon her analysis of Port Moresby pottery assemblages Bulmer posits a continuous evolution of pottery styles throughout all but the proto-historic periods (1979:23-4). However, she does record a shift in the settlement pattern beginning at 1000 years ago with the initial habitation of the coastal hill zone (p.13). Irwin notes a break in ceramic styles for the Mailu region (1977:200) which is comparable on typological grounds to that in the Hall Sound area, but concludes that as no other archaeological evidence supports an alteration in prehistoric life styles the Mailu development sequence experiences no discontinuity (p.441).

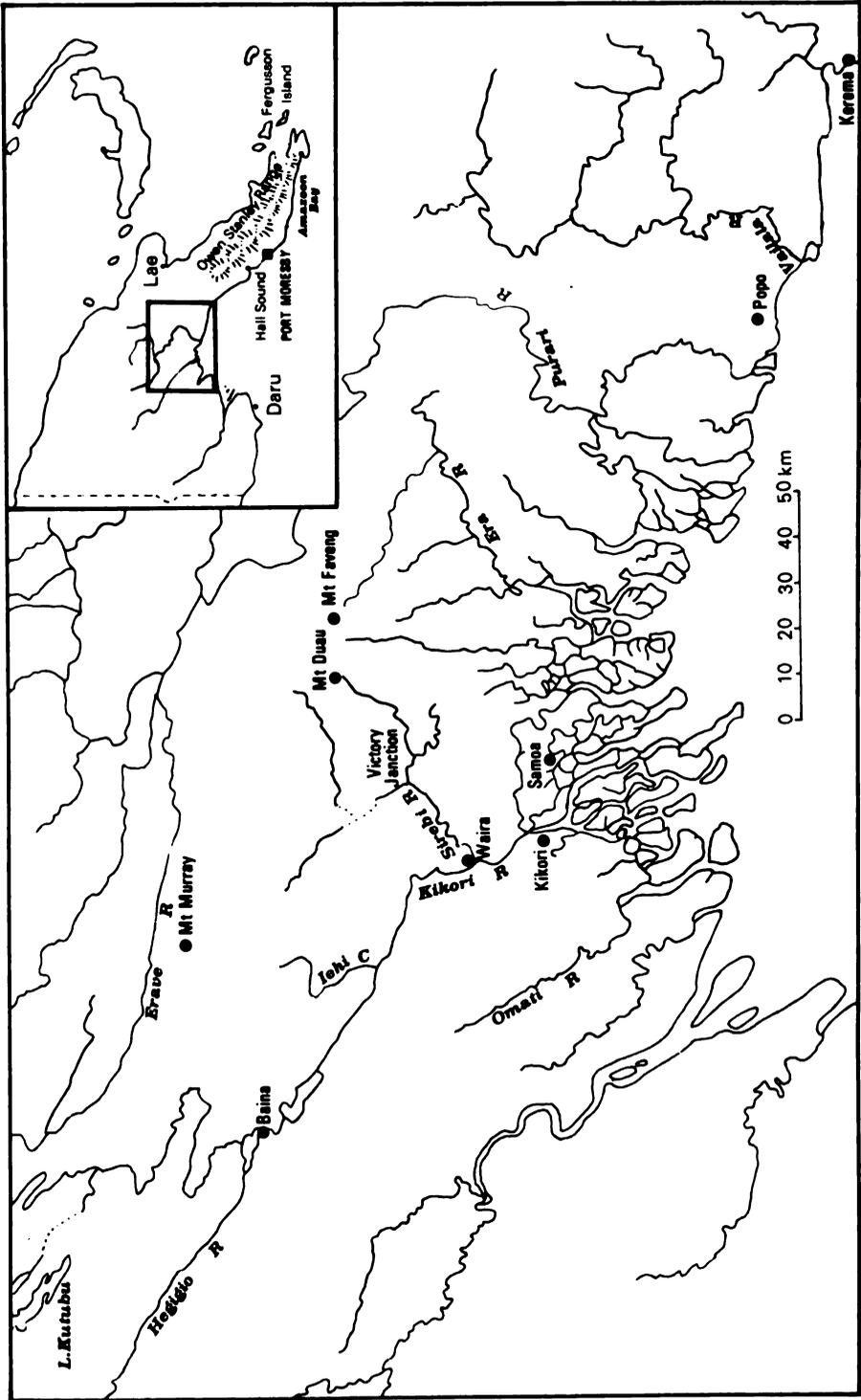
From approximately 800 years ago to the early contact period the prehistory of the Mailu and Port Moresby areas proceeded along similar lines toward the development of highly specialised trading communities which are recorded in early histories. The supportive arguments for this view are clearly rehearsed in the studies of Irwin (1978) and Allen (1977b) and further comment is unnecessary, except to note the objections raised by Bulmer (1979) to Allen's analysis. Allen posits the presence of specialised traders living on Motupore Island near Port Moresby around 800 years ago (1977b); Bulmer argues that this development only occurred since 1500 AD with the *hiri* (1979:24) and that evidence of trade at an earlier date is unfounded (pp.20-21). I believe there is little reason to doubt either of Allen's conclusions in light of his recent statements (Allen, n.d. (1978); Allen and Rye, this volume). However, as intimated in the introduction I feel his idea about when specialized trading systems began may be short-sighted by 1000 years. I shall presently return to this point.

Information concerning recent prehistoric cultures west of Port Moresby has been restricted to the Yule Island/Hall Sound area. The Urourina culture (c.700 years ago) is represented by two sites and best characterised by a distinctive pottery style, which I believe bears typological affinities with similar-aged pottery found at both Port Moresby and Amazon Bay (Mailu area). Vanderwal discovered no evidence of later cultures; however, based upon a range of cultural indicators he posits a continuity of societies from Urourina times to the present (1973:197-8).

Gulf prehistory and exchange systems

Pre-Ceramic period. The earliest evidence of man's presence in the Gulf appears in the lower deposits of the Rupo and Ouloubomoto rockshelters (Map 9), which probably date from 3000 years ago (Rhoads, 1980:185-7, 199). The activities portrayed here suggest infrequent temporary encampments (*kombati*) directed at the exploitation of riverine resources during the dry season (November-April) or the change-over between seasons. These camps were a part of a highly localised land-use system focused on inland settlements (cf. Rhoads, 1980:225-8, 244-5 for further discussion). 'Volcanic chert' implements, whose source area lies at the headwaters of the Sirebi River some 30 km to the north-east (Map 8), comprise the only exotic goods (Table 1).

Early Ceramic period. The arrival of foreign products in the Gulf is first noted at the Samoa site, Aird Hills (Map 8), which dates from 1800 years ago (cf. Rhoads, 1980:250). The red-slipped or painted potsherds and shell and bone artefacts recovered here are reminiscent of the material culture occurring at other ancient pottery sites along the Papuan coast. But this does not necessarily suggest the colonization of the Gulf by early pot-making



Map 8 The Papuan Gulf and inland regions

Table 1
Occurrence of exotic goods in Gulf sites

Site	Approximate age (BP)	Exotic artefacts	Source area	Comments
Rupo	2000-3000	—	—	—
Ouloubomoto	— ^a	chipped stone	Sirebi River headwaters	age probably comparable to Rupo
Samoa	1800	red-slipped pottery <i>Tridacna</i> club-head carved bone figureine	— — —	
Kulupuari	1200-1500	red-slipped and painted pottery	Cape Possession (Hall Sound) and possibly Port Moresby area	
		chipped stone	Baina quarry, headwaters of Omati and Sirebi Rivers	
		ground stone axes	western Owen Stanley Mountains	
Mampaiu	—	red-slipped and painted pottery	—	probably same source(s) as Kulupuari ceramics
		chipped stone	Omati River and Sirebi River headwaters	

^aWhere no approximate age is given in this column, the particular site, or layer within a site, has been placed in sequence on the basis of artefactual and/or documentary evidence.

Table 1 continued

Site	Approximate age (BP)	Exotic artefacts	Source area	Comments
Rupo	1200	ground stone adze weathered potsherds	—	probably western Owen Stanley Mountains presumably same source(s) as Kulupuari ceramics
		chipped stone	all three source areas	
		<i>Trochus</i> shell armband	—	
Ouloubomoto	1050	painted pottery	—	possibly the same source(s) as Kulupuari ceramics
		chipped stone	Omati River and Sirebi River headwaters	
		ground stone axe-adzes	—	probably western Owen Stanley Mountains
		cut cowrie shell	—	
		<i>Corus</i> shell bead	—	
Herekuna	—	painted pottery	—	source area cannot be estimated
		chipped stone	Omati River and Sirebi River headwaters	

Table 1 continued

Site	Approximate age (BP)	Exotic artefacts	Source area	Comments
Rupo	900	ground stone axe-adze red-slipped pottery chipped stone <i>Oliva</i> , <i>Nassa</i> and <i>Comus</i> shell beads; cowrie shell artefacts; <i>Comus</i> annulus painted pottery	— — all three source areas —	probably western Owen Stanley Mountains source unknown provenance uncertain, possibly proto-historic decorative style identical to pottery from lowest levels of Motupore
Ouloubomoto	700	chipped stone	Omati River and Sirebi River headwaters	
Popo	400	ground stone axe-adze <i>Comus</i> shell armband <i>Strombus</i> shell artefact tool-decorated pottery	— — Port Moresby	probably western Owen Stanley Mountains possibly Bootless Bay area

Table 1 continued

Site	Approximate age (BP)	Exotic artefacts	Source area	Comments
Ibira	400	white glass beads	European	
Kulupuari	300	chipped stone	all three source areas	
		ground stone axe-adze	western Owen Stanley Mountains	possibly Highlands also
		multi-coloured glass bead	Murano, Italy	
		white glass bead	European	
Maira	- (proto-historic)	chipped stone	Sirebi River headwaters	
		ground stone chips	-	probably western Owen Stanley Mountains and Highlands
Rupo	- (proto-historic and early historic)	<i>Oliva</i> , <i>Nassa</i> and <i>Comus</i> shell beads; <i>Melo</i> shell artefact	-	provenance uncertain, possibly recent ceramic period
		blue and white glass beads	European	
		glass dog tooth	European	
		miscellaneous metal objects	European	
Bageima	Modern (AD 1850)	weathered pottery	-	probably Motuan

Table 1 continued

Site	Approximate age (BP)	Exotic artefacts	Source area	Comments
Kulupuari	Modern (AD 1850-1890)	chipped stone	Baina quarry	
		ground stone axe-adzes	--	probably Highlands
		weathered pottery	--	possibly Motuan
		chipped stone	all three source areas	
		ground stone axes	Highlands	

peoples. If, as I suspect, the antiquity of well-established sago-using communities in the Kikori/Purari delta exceeds 2000 years ago (Rhoads 1980:249), then the habitation of the area by marine-oriented horticulturalists would have been most difficult. Therefore, the transport of these items by means of coastal trade seems most likely.

Although the evidence is circumstantial, I also believe that local exchange systems are not well-developed at this time. The few chipped stone artefacts from Samoa cannot be directly related to any of the three Gulf source areas situated to the north at distances of from 30-80 km. As I stated knowledge of at least one of these sources was held by people living just inland at a date preceding the initial settlement of Samoa. If there was economic exchange linking delta groups with their inland neighbours, then surely the dispersal of chert resources into the stone-impooverished coastal areas would have occurred.

From 1500-1200 years ago the people of the Kairi area lived in permanent or semi-permanent villages along major waterways (cf. Rhoads, 1980:228-33), with *kambati* used mostly during the dry season. From such encampments the people pursued seasonally available game and aquatic fauna and possibly processed sago from feral palm stands. Extensive use of villages occurred mostly during the wet season and cultivated sago-palms, domestic pig herds and seasonally accessible aquatic animals were the major sources of food, with garden produce probably playing a supplementary role in the diet.

This period is marked by the appearance of a wide range of exotic goods (Table 1). Pottery arrives from manufacturing sites in the Hall Sound and possibly the Port Moresby areas (Mackenzie, 1980; M. Worthing, pers. comm., 1977). Axes were fashioned from 'meta-volanic' stone found in the western reaches of the Owen Stanley Mountains (Mackenzie, 1980). The shell-fish species represented by the shell ornaments inhabited coral reef or sandy beach environments, usually found east of Hall Sound or among the Torres Strait Islands.

The movement of these goods into the Gulf probably occurred as a result of long distance trading voyages. The most persuasive evidence for this view is the closeness of the dates for a common style of pottery in the middle Kikori River area (particularly at Kulupuari) and at the distant sites of Oposisi on Yule Island (Vanderwal, 1973:50) and Nebira 4 near Port Moresby (Allen, 1972). The eastern origin of many exotic goods sustains this conclusion and distinguishes the Yule Island-Hall Sound region as the likely candidate for the primary port of departure.

Once these items were off-loaded in the Gulf they probably moved inland via local exchange systems. Regular contact between coastal traders and the prehistoric inhabitants of the Kairi area

is unlikely. The waterways of the Kikori/Purari delta are not easily navigated by sail craft. Also, it is questionable whether the delta peoples would permit their inland neighbours to have direct access to the suppliers of exotic goods thereby diminishing their control over the trafficking of these items.

Inland stone resources are also intensively tapped during this period. Cherts from the Sirebi River source area continue to appear in Kairi area sites. However, 'limestone cherts' from the headwaters of the Omati River, which lies 40 km to the north-north-east (Map 8), arrive in considerable quantity and black chert from the Baina quarry situated 80 km northward filters into the region. The analysis of chipped stone artefacts present at the Kulupuari site supports the transport of unmodified cores to the middle Kikori River area (Rhoads, 1980:A.57ff), so direct exploitation of stone source areas seems unlikely. Inland/near coastal exchange systems therefore seem the likely mechanisms for the dissemination of raw material for chipped stone implements.

In summary, economic systems in the Gulf developed from modest beginnings about 1800 years ago into an intricate interweaving of coastal/inland exchange and long distance trade at 1500 years ago. While evidence documenting the manner in which these activities intensified is not available, I now examine two hypotheses which may explain this development.

A heightening of exchange may have simply occurred through incremental increases in the level of contact between adjacent inland and coastal peoples, an association which was largely sponsored by a continual inflow of goods via coastal trade. While this model accounts for the distribution of exotic items, it fails to consider why they were accepted by coastal Papuans in the first instance and thereafter by inland groups. Gulf timbers and sago might have been required farther east, but shell ornaments could have been done without in the Gulf. Pottery also need not have been readily accepted since traditional cooking methods certainly included the use of bamboo. This hypothesis encounters greater difficulties when one attempts to describe the range of goods, excluding chipped stone artefacts, offered by inland peoples in exchange for exotic items arriving along the coast. Timber and sago resources abound in areas near the coast; therefore, it is unlikely that coastal peoples would have searched beyond their landholdings to meet the demands made by maritime traders for these commodities.

The second proposition, which accommodates a solution to these objections, is the development of prestige-goods economies along the Papuan coast by 1500 years ago. In other words, the maritime pottery traders not only supplied goods but also stimulated and possibly introduced social and economic innovations. The ample stands of sago-palms and timber in the Gulf could easily provide the surplus required for adventurous or far-sighted Papuans

to acquire useful items (e.g. stone axes and chipped stone artefacts) and to accept non-utilitarian goods (e.g. pottery and shell ornaments) during the early stages of contact with foreign traders. Over several generations the desire for goods could mount within and between communities and direct access to traders would certainly promote economic status for fortunate individuals and groups. The inland extension of exchange systems would proceed as a result of the quest to gain access to new resources, additional markets and expanded social relationships, which could further consolidate positions of prestige.

Evidence in support of this hypothesis is threefold. Perhaps the most convincing is the dramatic change in the land-use pattern of the middle Kikori River peoples. I do not believe that simply the availability of foreign commodities is sufficient recompense for the disadvantageous restructuring of their subsistence strategy and the apparently sudden establishment of exchange relations with groups further inland. The time lag of approximately 300 years between the first arrival of exotic goods in the Gulf and their appearance in the Kairi area, which immediately borders the Samoa site, provides supplementary proof for this hypothesis. A shorter span of years would accommodate the diffusion of goods, so the protracted interval possibly signals the involvement of other processes. Finally, the areal extent over which items move, the longest documented being from the western Owen Stanley Mountains to the middle Kikori River area, suggests a more intricate and formalised exchange network than can be explained by a structure based upon the bartering of utilitarian items alone.

Intermediate period. Gulf prehistory from 1200-400 years ago is only directly documented in the Kairi area at the Rupo and Ouloubomoto sites. The former is used until 900 years ago and the latter until 1050 years ago with a brief re-occupation at 700 years ago. Both continue as dry season encampments; however, they increasingly gain importance as hunting bases rather than sites for exploiting a wide range of faunal resources, as is the case in the past. Riverine settlements no longer appear and I believe villages are relocated inland (cf. Rhoads, 1980:236, 243-5).

Exotic items occur at both sites. The range of source areas represented probably remain substantially unchanged, but new goods enter the inventory. The *Conus* shell armband and *Strombus* disc found in the upper 10 cm of Ouloubomoto are unique to the Kairi area. Potsherds recovered from the upper deposits of both sites differ distinctly in form and decorative style from earlier specimens and are, as well, unlike those found in other Papuan assemblages of a similar age (see Rhoads, 1980:187-8, 200-1). One authority, however, does note similarities between one Ouloubomoto rimsherd and early styles at Motupore (O. Rye, pers. comm., 1979).

Further comment on this must await the findings of a sourcing program now under way (see Allen and Rye, this volume).

So far there is no archaeological evidence from the Gulf for the period lasting 700-400 years ago. While the absence of material culture remains in the middle Kikori River region may seem to represent abandonment, this surmise appears unwarranted. The subsistence strategies and settlement patterns before 700 years ago exhibit the evolution of a well-established land-use system which centres around the exploitation of cultivated sago-palm stands (Rhoads, 1980:225-36, 243-5). Only a drastic series of events would propel the area's inhabitants to forego an investment of such magnitude (cf. Rhoads, 1980: Appendix 2) and resettle elsewhere. The archaeological record between 1500 and 500 years ago hints at no such occurrences and best reflects a shift to non-riverine village sites. Therefore, instead of abandonment, I support the more simple explanation of an alteration in the land-use strategies employed by a long resident population. This change need only have been a decline in the use of inland temporary encampments in favour of directing most subsistence activities from inland villages.

Gulf prehistory during the Intermediate period bears one striking similarity with the archaeological record noted elsewhere in Papua: the cultural development of immediately preceding centuries undergoes a marked change about 1200 years ago. The reversion to an ancient and more practical land-use strategy by Kairi area peoples does not denote a local event of great proportions. Exotic goods, to include new types, continue to appear at inland sites until at least 700 years ago, but arguably on an ever diminishing scale. Still, something occurred in Papua to promote change. The explanation for such events is a question I take up presently.

Recent Ceramic period. The prehistoric record from the Gulf takes up again around 400 years ago at the sites of Popo and Ibira. Popo is situated 5 km inland from contemporary Orokan villages along an old coastal dune (Map 8). A preliminary analysis of rimsherds recovered from my 1976 excavations reveals a high degree of similarity in form and decorative styles with potsherds excavated from the upper levels of Motupore (cf. Allen, n.d. for a discussion of this site). Additional support for some relationship between Popo and Motupore ceramics comes from the findings of a preliminary sourcing analysis conducted on a single sherd, which confirms its manufacture from clay found on the mainland opposite Motupore Island (O. Rye, pers. comm., 1979).

Coastal trade seems on present evidence the only means by which the pottery at Popo arrived in the Gulf because the minimum date for Popo, 430±110 years ago (ANU-1829), compares closely with the time for the deposition of similar sherds at Motupore (J. Allen, pers. comm., 1979). In light of these findings and Allen's determination of strong affinities between Motuan material culture

and the remains at Motupore (n.d. (1978)), we can be confident that we are viewing archaeologically a trading manifestation indistinguishable from the Motu *hiri* at about 400 years ago.

The temporary encampment at Ibira (Map 9) documents the re-emergence of riverside settlements in the middle Kikori River area and the earliest date for the introduction of European artefacts in Papua. The white glass beads found here also occur at more recent sites in the Kairi region. At Kulupuari one specimen lay in direct association with a multi-coloured glass bead which was manufactured at Murano, Italy and subsequently modified in Holland between 1650-1750 AD (A. Lamb, pers. comm., 1979). Elsewhere I review historical information concerning Dutch voyages to New Guinea and adjacent areas (Rhoads, 1980: Appendix 12) and conclude that the transport of glass beads to the Gulf resulted from coastal trading or exchange systems linking Kikori/Purari delta communities with peoples living on the Torres Strait Islands or further west along the south coast of Irian Jaya.

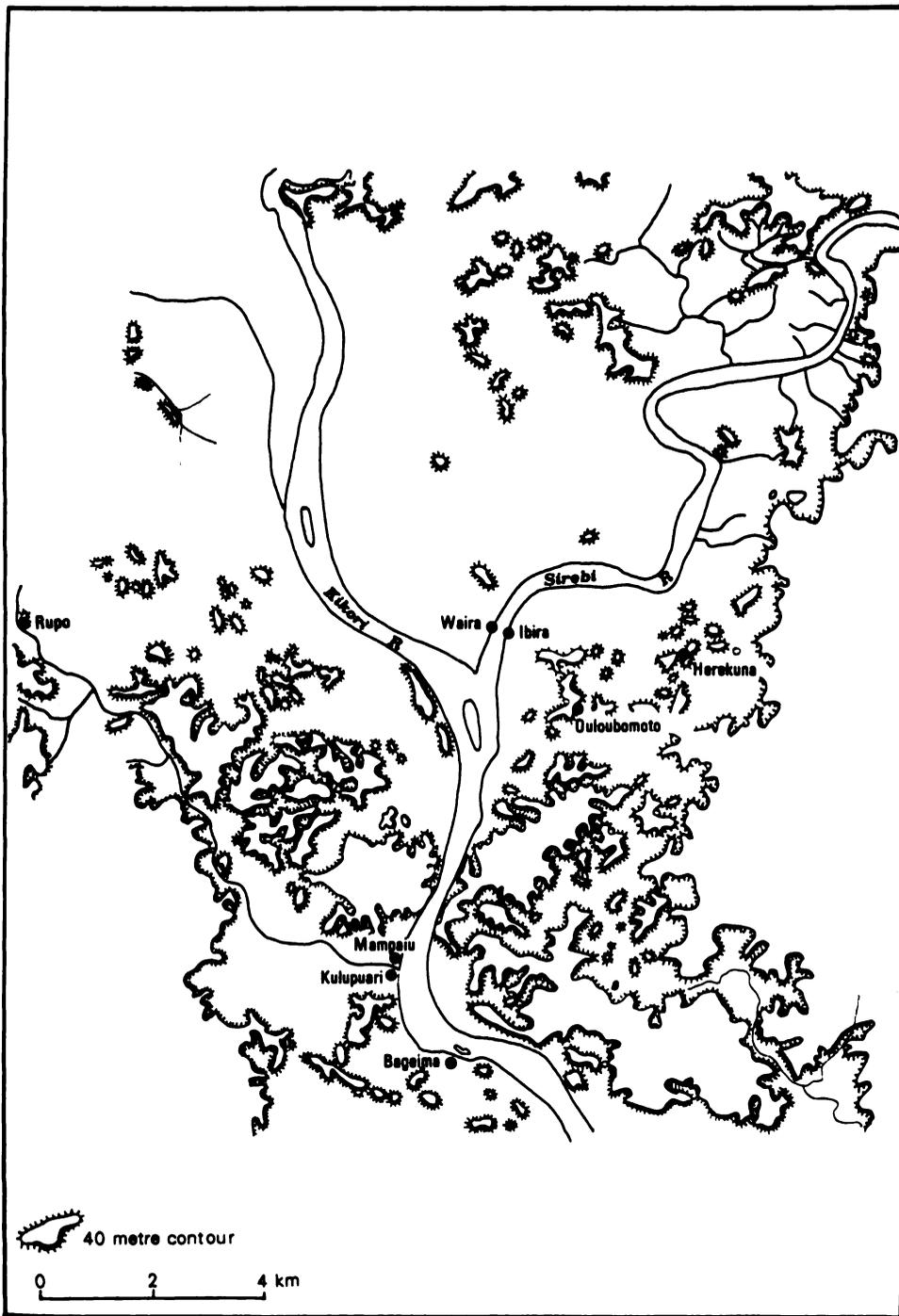
By the time of first European contact with the Kairi in 1887 (Bevan, 1890:190-1) three additional sites had been inhabited along the major rivers. All settlements were small-sized camps used during the dry season. Villages were located well inland near small creeks and streams and the majority of year-round subsistence activities was conducted from these sites.

During the early portion of this period previously available source areas for cherts and stone axes are again supplying the Kairi area. Highland stone axes, some of which were manufactured from Abiamp stone (Chappell and Hughes, pers. comm., 1979), replace 'Owen Stanley axes' near the close of this period. Motuan pottery probably also reaches the Kairi at the same time, at least 300 years after its arrival at Popo.

The parallels between the Early and Recent Ceramic periods are striking. Traditional land-use strategies are modified to accommodate riverine settlements. Exotic goods are obtained from coastal and inland groups. The exclusive contemporaneity of these phenomena during two distinct periods of Gulf prehistory must denote their interdependence. An animated and intense maritime trading system would on present evidence seem a most important stimulus effecting changes in the culture history of the Gulf's inland peoples.

Patterns of prehistoric development

As illustrated above, Gulf prehistory contains two developmental elements in common with other areas along the Papuan coast: cultural discontinuity at around 1200 years ago and an association with coastal trading systems during early and recent times. This replication of historical events demands a region-wide perspective if area-specific patterns are to have contextual propriety.



Map 9 Site locations

To conclude this paper I speculate about the conditions which may have sponsored these two developments in Papuan prehistory. My offerings are structured as hypotheses amenable to field testing, the stimulus of which is my sole interest.

The Papuan hiccup. A total dissolution of intercommunity trade and exchange after its inception at least 1800 years ago is inconceivable. As illustrated above, there is a widespread substratum of shared material culture during the first millennium AD. Afterwards exotic items continue to be transported and trade centres, which are documented historically, begin to emerge. If ethnographic information serves to illustrate more ancient patterns, and I see no reason to doubt such, then well-positioned pottery manufacturing communities play a major role in dispensing commodities along the Papuan coast from the time they are first settled.

The potential for continuous development was strong; however, the synchronous divergence from well-established patterns approximately 1200 years ago attests without doubt to events of some importance. The two most common indices of discontinuity are a shift in settlement patterns and the emergence of new pottery styles, but the occurrence of both in specific areas does not always obtain (see discussion above). It would, therefore, appear that the stimulus for change originated locally and then reverberated throughout the region. With this in mind I now discuss three possible sets of events which may have contributed to the Papuan-wide cultural hiccup.

(i) Migrant model. This hypothesis proposes that the movement of maritime traders into or within Papua sufficiently unbalanced traditional cultures so that their restructuring eventuated.

Vanderwal (1973:194) was the first to allude to the arrival of new peoples in Papua as the impetus for cultural discontinuity. Allen, however, historically stands as the major proponent of the Migrant Model (1977a:38-9). He argues that the appearance of a distinctive pottery style and the high degree to which the coastal strand is inhabited around 800 years ago in the Port Moresby and Hall Sound areas denote the immigration of maritime peoples. At the same time he posits the coastwards movements of inland groups.

In all fairness to Allen, his stance on this matter has altered (White and Allen, 1980) in response to recent work at Taurama (Bulmer, 1978:307-23) and Boera (P. Swadling, pers. comm., 1977). The findings of these excavations provisionally support a continuity of pottery styles over the period in question. The role played by the movement of inland peoples at this time is as difficult to assess as is the archaeological record from which the claim is made (e.g. see Bulmer, 1979:13-19, 23-4).

There may, however, be some merit to the idea of coastal Papuans relocating themselves. Oram (1977) notes mention of Motu

speaking peoples migrating from Yule Island to Boera in his collection of oral histories. If this record reflects an ancient event and the claims of Boera pottery evidencing style continuity between 1200 and 800 years ago ceramic assemblages are upheld, then the Migrant Model may aptly describe events underlying cultural discontinuity.

The importance of the Cape Possession area as a supplier of pottery and stone axes to the Gulf is demonstrated above. If 'Yule Island traders' abandoned their base for another further east, the effects on Gulf exchange systems would be noted. Trade links between the resettled groups and Gulf peoples may have been maintained. Voyages to the Gulf would probably not, however, continue with past regularity and the volume of goods available for distribution in the Gulf would decline, a fact which gains some support in the archaeological record of the Kairi area.

This narrative is not as cut and dried as it may appear. The prehistory of the Yule Island region provides no clues to explain its abandonment. Also, Oram (1977) believes the bulk of evidence probably suggests a recent date for the 'Apua-Motu' migration.

(ii) Blockade model. This model describes a situation where disruptions among Gulf communities, resulting either from internal strife or from the influx of different sago-using peoples, promote a setting where normal relations with pottery traders are impossible.

Evidence supporting this occurrence and indicating its probable age are not readily apparent. Kairi oral history, however, recounts a similar chain of events (Rhoads, 1980:16ff). The traditional stories I collected, which are duplicated in earlier records (Woodward, 1917), tell of Kairi expansion toward the coast being thwarted and of their retreat inland being successfully implemented by the cultural hero of contemporary coastal peoples (see also Austen, 1931-32).

My analysis of prehistoric land-use patterns practised in the middle Kikori River area supports its continuous occupation since 2000-3000 years ago (Rhoads, 1980:243-5). If this conjecture is true, then the Kairi may well be the descendants of the area's prehistoric inhabitants. Therefore, traditional history may reflect prehistoric events.

The timber and sago-palm resources of the Papuan Gulf, particularly those occurring west of the Vailala River, must have been among the major items which promoted intense maritime trade along the Papuan coast. If this support were denied, then a trade collapse would follow and the life-styles of trading communities may have changed. Perhaps, the 'Yule Island traders' would in the face of such an event have thrown in the towel, cut their losses and retreated to more secure and profitable surrounds.

(iii) Competition model. In this model rivalry develops between pot-making communities for Gulf markets.

Speculation along this line appears attractive. The evidence from Gulf sites indicates a change in the source areas for pottery from the Hall Sound region at 1500-1200 BP to Port Moresby since 400 BP. Recent suggestions of an unbroken development sequence of pottery styles and forms in Port Moresby sites add credibility to this proposal. Despite this, the lengthy time separating the initial decline of Hall Sound goods in the Kaira area and the arrival of those originating at Port Moresby in the Gulf is worrisome. One would expect the assertion of new traders into Gulf market places would proceed more swiftly. It may have been the case that competition between groups is directed at other markets or centred upon other than purely economic imperatives.

Inducements for increased trade. As discussed above, the evolution of prestige-goods economies among long resident Papuan communities putatively sponsored the widespread trade and exchange network between 1500-1200 years ago. The question which now remains is what provided the stimulus for the re-establishment of a similar pattern at least 400 years ago?

One view held contends that the Motu *hiri* arises from the loss of arable land as a result of the coastwards expansion of inland peoples and the subsequent unpredictability of starch resources (Bulmer, 1979; Oram, this volume). Given the long history of trade and exchange systems now known to exist in Papua I believe that tracing the origins of an increase in trade activities to such causes denies the precedents formed in the past.

Allen (1977b) and Irwin (1978) point to the cause being the development of specialist trading communities among peoples long versed in maritime trade who sought or held geographically advantageous positions from which a control over the coastwise movement of goods was insured. In this case the stimulant for such an occurrence must have been area specific evolution. In other words, those groups which secured a good location for trans-shipping goods succeeded in time while others did not. The nagging problem with this view is that both the Mailu and Motu trading systems appear to peak at roughly the same time.

Was this in fact a situation where independently developed events quickly interacted and became similar? Or were the specialist traders of recent times a product of more encompassing historical processes?

Through the second query, I am promoting the view that area specialists in New Guinea prehistory must turn away from purely parochial vistas and consider regional patterns. Certainly one of the most recurrent themes during the last stages of the island's prehistory is the apparently rapid dispersal and assimilation of

a new suite of exotic goods, whose introduction came by way of Asian and European adventures into the region. Golson (in press) argues for the introduction of sweet potato into the Central Highlands around 500 years ago and clearly speculates as to the dramatic effects this event had on traditional land-use strategies and social structure. Ellen (1979) presents firm evidence for the complete integration of Chinese ceramics into the ceremonial exchange systems of west New Guinea by the beginning of the 16th century. My own findings demonstrate a widening of Gulf exchange systems, which include coastal peoples to the west around 400 years ago and Highlands fringe groups more recently.

Any suggestion that there is a direct connection between such occurrences is grossly premature. However, dramatic moves were afoot during recent times and many are comparable to a re-awakening of intense maritime trade along the Papuan coast. The contemporaneity of their advent undoubtedly poses an intriguing problem for future research.

Conclusion

In portraying the development and characteristics of Papuan trade and exchange I have indeed painted with a broad brush. The far-reaching geographical perspective was encouraged by the high incidence of exotic goods recovered from Gulf sites. The general replication in the Gulf region of development patterns found elsewhere in Papua has promoted a comprehensive view of the temporal scale of events. While my hypothetical explanations may prove unconfirmed, I feel confident that my appeal for a more encompassing perspective of Papuan prehistory is substantiated and indicative of a worthwhile course for future studies.

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