
Introduction: Changes and Last Chapters

Sipum

This book is the culmination of research begun in 1991. I was interested in how people in and around Muyuw in the northeast corner of the Kula Ring located themselves in their environment. Returning to Muyuw after research there in the 1970s, I was informed about but not particularly interested in the vast changes—continuous gold exploration and timber and then oil palm plantation plans—that were once again making the island a proletarian speck in a renetworked world. By virtue of an 1895 gold rush, dreams about copra plantations, and the way steamships had apparently opened the Pacific to development, the island had been one such space for several decades at the turn of the twentieth century. But by my first experiences on the island in the 1970s its ties to the West had receded, villages were tentatively reconstituting themselves, and it seemed possible to investigate the culture at a remove from its European context. To this place I desired to return.

Yet from the very beginning, changing circumstances redefined this new study's purpose. One of these came during that initial return in 1991. The first half of this book documents the consequences of that encounter: I provide an account of the place of flora within the northeast sector of the Kula Ring. This book is an ethnography of flora. It describes how trees and other plants are understood and used to make and comprehend lifeways.

The second and third shifts came during and after my 1996 research. One is realized in the last half of this story. The investigation of flora led to an investigation into the structure and place of outrigger sailing craft in this cultural system. These forms create an argument about how the region relates to a major climate pattern in the southern world—, *El Niño Southern Oscillation*, from here on ENSO or *El Niño*. This phenomenon generates a problem of knowing, of knowledge structures. A general consideration of knowledge forms outlined in the first half of the book builds

to their more focused pursuit in the second. Chapter 2, the beginning of Part II's ethnography of trees, begins with a bizarre event from my first research time, 1973–1975. One evening in 1974 one of my age-mate informants underwent a sudden altered state of consciousness reportedly because he saw a tree he was not supposed to see. Eventually we will see how that tree is a signpost for regional relationships, as is the conscience which enables the life I attempt to describe.

Suffusing the whole, the third unfolds around the ravages of time and history.

From 1991 I had planned to convert this research into a two-part comparison. The eastern half of Kula Ring is one part. China is the other: I visited Taiwan and the People's Republic of China for the first time just before returning to Muiuw in 1991. As I made repeated returns to Muiuw, so I continued visiting East Asia. Gradually a historical dimension merged the two. For I became increasingly familiar with the Kula Ring as a transformational moment in the Austronesian pulsation out of East Asia some four to six thousand years ago. Although footnotes and chapter 6's final synthesis allude to possible morphological conversions across these spaces,¹ this study synthesizes what I have learned of the northeastern Kula Ring.

One development from this synthesis became a profound sense of writing a last chapter in a Pacific story, undoubtedly one of many, nevertheless a last chapter. Among the events that heightened this realization was the tragic death in April 2009 of my friend, mentor, and jungle guide from 1995 through 2006–7, Amoén Aisi. Nicknamed "Sipum" because his ruddy face reminded people of a yellowish-orange flower identified with chicken pox, he was the son of Aisi, one of my earliest instructors. In his late teens during my 1970s research, Sipum verged on an elder by my return. An ebullient man with aggressive intelligence, I treasured my association with him. But Sipum's death did not stand alone. His two sons predeceased him. Both drowned tragically, one in nearly inexplicable circumstances; some of its grief I shared with him and his wife in 2002.

Sipum became sick during a proverbially successful wild pig hunt he led one Wednesday afternoon in April. That hunt had followed a uniquely stunning fishing trip Tuesday evening; others went fishing too but caught nothing. Retrieved from the hunting grounds and transported immediately to the aid post located by the World War II airstrip at Guasopa, he was returned to his village, Wabunun, Thursday evening where he died in a sister's son's house early Friday morning. He was moved immediately next door to his own house where he was set up for visitors from near and far until mid-day. He was then buried. Following this, his daughter, his

last child, came down with the same symptoms. Calling “Father I come to you,” she died and was buried Saturday.

Sipum represented many of the tensions on the island. Many believe his wife killed him, their three children, one of her sisters, and her mother with witchcraft (*bwagau*); as I left in August 2009, the village was organizing action against to her. A picture my son took of us captures our anguish.

Sipum was a middle brother surrounded of two elder brothers with the extraordinary success in the *kula*, and younger brothers with phenomenal commercial success in the encroaching Western sphere. He became the village’s expert on the bush, but not just that—he also made himself a sewing-machine mechanic and took great pride in fixing Singer machines across the eastern part of the island. He invented a special belt that allowed him to neatly insert elastic bands into the cloth skirts all women now wear. I learned these baffling but not surprising facts on the last day I saw him during 2007’s brief return. His death, and his daughter’s, however, brought to the fore another facet of his being, one closer to what attracted us to each other. Sipum *studied* traditional magic and the empirical world that gave it content—trees and winds and cloud formations—and was working on new material he had learned from people elsewhere in the region. He wrote magic down in a book. Fearing that unleashed powers from this practice led to Sipum’s death as well as his daughter’s, to say nothing of his sons, his subclan relatives insisted his books be buried in her grave.

A Last Voyage

I first settled on this project by trying to understand what people meant when, in 1991, they told me they used a tree called *gwed*—*gweda* in the Trobriands—to reproduce soil conditions for their horticultural fields. To pursue this issue I knew I had to make a general inquiry about the culture’s flora. I thought I had finished collecting that data when I left Muyuw in late July 1996, exhausted and unknowingly malarial. I wound my way home, passing through Canberra’s Australian National University and then Auckland, New Zealand, to see, respectively, Chris Gregory, an old friend and colleague, and Simon Bickler, a new friend and then a graduate student who had finished archeological research on Muyuw several months earlier. In Canberra I told Gregory that I unexpectedly learned a great deal about outrigger canoes, *anageg*, which Nancy Munn described in her classic account of Gawa (Munn 1986). He told me that I must meet Adrian Horridge, a legendary and founding figure in ANU’s Research

School of Biological Sciences. Although retired, Horridge maintained an office and kept working in his main field, insect optics, and his intellectual avocation, Indo-Pacific sailing craft. We met for coffee in his building's outer public spaces. He quizzed me to see if I was worth his time, and apparently I was, as he invited me to his office. Among other things, I described springs people built into canoes and the peculiar cross grains of a tree species used to fashion keels. Although then a world expert on Pacific sailing craft, he claimed he had never heard what I told him.² Then as I talked about what puzzled me most about Muiuw sailing craft—those vibrating parts—he gently introduced me to his writings about Pacific sailing and invoked various physical principles—among others Grey's paradox—that might suggest lines of interpretation for my puzzles.

Surprised that the boats were still being made and sailed, Horridge urged me to return to learn more—I was conversant with the culture, unlike almost anyone else in the world, so who was going to study and describe this passing technology? For personal and physical reasons this was the last thing I wanted to hear. However, by the time I flew to Auckland several days later I started recalculating. Simon Bickler and I walked through Auckland's Maritime Museum, looking over its display of Pacific sailing craft. I was impressed by a tightly wound large craft from the Gilberts built by a European trying to replicate original forms; later I read that its twin, built by the same European, blew apart when it sailed in a stiff wind. We spoke with museum personnel about what I knew. Opening Haddon and Hornell's account (1936) to the Milne Bay sailing craft, they expressed that they were familiar with the literature, but they were intrigued by what I could report. Horridge was correct. My ethnobotanical project and familiarity with the language and people transcended my technical limitations.

So I succeeded in returning to Muiuw in 1998 to further investigate outriggers. I returned the following August, 1999, but had only several weeks in Alotau, Milne Bay Province's provincial capital. Fortunately I spent much of that time with an experienced sailor from Yemga, one of Muiuw's principal sailing villages, and Ogis, elder brother to Sipum, another old Wabunun friend who, since Sipum's death, has assumed that place as my principal tutor; much of the learning embedded in chapter 6 flows from Ogis.

While I had learned much through 1996, by the end of 1999 I had radically transformed the verbal and pictorial data base I had for these craft. However, my scant experience sailing these consisted of two simple trips in the 1970s when I paid these craft little attention and two short, riveting, trips in 1998. Therefore I arranged to return to Muiuw in 2002, hoping to spend time with Muiuw sailors on at least two *anageg*. Although my plans

could not work out as imagined, I succeeded in sailing from the southeastern corner of the Kula Ring to my home away from home, Wabunun, in its northeast corner. Bad luck turned fortuitous for a developing thesis and my purposes.

The Voyage of 2002

In July 1998 I measured and drew an *anageg* from Nasikwabw that had sailed to Muyuw for ritual reasons. The boat's owner, called No. 2, was a son of a former Wabunun informant, and he consented to my inquiries. For my 2002 return I hoped to find my way to the island variously known as Koyagaugau, Gaboyin, or Dawson. I then reasoned that the Nasikwabw man would sail to Koyagaugau, carry me back to Nasikwabw, perhaps also to Yemga; I then anticipated hitching a final ride to Wabunun on another boat. Since fewer of these craft are being made and put into circulation, and given other issues, I was prepared for these plans not working out; and they did not.

Milel Gisawa, a youth in Muyuw's elementary school in the 1970s but by the 1990s a legendary announcer for Radio Milne Bay and organizer of the modernizing world for many Muyuw people (symptomatically, he died of diabetes in 2012), accompanied and helped me quickly pass from Alotau to Koyagaugau. We arrived there on June 14, 2002. Ending his campaign for the region's local representative to the Papua New Guinea Parliament (he lost), Milel went on to Nasikwabw and Wabunun, in Nasikwabw under instructions to tell No. 2 that I was waiting for him. On Koyagaugau I stayed with the nephew who had inherited the position of the great Kula man, Mwalubeyay (d. 1995).³ Unexpectedly, on Koyagaugau Milel also found a young man, Onosimo, who had practically grown up in Wabunun. Milel instructed Onosimo, a polyglot like himself, to watch out for me. He did, and within a day we walked around the island and took a short canoe outing to the little island connected to Koyagaugau, Ole. Ole had several working *anageg*—called *kemurua* in this area—in various states of assembly and reassembly.

It became apparent that nothing was going to happen swiftly. First, mid-June is early in the time of the hard southeast wind, neither the best nor worst time to sail. However, a peculiar southern wind kept blowing, and this made it difficult to sail south, the general direction my craft for its return; and as I was to learn, it was especially hazardous to travel north, the direction we had to sail. Second, this region of the Kula Ring, Bwanabwana, was filling up with *mwal*, one of the two *kula* valuables. Hence preparations were underway for all of the remaining Muyuw sailing ves-

sels to head there. Several people told me I should just wait for that; but I knew that sailing was unlikely to occur within the two-month period I had—more likely, it was a year or two away. Finally, intra- and interisland sports cycles are now a major factor in organizing travel among islands, so many youth were occupied by upcoming sports events.

These islands are connected by short-wave radio, so a week or so after my arrival on Koyagaugau I learned that No. 2 was not in Nasikwabw; he was in southwestern Muyuw at a volleyball and soccer tournament. Later, when I had arranged passage on the Ole *anageg Lavanay*, its owner had difficulty assembling a crew because many young men were practicing for a major soccer tournament, the Kula Open. New times bring new configurations of power and the body's relations to alienable objects: these times capture people's fancies now.

Worried that it may be months before No. 2 could come for me, I asked the small but regal looking owner of the *anageg Lavanay*, Duweyala, if he would take me to Muyuw, stopping in Panamut and Nasikwabw on the way. He was the younger brother of a Koyagaugau man named Gideon, also a polyglot,⁴ who had become my tutor. Gideon had spent a lot of time on Muyuw's southwestern end. Both men, as was widely the case in these islands, spoke Muyuw as well as or better than me, and easily passed back and forth among the terms Bwanabwana and Muyuw use for the boats. On June 25 I moved from Koyagaugau to Ole to await our passage.

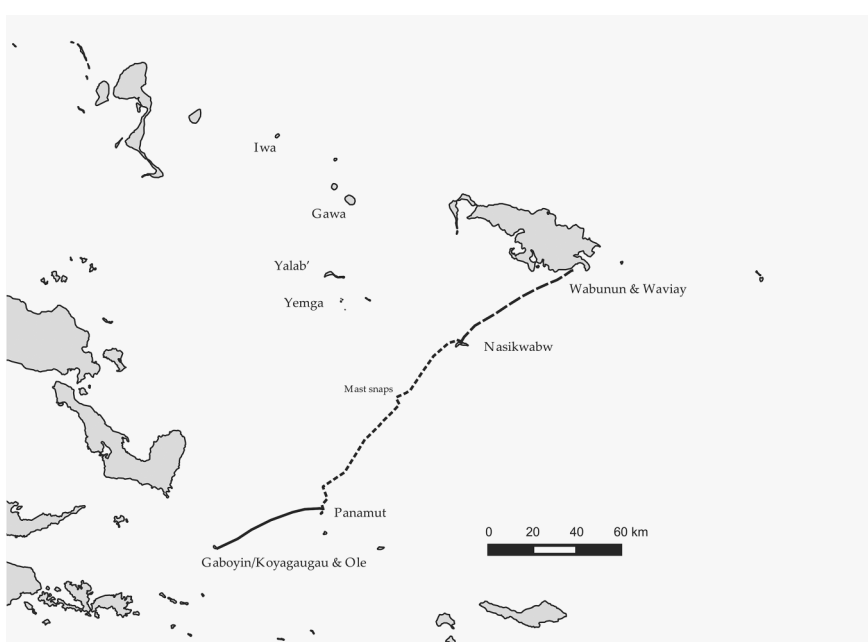
It was now apparent that I would not have several weeks on Nasikwabw with its sailors and then more time in Yemga before finally heading to Wabunun. I needed to check what I was learning from people I knew best and who knew me well enough to correct my mistakes. This presented problems because I had no choice but to start learning boat details from Ole and Koyagaugau people, a significant issue because I was especially interested in the relationships between the boat's technical aspects and the way these redounded into the local culture. Bwanabwana culture, the ethnographer for which is my friend Martha Macintyre, is different from Muyuw culture. And while I learned much about the Koyagaugau and Ole variants of it, I by no means became nor wanted to become an expert in it or its language.

In any case, as Duweyala made steady progress outfitting his boat for our voyage, two matters posed challenges. The first was an infection on my left leg and a related or unrelated fever that was clearly becoming serious by the first week in July. At one point Gideon looked at my leg and told me it was rotting. Assuming the fever was malaria, I took an acute dose of lariam (Mefloquine) the day before our scheduled departure and told Onosimo, who had now agreed to sail with us, that if I became delirious and got out of control he was to knock me out rather than let me drown or

delay the trip. I told nobody else about the fever for fear they'd refuse the trip, thereby voiding two years of planning. Fortunately by the morning of our departure the fever broke; however, the leg remained swollen.

The other problem was the wind.⁵ By this time, and into August, Durewela would look at the flowering "Beach *Calophyllum*" (*Calophyllum inophyllum*) and say that its flowers appear with the southeast wind. Although its direction wavered, the wind blew, unusually, from the south and remained very hard. It slackened enough that we were able to depart on July 4. As is usually the case, lots of people helped our boat into the water and worked to get us on our course before jumping off and swimming back to shore. I suspect they left with a mixture of regret and nostalgia. Throughout this region people are giving up *anageg* for the new faster class of outrigger called *selau*, fiberglass dinghies and their outboard motors, and diesel vessels. The latter ply these waters less frequently, but they carry much of the interisland loads of pigs, vegetables, clay pots, and other things for which *anageg* were designed. Yet the *anageg* remain carved into people's hearts and minds. As they helped us get underway, many men spoke to me about the joy and thrill I'd have on this voyage.

I carried a GPS with me to regularly record our position, direction, and speed throughout the trip. Map 0.1 and table 0.1 display the GPS information.



Map 0.1. The Voyage of 2002.

Table 0.1. The Voyage of 2002, July 4–15, 2002⁶

GPS READINGS
FROM OLE TO PANAMUT; PANAMUT TO NASIKWABW;
AND NASIKWABW TO WAVIAY
July 4–15, 2002

	Longitude	Latitude	time	Voyage	Distance (km)	Bearing	Time (mins)	speed (km/hr)	knots
1	151.4269	-10.3997	9:54:00	1		71			
2	151.51	-10.3611	10:48:00	1	10	65	54	11.1	6.0
3	151.5678	-10.3225	11:29:00	1	8	56	41	11.1	6.0
4	151.5147	-10.2836	12:18:00	1	10	64	49	12.0	6.5
5	151.7394	-10.2514	13:19:00	1	11	70	61	10.4	5.6
6	151.7908	-10.2392	13:54:00	1	6	76	35	9.9	5.3
7	151.8514	-10.2358	14:40:00	1	7	87	46	8.6	4.7
8	151.8633	-10.2372	15:00:00	1	1	97	20	3.9	2.1
				Total	52		306	10.1	5.5
9	151.8656	-10.2375	4:44:00						
10	151.8608	-10.2222	5:18:00	2	2	353	34	3.0	1.6
11	151.8831	-10.2958	5:43:00	2	4	40	25	9.1	4.9
12	151.8644	-10.1469	6:22:00	2	6	339	39	8.9	4.8
13	151.9553	-10.0881	7:08:00	2	12	57	46	15.5	8.4
14	151.9964	-10.0231	7:54:00	2	8	32	46	11.1	6.0
15	152.0372	-9.95667	8:42:00	2	9	31	48	10.7	5.8
16	152.0989	-9.89667	9:30:00	2	14	62	48	17.7	9.6
17	152.1158	-9.87778	9:59:00	2	4	298	29	9.2	5.0
18	152.1517	-9.84306	10:36:00	2	5	45	37	8.9	4.8
19	152.1828	-9.81056	10:59:00	2	5	43	23	12.9	7.0
20	152.1808	-9.80528	11:09:00	2	1	340	10	3.7	2.0
21	152.1786	-9.80167	11:20:00	2	0	329	11	2.6	1.4
22	152.1736	-9.79194	11:46:00	2	1	333	26	2.8	1.5
23	152.1694	-9.78389	12:07:00	2	1	333	21	2.9	1.5
24	152.1725	-9.77944	12:17:00	2	1	34	10	3.6	1.9
25	152.2111	-9.7625	12:50:00	2	5	66	33	8.4	4.5
26	152.2292	-9.75028	13:05:00	2	2	56	15	9.6	5.2
27	152.2783	-9.67778	14:05:00	2	10	34	60	9.7	5.2
28	152.325	-9.61167	14:58:00	2	9	35	53	10.1	5.5
29	152.3889	-9.55778	15:58:00	2	9	49	60	9.2	5.0
30	152.4269	-9.54694	16:24:00	2	4	74	26	10.0	5.4
31	152.4414	-9.55222	17:10:00	2	2	110	46	2.2	1.2
				Total	114		746	9.2	4.9
32	152.4417	-9.55167	09:57:00	3					
33	152.4519	-9.53389	10:35:00	3	2	30	38	3.6	1.9
34	152.4972	-9.4875	11:18:00	3	7	44	43	10.0	5.4
35	152.5814	-9.43889	12:22:00	3	11	60	64	10.0	5.4

36	152.6364	-9.40278	13:08:00	3	7	56	46	9.4	5.1
37	152.6947	-9.36611	14:03:00	3	8	58	55	8.3	4.5
38	152.7564	-9.33528	14:59:00	3	8	63	56	8.1	4.4
39	152.8061	-9.31222	15:43:00	3	6	65	44	8.2	4.4
40	152.8381	-9.3	16:13:00	3	4	69	30	7.5	4.0
41	152.875	-9.27722	16:45:00	3	5	58	32	8.9	4.8
42	152.8981	-9.26167	17:05:00	3	3	56	20	9.2	4.9
43	152.9014	-9.26056	17:12:00	3	0	71	7	3.3	1.8
				Total	60		435	8.3	4.5

I hoped to play whatever active role I could on our voyage. The trip's purpose was to begin to parlay the intellectual models I was constructing into experiential knowledge. But I was frustrated in these attempts right from the beginning. First, of course, we all knew I had little sailing experience, so I planned to spend the first leg of the voyage just watching (though maybe also bailing). But second, my companions quickly determined that because of my weight they should put me in the rear of the boat (actually the prow, which, because of our direction and the wind, had to follow for the whole trip). There I stayed until we finally drifted from Waviav to Wabunun twelve days later.

The trip from Ole to Panamut, a low island formerly occupied and now a source of food for stranded sailors, was under clear skies and mostly uneventful. We pushed off before 10:00 AM and saw Oleyamat, a higher island near Panamut (from which Koyagaugau's sister island Ole gets its name), by about 10:15, long before Ole and Koyagaugau had sunk beneath the horizon; just before 3:00 PM we finished poling the boat into its shallow resting place for the evening. It's about twenty-two miles from Ole to Galakalaeliya, an islet on a reef extension north of Panamut, where we finally stopped.

Although the trip was uneventful, I noticed fairly quickly a discrepancy between how I was told the boat would be steered and how it actually was. These craft have to sail so that the outrigger float is into the wind. The force of the waves coming into the vessel is such that the steering oar (*kavaavis*)—technically not a rudder, but rather something approaching a “lee board”—is supposed to be lifted up as a wave passes from the outrigger float to the keel. Otherwise the energy might snap the piece in two. Then as the wave passes underneath the boat, the *kavaavis* is inserted back into the water to redirect and gently lower the boat as the swell and boat pass each other. A kind of rhythm can develop with this raising and lowering, and in 1998 I briefly experienced that rhythm in an *anageg*, when a number of crew started calling out “lift” and “lower.” Their words were

not so much commands as voices of collective participation. I knew that men sometimes sang during their trips and wanted to experience a sense of rhythm potentially related to raising and lowering the rudder, among other vibrating boat parts. And so for this first leg I carefully watched for a rhythm, but I could never quite understand the pattern. The same thing happened on the next two legs of our journey, only then the wind was stronger and we sailed with two leeboards. I was told my companions would coordinate their movement, and there was sometimes talk between, usually, Duweyala at the back and whoever handled the forward leeboard a meter or so in front of him. But the pattern remained opaque to me.

Duweyala was also paying very special attention to the mast (*vayiel*), as it was made from the wrong kind of tree. And once I talked him into the voyage, one of his motives was to go to Sulog in south central Muyuw to obtain one of the two types appropriate for the part. I hardly noticed another item, but it was evident and I eventually understood the issue: While Duweyala did not hesitate to look all around him to gauge speed, direction and distance, he also kept watching the *bis*, the streamers, tied to many places on the sail's sides.

We spent July 5 at Panamut because I wanted to see it. I frequently heard about Panamut because it figures in origin travels of the clan to which I had been assigned and because most Muyuw people who have sailed back and forth between the islands talk about it and its food resources. According to the accounts I received in Ole and Koyagaugau, it was occupied and also the center for mediating north/south relations until about 1900. However, my crew chose not to violate prohibitions placed on the island—this was why we beached instead on the islet beyond it and why when we went there I was only allowed to explore a few hundred meters inland from its northern end; anything worth seeing—such as its potshards and a range of significant trees and their ages—would be at the southern end.

While several of us explored what we could, a crew member remained behind to rig up support for the mast. Duweyala had decided that the mast was not strong enough for the wind, and so he ordered the adaptation.

Although it was mostly cloudy and windy early in the morning of July 6, Duweyala ordered us up about 4:00 AM. We were loaded by 4:40 and began drifting to the northern end of the Panamut structure. By 5:10 AM the sail was up; we arrived at the Nasikwabw landing twelve hours later. Since the day varied from being very hazy to cloudy, setting and maintaining a course was difficult, and Duweyala kept looking back at Panamut—and its light beacon—until it completely disappeared. On a clear day the mountains of Misima to the southeast and Normanby to the

southwest could be used as additional backsights for more of the voyage, but not that day. The voyage south from Muyuw or Nasikwabw is considered simple because you cannot miss islands stretching to the east and, to the west, the whole mass of New Guinea. By contrast, the trip north from Panamut is more challenging as it does not have similar features to help with orientation, so markers, including wave structures and the appearance, disappearance, and reappearance of bird life are watched carefully. The difficulty is noted by an adjectival term for this segment of the voyage: *nuwa veveyua*. My Muyuw informants say this is a Misima word phrase meaning “insides fly out,” illustrating the nerves sailors have while traversing this distance.⁷ In this long stretch of sea, islands to the south and north may be invisible for hours, and bird life, important for navigating and gauging distances, also disappears. It is not the place for a breakdown.

Duweyala navigated by studying the swells and the shadow cast by the sun passing over us; that shadow changed over the course of the day and was fixed to the time of the year we sailed, so it was much less constant than the star routes people prefer to use on these voyages. In any case, the wind remained strong the whole way; as we got closer to Nasikwabw, waves towered over us as they came almost from our rear. It was an eventful trip.

During this voyage the GPS compass was sensitive to the relatively wide arcs the boat traversed as it went up and down the waves, hence the readings in the chart. Yet many of the hand compass readings I took suggested we maintained a fairly steady course close to 40°; this was the same direction my watch guard, Onosimo, detailed the evening before when I asked him where we would sail the next day; a cognitive map of island whereabouts is well-formed among these people. However, about 9:30 Duweyala started yelling; the mast and sail was radically changed, and we seemed to head into the waves close to a 120° direction for about ten minutes. Just before 11:00 we experienced another episode like this, heading off at 60–70°. Right after we returned to our course the mast snapped, the sail blew into the water, and we started drifting. We were in an emergency situation so I had no choice but to stop asking questions, refrain from anything else that would seem impertinent (like taking pictures), and concentrate on taking more frequent GPS readings—the only way I could be of any help whatsoever—so, if need be, I could chart our movement on a map which remained rolled up in my bags.

Duweyala and the crew instantaneously swung into action. Their first act was to rescue the sail. Later I learned that none of them had ever had an experience like this, but one principle everyone knew is to never let the sail get into the water. Sometime later when the danger was over and the

expressions on everybody's face had changed to obvious relief, Gideon looked at me and said, "We are seamen"; days later Duweyala told me he was never worried, only determined.

We drifted north for about an hour while the crew rigged up a new mast from the remains of the old. By 12:15 we were underway, our course adjusted more to the east to account for our drift. Soon birdlife appeared, and shortly after 1:00 PM one man sighted Nasikwabw.

It was well into August before I thought I understood what had happened to us. Duweyala was watching the telltales (*bis*) on the sail as well as other parts of the boat, keeping an eye out for eddies off the main wind current that might immediately capsize us. Two large eddies were the cause of the major course diversions. I do not know if another accounted for the snapped mast because it was obvious we were sailing near the limits of the tree used for it. Later Onosimo told me he had cautioned Duweyala about the wind's speed and encouraged him to lower the sail. But Duweyala was concerned about his "cargo"—me—and figured that moving faster to Nasikwabw was safer than moving slower.

We remained on Nasikwabw from July 7 to 15. During our stay Duweyala and Gideon prepared a new mast for the final leg of our voyage. Nasikwabw is full of the *Calophyllum kausilay*, the same species as the broken mast. Although this type of tree is good for a keel, it is inappropriate for a mast—yet it had to do. Shortly after we were underway on July 15, both Gideon and Duweyala expressed great pleasure in how the new mast was performing. Yet the hard southern wind continued to blow, and half-way into our voyage both men realized it was not going to work. As they had for much of the voyage from Panamut to Nasikwabw, the two men steered, each with a *kavavis*. Although the wind was strong, this leg of the journey was uneventful. The Sulog Mountains in south-central Muyuw are almost always visible from the shoreline of Nasikwabw, so we did not encounter any interesting navigational issues during our journey. But as we veered toward our destination, the wind came increasingly from our front. I had read Ben Finney's 1994 account of sailing in the mock-up Polynesian rig twice while I was waiting in Koyagaugau, and I began to think that we were sailing much closer to the wind than Finney thought Oceanic craft were capable. Knowing my lack of sailing experience and therefore fearing for my ability to record what I was seeing, I took a photo to try to capture a flag in the wind that seemed to be blowing into us. The arc of the sail roughly paralleled the fluttering flag as we approached our destination, and it may very well be that in this context the sail was functioning like an airplane foil, pulling rather than pushing us. Several years later, another friend and expert on Pacific sailing craft, Erik Pearthree, examined a model sail made for me and remarked about how the "back" of

the sail was smooth compared to the rough “inside.” The inside is the part designed to catch the wind; the backside is smooth perhaps to facilitate the wind’s rapid movement over its surface.

I had envisioned a dramatic landing at Wabunun, my final destination. I had watched many an *anageg* sail to the island and be dragged up on its brilliant white sandy beach, but I never participated in the act from a boat crew’s perspective. However, we sailed to Waviay instead, a small island on the outer lagoon just across from Wabunun. The next day we would sail across. I insisted that I be allowed to do something, bail the boat or handle the “rudder.” However, I was not needed; in mid-morning we merely hoisted a coconut frond and little more than drifted onto Wabunun, customarily drawing scores of people to help beach the canoe and greet the crew. For me *anageg* voyaging was over.

But not for Duweyala, his crew, and passengers. Originally he intended to stay in Wabunun just long enough to cut a new mast at Sulog. A fleet of Nasikwabw boats planned to follow us to Muiyuw, and Duweyala intended to return to Nasikwabw with them in a couple of weeks, where he would then replace parts of his vessel, entirely retie it, and return home. However, that peculiar south wind kept dominating the weather. So he switched plans and reworked his boat in August in Wabunun, where more of the appropriate trees were available. Since it appeared for a while that no diesel vessel would be heading our way, partly because of the severe weather, I began plans to return to Ole with Duweyala, an idea most thought absurd; I was the wrong kind of person (a white man) on the wrong kind of boat (a “New Gin” wag). However, a ship finally came to the island and I left on it on August 15. Duweyala remained on Wabunun for several weeks, finally sailing back to Ole under a wind so undesirable that he veered to Normanby Island well to the west of Ole before doubling back.

Shortly after returning to Alotau I learned that an El Niño was brewing; this is what had led to the persistent south, rather than southeast, winds. By December a drought was building in the province, one, however, that did not compare to the 1997–98 ENSO. During my 2009 return I learned that our voyage and Duweyala’s return was the last round trip an *anageg* with the traditional sail had made.

Practicalities (1): Original Intentions

I did not start this research to investigate outrigger canoes or trees; rather, I first returned to Muiyuw in 1991 to focus on the island’s “ethnogeology.” About 1990 I determined to give a double twist to my research and teach-

ing by taking up a new topic at my original research site and then turn my interests to China. When the project finally started in 1991 only one thing was certain: I wanted to learn about phenomena that were beyond my experience and training. In this I succeeded. And this is why this account combines, to the best of my ability, storytelling features—Dickens is my model—with soil and ecological sciences, recent concerns about climate and culture, and a theory about how the focus of my endeavors, Muyu, fits into the structural history of peoples who occupy the Indo-Pacific.

Anthropology is a science about people in specific spaces and times conducted by people from specific spaces and times. I stress the personal aspect of this work because my discoveries have been so dependent upon the willingness of other people to explain so much that was beyond my understanding. If this begins with my close and distant friends from the Kula Ring, it now includes many other people from Australia, China, England, France, New Zealand, Taiwan, and of course the United States. Among these people I was an interloper fearful of their suspicions and dismissals.

The plan was to take up a new topic in an ethnographic context I already knew and then turn my redefined focus to East Asia. I desired to change my theoretical interests from theories about social systems emphasizing exchange, production, and ritual to questions oriented by environmental research. I conceived my project to be an exploration of the ways that “technical” knowledge related to the cosmological and social structures described in many previous publications. Although my regional focus on “China” changed over the years, when I started the project it could just as easily have been on India; I wanted to explore the continuities and discontinuities across these regions, which, in fact, have been interrelated for millennia. A foray to India in 1998 became a turning point in this story. In Buddhist origin mythology I found interest in flora that paralleled what I learned about Muyu in 1995 and 1996 (see Damon 2007).

I was not, of course, sure how this deliberate maneuver—taking up a research agenda for which I was not prepared and moving from Melanesia to Asia—would turn out. Yet that was the point: I wanted a challenge that would be transformative.

Although sympathetic to the environmental movement that had been defining Western culture since the 1960s, I was professionally uninformed and, trained as a symbolic anthropologist in the Anglo-French tradition, largely unsympathetic to what I understood of ecological anthropology. Yet it was my intent to enter this new territory, and I wished to do it not just by learning from a subdiscipline of anthropology—I also wanted to initiate dialogues across the “arts” and “sciences.” I did not, and still do

not think divides between the branches of the academy are healthy for either understanding or making the world we inhabit.

I put the plan into action by the mid-1991 return to Muyuw, preceded by a week each in Taiwan and Yunnan Province, People's Republic of China. By 1995 I had planned on two additional returns; to date there have been seven, intermixed with enough trips to China and Taiwan to begin to transform that part of the design into a real one.

Lacking a deep natural science background, I selected the area about which I had the most interest and the greatest amount of positive knowledge, as I understood the island as a westerner and as my Muyuw friends presented it as a humanized landscape: so, geology as the area of interest for exploring the movement of water on the island. Had I been fully cognizant of subdisciplines in the environmental sciences, I would have added hydrology. My new research was going to focus on how islanders conceptualized their place as a physical entity, and how that knowledge related to the practices I already knew.

I had held a lingering interest in geology and always found geological writing about the southwest Pacific fascinating—the crashing of the Pacific and Austral-India plates that generated Melanesia. Geologists I had read or met on the island were engaging people clearly dealing with a thicket of complicated relations. The geomorphologist Cliff Ollier, who had also described many megalithic ruins across the northern side of the Kula Ring, wrote that the region was so complex that only a poet could describe the myriad of conflicting forces that had, and were, producing it. A result of larger encompassing forces, the island is a mixed classic coral atoll—or atolls—with a volcanic center circumscribed by a coral platform. The northern side of the platform rises as much as one hundred meters above the sea; the southern side seemingly slides beneath it, creating barrier reefs and extensive lagoons. The region is tectonically active.⁸ The island's occasional movement is fully incorporated into the reigning cultural system. Elder instructors in the 1970s told me that earth tremors—*nikw*—result from the Creator moving around to look at something. The Creator supposedly holds the island on his—perhaps her—head, just as women carry loads on their heads. The strain of this load is represented in a Muyuw mortuary sequence, called *lo'un* (Damon 1989b). Designed to end the debt created by a father producing a child, in the ritual people witness selected women straining to hold and walk with a gigantic basket of yams and taro on their heads. Some people also tie tremors to the onset or end of droughts and exceptional wet periods. Arguably the conception is related to the ways in which Muyuw cultural forms are carved out of a dynamic that also produced Trobriand culture some hundred kilometers

to the northwest; Trobriand chiefs are credited with controlling droughts and inundations there.

On hindsight my initial program was apt. These ideas were formulated before I was aware of the complicated ways in which concerns with water organized the vast cultural and technical systems of South and East Asian societies, before Lansing had published, or I was aware of his immensely stimulating work on Bali (Lansing 1991, 1995, 2006),⁹ and before I was familiar with Kirch's wet and dry systems in Polynesia (1994). Such research would have lent credibility to questions I wanted to ask, though not necessarily to the phrasing of my hypothesis. Rather I was being guided by intriguing perspectives from a former University of Virginia graduate student, Christopher Taylor, who developed an understanding of Rwandan society based on the movement of liquids (Taylor 1992, 2001). From my earlier research and interests, I constructed a model that suggested the islanders had an organic understanding of their island's physical presence. Aspects of the island are named as if it is a body. It has a "back," and a "stomach," "head," and "feet"; current mortuary practices draw on an isomorphism between bodies and the island for placing the dead; burying Sipum's magic with his daughter followed from those ideas. A particularly prominent bay at the center of the island's "stomach" is called Kalopwan. Etymological analysis of this word would focus on *pwan*, which may be translated as "anus." The probability that such metaphorical references might suggest well-formed understandings of the island's physical structure and the movement of water on it seemed high. It would then be a matter of exploring the references and coming to a detailed understanding of the implicit and explicit knowledge they presumably contained. I established contact with a geologist in the University of Virginia's Environmental Sciences Department in preparation for future consultation then proceeded to the island in 1991 to explore those metaphors and to reorient myself to the language and people.

Twenty years later I do not think I was wrong about the cultural importance of geological settings, nor to peoples' models about them. In 1996 I watched Muyuw people dismiss Western scientists' ideas about how water moves under the island. The geological advisers were exploring conditions for a potential gold mine. Muyuw people quickly realized that the experts knew nothing about how underground water moves and how its movements change—considerably—according to rainfall variation, tidal forces, and shifts caused from the Creator looking about. By contrast Muyuw knowledge—more observational than modular—was profound and continuous. By 2000 I believed that whether one is looking at symbolism or human ecology, from East and South Asia to Australia and into the Pacific, populations built themselves out of their relations to water,

and its obverse, fire. By the time I left Muyuw I felt I could argue that the Kula Ring, nearly the entire social system of eastern Papua New Guinea, had been organized to deal with its geological settings amid unpredictable circumstances of El Niño Southern Oscillation—thus the availability of water.

Nevertheless, my work would not focus on geology and underground water flows. During the weeks of my 1991 return I explained to my closest friends my interest in water and the island's physical forms. They laughed at me. I suspect my reaction to their laughter—dropping the topic—was hasty, yet it was conjoined with a startling positive encounter. During the course of those weeks an elderly woman casually mentioned that people used a tree, *gwed*, to reproduce soil fertility. Muyuw gardens are like Chinese temples, complicated constructions consciously encasing the swirl of relations that are—perhaps Shiva-like¹⁰—the culture's fundamental principles. I knew a lot about them, and had written about them in a major chapter in my first book. But I had never heard this story before, and I had no recollection of any other Kula Ring ethnographer writing anything similar. Moreover, everyone I talked to confirmed the woman's story; Sipum's father, who giggled at my water ideas, added that the tree was understood differently across the islands to the Trobriands, and by there, for him *Kilivil*, it was so important one would be killed if he cut it down. Hyperbole aside, he was telling me something important about something important. My focus was defined.

I have spent the last twenty years trying to understand what was entailed in what I was told those weeks in 1991. How the news of that tree led to the voyage of 2002 is a plotline of this book.

Practicalities (2): Getting Ready

When I returned to my home after the 1991 trip, I set out to engage the experts and gain the expertise I would need to carry out my intended research. My environmental sciences mentor, Hank Shugart, was pleased with the turn of events. A forest ecologist interested in modeling procedures, he had experience in Papua New Guinea and Southeast Asia and was anxious to learn more.¹¹ Among others, he quickly referred me to a new colleague in his department, Dr. Stephen Macko, a geochemist who uses stable isotopes to trace nutrient flows. Shugart immediately assimilated the story about the tree to the hypothesis that it was a legume and so probably fixing nitrogen; the analysis of stable isotopes should be able to determine that. It seemed that there might be a close fit between the Muyuw model and the kind of information we could gather by tracing

stable isotopes from trees to soils to crops. But I needed to fit that tree into the larger body of knowledge that people had about surrounding flora. And for that I would need to learn as much as possible about plants across the culture. Shugart told me that he could not wait until I got attached to a systematist, the expert who would identify the floral voucher specimens I would collect.

After visits to herbaria in Hawaii, Washington, DC, and Harvard, I eventually became associated with systematist Peter F. Stevens, then a curator of Harvard's Arnold Arboretum and Gray Herbarium, later at the Missouri Botanical Garden and the University of Missouri—St. Louis. Stevens became the principal person who directed my collecting and identified my voucher specimens because he had an interest in the flora of what systematists call Malesia, more or less from Southeast Asia to Australia and the Pacific Islands. While the evidence of his passion for plants became clear, it took a while for me to realize the depth of his scholarship (e.g. 1994a, b). Known as a radical in the world of botany, Stevens told me that he didn't think botanists had a coherent idea of "species"; he has named many (Wikipedia lists them). But he exhibited precisely the kinds of characteristics Shugart was waiting for me to discover: deep skepticism, encyclopedic knowledge of flora, and, English eccentricity. Not incidental to these qualities was Stevens's fascination with issues pertinent to anthropological work: impressed by the limitations of his culture's analytical models, he did not look favorably on the anthropological use of our ideas on other regimes of knowing. In any case, I did not know then that our association would lead me to become fascinated by the genus for which he is perhaps the world's expert—*Calophyllum*.¹²

By the time we met, Stevens was deeply engaged in the problematics—and anthropology—of classification (e.g. Scott Atran and Brent Berlin and their associates) and it was about then, circa 1994, that I began to familiarize myself with questions about "classification" in anthropology. Brent Berlin's work (1992), which Stevens had reviewed, was my first turn. And Berlin kindly invited me to his department for a lecture after my original return in 1995. I told him that I intended only one more research trip—he smiled and said, "There will be more."

By this time I was teaching a course eventually be called Ecology and Society. Somehow that activity led me to discover William Balée and a 1994 conference he was holding at Tulane on a new turn in ecological anthropology, "historical ecology" (see Balée 1998); he let me attend the conference. Carole Crumley's pathbreaking collection, *Historical Ecology: Cultural Knowledge and Changing Landscapes*, had just appeared; I read it on the plane to Tulane.¹³ To my good fortune, among others, Crumley, Joel Gunn, Darrell Posey, and Laura Rival (whose 1993 essay I incorporated

into my teaching) attended the conference. In one short time I was introduced to many of the people who were then transforming what, for me, had once been an unconvincing ecological anthropology.¹⁴ Although my biases in Anglo-French social anthropology continue, through these individuals I received new ways for thinking about the society/environment relationships I sought to investigate. Crumley's volume—its language of biomes, ecotones, and patches in particular—pervades this study.¹⁵ Balée's work and friendship became useful and critical for both surveying and analyzing the forests I have now explored.

Although specific directions I first learned from Crumley's volume are employed throughout this study, most significant for me was a reorientation of the scope of the inquiry. I discuss what I mean with respect to Gunn's chapter "Global Climate and Regional Biocultural Diversity" (Gunn 1994b; see also Gunn 1994a) because, as my data base and understanding of the specific ethnographic materials became richer, Gunn's questions became more suggestive.

Gunn attaches a hypothesis about the concrete, instrumental knowledge contained in a society's collective representations to how societies position themselves in time and space. This is a time and space as defined by various macro relations, such as, among others, regional geology and regional effects of the sun/earth orbital dynamics, the latter of which partly determine the amount of solar energy the earth regularly and irregularly receives. The operant theory here suggests "culture" is knowledge, and that that knowledge is constructed with respect to important environmental dynamics. This idea varies little from the Malinowskian understanding of "charter," meaning that distilled cultural constructs impart models for social action. Here, however, the concern is with human action on a landscape rather than social relations per se.

Appearing at a time when it could still be claimed that climate dynamics follow from orbital cycles too large to be effected by humans,¹⁶ and following a theory of solar variation found in the work of Reid Bryson, Gunn suggested that rituals, folklore, and myths might store, or "capture," information that would allow cultures to maintain climate-specific procedures across climate epochs. The relevant time periods here were inside the Holocene, in the last ten thousand years or more. The climate epochs that various scholars delimited were denoted by terms such as the Roman Climatic Optimum (ca. 300 BCE–300 CE), the Medieval Climatic Optimum (900–1300 BCE),¹⁷ and the Little Ice Age (ca. 1300–1900). Time, or the processes that occur in what we call time, becomes important here because it may be cyclical, accumulative, or destructive. Social systems sooner or later must configure themselves with respect to this variation, some of which they may create. At one point during the Tulane conference, Gunn

casually mentioned that most of the earth's soils and water have to be considered anthropogenic, i.e. created by human action, and not just recently, but for millennia. Although I was not wedded to a fixed nature/culture divide as anything more than a possible culturally significant contrast, Gunn's phrasing was startling and preparatory. The preparation was two-fold: first, it helped me consider Posey's work in the Amazon as a possible model for analysis;¹⁸ second, it helped me take more seriously what I was told in 1991—that by means of trees people were making their soils.

Crumley and Gunn were archaeologists, and it was partly in relation to their work that the initial comparison—Melanesia to East Asia—I conceived at the start of this work transformed from a typological to a time- (and space-) driven question. Yet I was not inspired by them alone. As I made my way home in 1991, I stopped in Auckland to meet an old friend, Geoffrey Irwin, and a student he was sending to the University of Virginia, Simon Bickler.¹⁹ Bickler fulfilled a plan Irwin and I discussed when we initially met during the first Kula Conference in Cambridge, England, in 1978. I was then fascinated by the megalithic ruins I saw on Muiuw, and I conveyed enough about them for Irwin to envision follow-up studies (see Damon 1979).²⁰ In our plan, Irwin would tutor a student in Pacific archaeology and then send him to the University of Virginia where he would be exposed to our two Melanesianists, Roy Wagner and me, as well as to the expertise of the university's new archaeology program. Although our research projects were not formally linked, Bickler and I both went to the region about the same time in 1995, and again in 1996. Immediately upon our arrival in Wabunun in 1995, we took a boat to the Budibud islands southeast of Muiuw; coincidentally this was our first exposure to Sipum's magnetism and magnanimity. He accompanied us to Budibud and, by his diving wits and fishing magic, kept us well fed. I introduced Bickler to villagers all over the island. We became good friends. My sense of Pacific archaeology has expanded over the past twenty years along with his, especially as he teamed with the elder Polynesianist, Roger Green (d. 2009), with whom we regularly met to discuss the similarities and differences throughout this "region," a space that contracts or expands depending upon what kind of perspective, temporal among others, one gives it.

An early result from Bickler's syntheses (Bickler 1997, 1998; Bickler and Turner 2002; Bickler and Ivuyo 2002) showed an epoch of monument building from perhaps before 900 CE to roughly 1350–1400. By the latter time he could argue for a new mortuary system (close to the system throughout Milne Bay evident at contact in the late nineteenth century) and, perhaps, the beginning of the Kula. Since pot production and exchange dynamics also changed about this time this, transformation almost certainly meant a new regional setting; this is why I wanted to see the

potshards on Panamout. This periodicity fits two of the temporal epochs to which Gunn oriented his work. In fact the divide between the Medieval Climatic Optimum and the Little Ice Age are critical centuries in Melanesia, Polynesia, and throughout Southeast Asia and perhaps the world.

Yet these facts alone were not all that served to expand my sense of the relevant spatial and temporal framework. Through my appearances at Australian National University I became increasingly alerted to James J. Fox's Austronesian project, first being drawn to Clifford Sather's work in Borneo (e.g. Sather 1993). Sather describes social systems in Borneo that, almost eerily, have feels to them reminiscent of the Kula region. By good fortune, Sather had learned things about tree symbolism in Borneo that played closely to the technical information I was learning. At one point I asked him how long the people he worked with paid attention to trees. He answered, "Four hundred years," a calculation made from the way people there organized tree knowledge, their method of tracking human generations. When experienced through the life cycle of forests, time takes on a new dimension.

However, I had much to learn before the ideas inscribed in this account played a concrete role in what I was about to investigate.

Practicalities (3): Confessions

This account is about the environmental research I conducted, centered on Muyuw, between 1991 and 2014. As it was intended at the time of its conception and as its goals shifted as I learned, its ambition was not designed to be about what was happening on the island during my time there. Nevertheless, a rough outline of the current situation is important to understand the island, for the last thirty years are probably epoch making.

Muyuw in particular and Milne Bay Province in general are at one of the extreme points of the modern world, and have been so since the late eighteenth century and probably throughout the last 2000 years if you consider the trading systems across the Pacific and Indian Oceans that gave birth to the West. Insofar as the modern world-system is concerned, what will happen on the island will largely be determined by what happens elsewhere in that world—so rising and falling gold prices, demand for various marine resources, timber, oil palm, and the ability of the centralizing state of Papua New Guinea to sink Western forms of education and wealth into the region's social fabric; some would add to this list Christian mission activity, whether externally or internally directed, and its ability to further inculcate its values. As I conclude this volume, it is unclear how these factors will affect this dot in contemporary geogra-

phies, but it is likely that the thirty-year interval between about 1980 and 2010 will amount to a great transformation. I did not research this but I watched and participated in it.

First, for almost all the time I have been on Muiuw, somebody has been surveying the island's mineral resources with the idea that they could pick up where the first mining phase, which ran from about 1894 to 1940, left off (see Nelson 1976). By my first return in 1982, the 1970s run-up in gold price sent some of Australia's larger firms to the island. Then the relative successes of mines on Misima, the Highlands of Papua New Guinea, and then Lihir put what the miners called Woodlark Island in the hands of smaller venture firms, though there was often a tie to larger companies and almost always a presumption that if deposits proved significant, a larger firm would move in. When I left the island in 1991, one such firm thought it was on the verge of an endeavor that might eventually lead to the removal of the Coral Sea.²¹ When I left the island in 1996, the first leg of my journey being on a gold-mining company's plane (Auridium Consolidated NL), the miners were pretty sure they had discovered enough gold to clear their expenses, though they thought they might have to ship the ore to the processing plants that remained from the then-closed Misima mine. These interests were bought and sold a number of times so that by 2005 a different set of people, still mostly Australian, were involved. These people—with a new name, BDI—had held a small interest in the Auridium project, but by this time, having succeeded in creating a diamond mine in Indonesia, they felt that with their geological expertise, they could do a better job than Auridium. I had lunch with the group's director, Lee Spencer, in Sydney in 2005. A fascinating and experienced man who knew and respected Tim Flannery's works,²² Spencer talked about what the company would do for the island, especially concerning education and health. I wondered what was keeping the price of gold high enough to make a place as difficult as Woodlark appealing to such people; the first obvious answer was just that the place was there, a high mountain to climb.²³ But Chris Gregory explained how development in India was driving up the price of gold used for bangles in its marriage system. Thus, Muiuw "development" appears to be driven partly by India's marriage system. Asia as a sink for Western-generated gold is, in fact, a familiar pattern.

Other patterns are as old or older. By 2009 virtually the same company and personnel had been moved around the checkerboard of international mining capital so often that it was neither easy nor interesting to follow the shifts. The company on the island was called Woodlark Mining Ltd.; it was owned by something called Kula Gold Ltd., which in turn was held by Pacific Roads Capital Management and Rand Merchant Bank Australia. Kula Gold Ltd listed itself on the Australian stock market in late 2010.

At one point the firm was a fully owned subsidiary of the South African firm, Rand Merchant; Pacific Roads Capital Management is a Sydney-based equity firm that finances mining exploration and expansion. Almost all of PRCM's website pages show pictures (presumably projects it finances) demonstrating rugged landscapes transformed into roads, open pit mines, or other massively altered vistas. These images are power displays. In 2012 I was told American (pension) money funded much of the activity.

This power displays itself on the island. When I questioned a set of the miners²⁴ about their future success, given the island's long history of frustrated hopes, they asked me to consider the capital and effort I could see with my own eyes compared to other attempts I had seen since the early 1970s. Almost the whole igneous center had been leased for mineral exploration, and virtually all of it had been or was being surveyed by teams of Muyuw youth. Wherever initial survey paths looked promising, bulldozers smashed through the jungle and rolling hills so that one of two large drilling machines could extract cores to map the area's mineral potential. At least one drill worked day and night. Each drill set consumed about ten 200-liter drums of diesel fuel over each twelve-hour period. This was not an incidental use of power. Sipum's youngest brother noted a scale change. He correctly told me that the first miners came to the island with picks and shovels; now they had these massive machines. In his account of Australasia, Tim Flannery (1994) hypothesized that Europeans came out of an environment conducive to the exercise and use of raw power because, as did North America, the landscape seemed so rich. By contrast, the flora and fauna—including human—that became adapted to Australasia had to learn how to make a lot out of a little, to husband meager resources by seeing how far they could be extended rather than how quickly they could be extracted. "European power" now throws the dice on these islands.

One of the subtle signs of change was on display the evening of June 26, 2009. The mining company moved its television set, usually located in its mess hall, outside to accommodate a hundred or more workers, their friends, and families so they could watch a State of Origins rugby game beamed from Australia. The many Muyuw people were no less passionate about the game than were the attending Australians.

The success of this transformation is far from determined. The same capital jump the new mining exploration has instigated first appeared in the transition from the Neates' Kulumadau Enterprises to Milne Bay Logging, a company that started cutting and shipping out raw timber in 1982 (see Damon 1991, 1997). Ten thousand logs were cut and loaded for mostly East Asian markets within the first six months of operation. At that time, the company owners figured they had twenty years of cutting fifty

thousand cubic meters per year. They were a relatively large operation for the country. By my return in 1991, owner Rolly Christensen had married into the island and cut roads all around it. Yet his operation had shrunk in relative terms because of the arrival of large Malaysian companies elsewhere in Papua New Guinea, and he realized that for the long term he needed to “go green.” There was not as much wood as he thought, with large swaths of the island producing only five to fifteen cubic meters of wood per hectare. He told me that halving his output meant dropping to roughly twenty thousand cubic meters per year and creating the capacity to cut finished lumber for more local markets, with another five to eight thousand cubic meters. It turned out that much of the wood sized above the minimum standards—fifty centimeters in diameter at breast height—was in fact diseased; he was learning that the place was cursed. By 1996 he was a broken man with all but the occasional cutting of ebony prohibited, he thinks, by people he refused to bribe. He was effectively gone from the island by 2000, having moved back to Australia, though as of 2009 he occasionally returned to do work for the mining company and to plant yam gardens. Realizing how rapidly Christensen exhausted his machinery and now witnessing his failure, Muyuw elders on the island by 2005 or so began shifting their evaluations of Christensen compared to his predecessor, Don Neate (see Damon 1997). However, he left behind a relatively large pool of men who had experience with heavy machinery. Hence, by 2009 mining people were thankful to find what they considered a skilled and teachable labor force.

Muyuw elders were not surprised that the timber company did not work out. And while some middle-aged men living in the central part of the island who were firmly committed to “development” said they would now try mining, others recounted a myth from the early gold-mining days about a spirit who kept hiding the gold from whoever sought to take it away: it could be found but not removed. In a version of this story I heard in 2002, the narrative was tied to the 1891 hanging of a Muyuw man at the dawn of the colonial epoch. The hanging was a real event turned into a founding myth of the contemporary social order. It is also bound with original creation stories that account for the island being “cursed” by the Creator. Although permission was granted to go ahead with mining, the fall in gold prices by 2015 led to a decision to put the mine to sleep.*

One is tempted to take the curse seriously. By the latter half of the first decade of the twenty-first century, the island experienced the second rise and relative collapse of marine resource extraction since the 1980s. In the early 1980s the expanding Milne Bay Logging company attracted a flux of Trobriand people, mostly but not exclusively men, who worked in logging or got involved in the *bêche-de-mer* (Trepang) fisheries. But the

reefs were quickly exhausted. By the latter half of the 1990s that activity started up again as East Asian wealth increased the number of people who could afford sea cucumber soup and transformed the means of reef exploitation. Traditional outrigger craft were replaced by fiberglass dinghies and twenty-five- to fifty-five-horsepower Yamaha outboard motors, which, of course, consume great amounts of petrol. Politicians running for the national Parliament distributed dinghy or outboard motor sets to influence voters. Young men could dive into reefs named but never before exploited. Unlike the reefs nearby, sharks were not used to people here—hence new risks for both sharks and men. But the new reefs too were soon all but exhausted, so much so that the Papua New Guinea Fisheries Department was forced to create a *bêche-de-mer* season.

This action brings me to the last transformative process outlined here, the long-term but visible attempts to make over the existing cultural template. At one level, the point of transition here follows from the fact that the person now making decisions about Milne Bay Province's marine fisheries is a middle-aged man born in Wabunun slightly before I arrived there in 1973, Leban Gisawa. He was a very small child when I was first visited the island. While his father was one of my more important informants, Leban was not in my vision, though some of his elder siblings were. He has a BS from the University of Papua New Guinea and was an experienced researcher on matters of Pacific fishing before he became an administrator; in addition to supplying me with fish and turtle identifications, we have engaged in a discussion on the degree to which traditional human activity might create nutrients for the tuna-rich Solomon Sea to Muyuw's north. He is like a number of other young men from the island who work in the national or provincial governments in Port Moresby or Alotau, some of whom have advanced degrees from Australian National University or other Australian universities, and some are lawyers and doctors. These people represent a contradictory but very thoughtful future, for both the country and the island. While thoroughly ensconced in Papua New Guinea's modern sector, they do not wish to see the base of that life—resource extraction—make all of the inroads that the present demands.²⁵ This contradiction is apparent on the island as well. One of my informants who provided details on the sailing craft that came to dominate my last decade on the island is an elementary school teacher. While he takes great pride in these boats and his knowledge of them, he was also pleased that one of his daughters was away in an Alotau high school where, he hoped, she was headed for computer programming.

If these young people are now a leading edge, they reflect, in combination with demographic expansion, on-going processes being led by a combination of the school system and the Christian church. Demographics

first. When I was first on the island there were about two thousand people in all on what is considered “Woodlark Island” for national demographic purposes (all the islands between Budibud in the southeast and Iwa directly in the center of the northern side of the Kula Ring). Now there are closer to six thousand. Wabunun had slightly over one hundred people in 1975, counting a few from an apparent split between brothers just east of the main setting. As conceived by contemporary reckoning this place, called Topwelekel, is close to Wabunun’s origin point. That point is a tree and associated relics that are never to be seen lest one run amok, matters taken up in Part II. In 2014 Wabunun looks quite similar to the way it did in 1973–75. However, through other splits between brothers or witchcraft accusations, three new daughter villages transform “Wabunun’s” population to over 500. Other early 1970s villages have had similar transformations. In Wabunun’s case the original split to the east, Topwelekel, has grown into a well-formed double-rowed village like the Wabunun I described as the island’s standard. On another beautiful cove a hundred or so meters down the shoreline to the west another large assortment of houses has metamorphosed from a couple of houses isolated by witchcraft accusations into a full-blown community. It will be interesting to see if the bifurcating fractal forms evident elsewhere in the culture appear here as it expands over decades. Above the five- to ten-meter rise right behind and to the north of the main village is another assortment of houses. The logger Rolly Christiansen bulldozed the space between my departure in 1995 and arrival in 1996. Originally cleared to house a large United Church meeting in mid-1996, the place was deemed a good one for expansion, coming between the old village and a plot of land designated for a school, including a large field occupied every Saturday by soccer games and individuals marketing small items, baked rolls, sweet bananas, and various marine resources. The house spaces were set up to go in north-south rows, paralleling the directionality of a new church centered at the southern end of the desired village space. Both the new layout of the houses and the church building were partly conceived to go against Muyuw’s traditional ordering, thereby locating a new order on the land. So far the pattern has not quite been accepted; the new alignments both to the east and west of the village garner more people than this location to the north.²⁶

Wabunun’s church was designed to be the central United Church building on the island, and a seminary/training center remains associated with it. However, while throughout the 1970s many people across southeastern Muyuw trekked to the village every Sunday for services, as well as late-afternoon kula talk, now, among other things, the increased size of so many other areas has allowed them to build and sustain their own church buildings. Wabunun no longer functions as the church center it once was.

Beyond demographics, another subtle change is coming about. Whereas in the past the 'smartest' young men were drawn into the church leaders, now that is not the case.²⁷

But the United Church is no longer the only significant Christian voice on the island. A minuscule Catholic presence remains and is better known now that Italian interests are pushing sainthood for one of their brethren killed on the island in the 1850s. But the real new change was a vocal and active presence of the country's Christian Rival Church (CRC).

Although this is not a development I researched, and it probably has roots into the 1980s timber activity, the CRC rapidly gained momentum near the old and new mining and timber center called Kulumadau shortly after my 1991 visit to the island. I was told that by 1993–94 major splits developed all across the island. Sides were taken pitting the CRC against the United Church. Among other things, the CRC prohibited all Muiyuw customs, including betel nut chewing, smoking, mortuary rituals, and the kula. Adherents of the United Church defended all of these practices. The situation was extremely tense in 1994. Yet by my arrival in June 1995 things had settled to a point that people in the southeast no longer felt threatened. They did tell me, though, that all of the people in the central part of the island, what is called Wamwan, had either joined the CRC or followed its practices and so refrained from the region's major traditional practices. This is an exaggerated truth, at least insofar as the kula is concerned. Yet there are many people in that region, often employed by mining interests, who do not participate in the practices I have learned and described. In 1995 the owner of Milne Bay Logging told me that he felt caught between the two movements. He had friends, employees, and affines in both groups. He tried to support each church. Few people in southeastern Muiyuw seemed caught up in the conflict, but my elder informants in 1995 and 1996 rehearsed with me, defensively in my estimation, the virtues of the kula. They were speaking against injunctions coming from the CRC. I had the feeling that had I begun this research in 1994 rather than a year later I might have felt pulled into exploring the situation ... and therefore engaged in a different literature²⁸ over the last fifteen years than the one that has captured my attention. And had I done this, without question I would be creating an account closer to the contemporary situation than is the intent of this book. On the one hand, even though it might be said that the United Church is retaining a dominant position on the island in spite of the CRC onslaught, there is a more evangelical cast to the religious tenor most people now carry compared to what I experienced in the 1970s.²⁹ On the other hand, regardless of their differences, Christian organizations work to undermine what was Muiyuw culture. And they all

have succeeded, in part, to make the present Muyuw dismiss, denigrate, and to some extent hate what they once were and are (see Sahlins 1992).

It is almost a universal belief across the island that the elders, some still alive, most dead, were stupid and simple, and until the present order—the aforementioned hanging fits into this conceptualization—there were no villages, gardens, boats, kula, or anything. Men ran around in the forest, leaving their wives and children, should the latter cry, for fear of being speared by other Muyuw men. More than once when we came across potshards at the foot of some giant tree, whether doing my tree surveys or following up Bickler’s attempts to find old village sites, people would point to the shards as signs of their former existence living in the forest. And especially as I began to appreciate and understand the complexity purposefully built into the largest two classes of outrigger canoes, my instructors themselves would become surprised, and in a way delighted, by what I was learning. The experience also moved them from the “Christian” consciousness that dominates their present. Learning those other levels is what this study is about.

* * *

When I first decided to conduct this environmental research, I also decided I would not worry about the thesis I put forward in my book *From Muyuw to the Trobriands*, that there was a set of transformations that ran the length of the northern side of the Kula Ring. However, when I was told that the practices with respect to the gwed tree varied across the line of islands, I knew I had to pursue that part of the indigenous understanding. So I attempted to organize this research as a cooperative project in which I would handle the eastern side of the situation and Linus Digim’Rina would handle the western portion. Digim’Rina was then a young anthropologist from the Trobriand Islands finishing his PhD at Australian National University under Michael Young’s tutelage. Although the research never got funded, Digim’Rina helped me start and we have maintained close contact as the project has matured. Many ideas presented here were first sketched in lectures he set up for me through his Department of Anthropology and Sociology at the University of Papua New Guinea.

Data acquisition for this work started in 1995 and remained driven by my initial methodologies, survey procedures. In the abstract there were two tiers to these practices. First, my University of Virginia environmental science advisers convinced me that analyzing carbon and nitrogen isotopes would likely tell us much of what we needed to know.³⁰ So my responsibility was to gather soil specimens and bits of tree and plant material across a wide spectrum of places. Dried by the sun and a storm lantern I kept in my Wabunun house, these were to be analyzed by a mass

spectrometer during the fall of 1995 so that we could get an approximate idea of the situation for my return in January of 1996, at which point, the plan went, I could pursue our results in greater detail. I expected to have provisional results from the scientific point of view by then, as well as a much surer grasp of indigenous technical knowledge.

The second procedure concerned learning about trees. In general I followed two techniques: I conducted surveys of areas more or less formally determined—a hectare, for example; and I asked people what tree was used for what tool, boat, or house part and where the tree came from. Both of these methods were modified as I learned more over the course of the research. Since 1995 I have collected a total of 329 voucher specimens,³¹ though some of these are repeats. Copies of these specimens have been deposited at the Papua New Guinea herbarium at Lae, some at the University of Papua New Guinea's herbarium; a few have been left at Canberra, Singapore, Sydney, and most at Harvard.

I have now walked through, visually examined, collected, and talked about plants from many of the regions across the northern side of the Kula Ring and down to Koyagaugau and Ole in the southeastern corner of the area. My examination of the Trobriands is restricted to Linus Digim'Rina's home village, Okaibom, but I have walked around all of Kitava, Iwa, through Gawa, and around the western end of Nasikwabw (the rest of the island is impenetrable) and the central populated islands in the Budi-bud arc. Muyuw, including Mwadau Island forming its western limit, is about sixty-five kilometers long and thirty kilometers wide. Of this area, socially and botanically, I know the southeast the best, but I have walked and studied along the island's northeastern end, surveyed a hectare close to one of the lakes in its southwestern quadrant, and walked and studied the Mwadau sector. I collected plants from the Sulog area three times, but there is much that I do not know about this igneous center where the flora differs from the limestone shelves found elsewhere.

With an exception or two I always walked and collected plants with one or more of the Muyuw people. I deal with the variations in what they know in chapter 2. Although some people found what I was doing insipid, others were anxious to tell me more than I could understand; this frequently occurred with Sipum. On our walks he'd often pick something out and tell me what it would cure. One time when we were walking through an early fallow garden area, he hacked the aerial root off a *Pandanus* tree, stripped off its outer covering, and told me the sap from the phallic-looking object cured venereal diseases. I made casual notes of these kinds of reports but decided ahead of time that I'd leave medicinal questions for somebody else.

But another episode with Sipum a day or so before I left the island in 1996—presuming it would be my last time—forced the realization of

another limitation I imposed on myself. We were walking along a beach heading back to Wabunun when Sipum started expounding about the flora close to the water's edge, noting how interesting it was because it was in this liminal location. He practically gave me a lecture out of the writings of Tom Beidelman, Mary Douglas, Edmund Leach, and Victor Turner. The problem was that this was the anthropology I already knew; I had practically made a decision to ignore anything that led me to repeat that kind of analysis over again. That plan partly broke down but has remained an aspect of my intent to explore new paradigms, not prove the utility of older ones. The experience with Sipum, however, stands as a cautionary light as this project comes to completion yet impels another.

I shall end with another expressive episode near the end of my 1995 research. I had spent a long day of walking about the gardens and forests near Kaulay in north central Muyuw with Vekway, my chief contact and host during my earlier times in Kaulay. We hoped to resume our relationship. He remained an ambitious gardener and a good, if impatient, informant. Although he gave away all that he grew, he was especially expert about yams—in fact, he argued emphatically against something one of my best Wabunun informants had told me, that yams grew only at night. Vekway insisted they grew at both times, though water shortage during the day made it seem as if they didn't. However, time had not treated him well. He was probably arthritic and walked with a limp. He found my traipsing difficult and boring. In any case, on this particular day I was still struggling with initial overviews of everything botanical. Without exactly knowing how or why, I realized that human/forest relations in Kaulay were different than in southeastern Muyuw. As we sat down to rest, I looked out over a garden to see a mass of older trees just beyond it. A vista providing an exciting challenge beckoned in that tree line. Vekway, however, was rummaging around in the weeds where we were sitting, parting this one and that one with his fingers. He then bent over, looked down, and pulled up a plant about the size of his fingernail.

"This is a good one," he said. "It is for women."

I did not yet know those big trees, yet here was Vekway telling me I had to know things almost too small to see—making me realize that there were limits to my research.

Notes

* Just as this book is going to press I have received a message from Kevin Neate (September 3, 2016) reporting that Kula Gold has been taken over by GeoPacific, a company that intends to expand exploration activities beginning in December 2016.

1. Alemida 1990, Petitot 2009, and Turner 1990 reorient these speculations.
2. He mentioned Mekong River boats with sewn hulls, potentially significant given the Austronesian expansion out of the south and southeast China coast.
3. Throughout this region I am known as a man from Wabunun. These people had provided a lunch for my family on our voyage to Muyuw in 1998. Mwalubweyay married a Wabunun woman in 1973 shortly after my wife and I arrived and he became thoroughly engaged in the village as kula relationships and as his new wife's children matured. Although I compensated the Koyagaugau people, I participated in expected hospitality relations.
4. Although Gideon has spent years in Muyuw and was well-known in Wabunun, those people knew him as Talopet, from the English "interpreter," because of his language skills.
5. Bwanabwana categorize and name wind differently than do Muyuw.
6. Calculated by Simon H. Bickler. Bickler converted standard longitude and latitude positions into decimal form and calculated distances and speed. The original data for Table 1.1 can be found in the online accompaniment to this work, Chapter 1, Table 1.1, *The Voyage of 2002*. Subsequent references to positions and speed refer to my original recordings.
7. In Muyuw this would be *nuwa-* (+an obligatory possessive suffix for "inside") *veyo* (fly).
8. A spreading zone, the Woodlark rift, exists between the northern and southern halves of the Kula Ring, making the area geologically interesting (see Abers 2001 and Abers et al. 2002). Suzanne Baldwin from Syracuse University directs significant National Science Foundation-sponsored research on the area now (see Baldwin et al. 2012). Recent mining research on the island contravenes the prevailing geological model, which is one of continuous, gradual rise. Lee Spencer, a director in the current mining endeavors, believes catastrophic alteration defines it.
9. See also Schulte Nordholt (1996). My ideas about Bali and the pertinence of focusing on water were transformed by the predissertation research of a University of Virginia student, now Dr. Laura Bellows.
10. See Wheatley's 1983 account of symbolism and political forms of Southeast Asian regional systems.
11. Shugart had already had a significant interest in anthropology and uses modeling procedures identical Lansing's.
12. See <http://www.umsl.edu/~biology/faculty/stevens.html>.
13. Kirch (2000) is an archaeological response to this volume for the Remote Pacific.
14. By 2000 a new ecological anthropology has emerged that is far different than what it was in the 1960s and 1970s; however, Kurin (1983), drawing on symbolic constructs I was leaving aside, anticipates the new standard.
15. "Concepts in Historical Ecology" (1994) was my introduction to Winterhaldler's work and some of the parallels between ecological and anthropological thought. The paper continues to stimulate even though my mentor in things ecological, Hank Shugart, finds the piece lacking, in history among other things.

16. By the summer of 1994, global warming was becoming a factor that a few experts discussed. Conversation outpaced understanding (it was suggested I buy land around my home, Charlottesville, Virginia, because it would soon become beachfront property); Michael Mann's hockey stick of recent global warming was four years into the future. Reid Bryson's work was probably the most interesting investigation of climate and culture. In 2001 I team-taught a course on climate and culture with Michael Mann and Bruce Hayden, a senior climatologist who had studied with Bryson. Generational knowledge conflicts between the two were palpable. The University of Virginia's collection of environmental scientists was shortly to produce Ruddiman's important thesis that humans started affecting the earth's climate six to eight thousand years ago. Tim Flannery's 1994 suggestion that Australian aborigines transformed Australia's climate thousands of years ago was a distant outlier on what then seemed possible. See Ruddiman 2003, 2010; Flannery 1994.
17. Or Medieval Climatic Anomaly—see Mann et al. 2009.
18. I gradually became familiar with the posthumous 2002 collection of essays (Posey and Plenderleith) and incorporated some of them into my teaching.
19. Bickler did computer programming that supported Irwin's important and pathbreaking study of sailing and discovery in Melanesia and Polynesia (see Irwin et al. 1990 and Irwin 1992).
20. In 1978 the Lapita Project was just underway, so Melanesian prehistory known today was barely conceptualized. Irwin guessed that Milne Bay Province was a likely route east by the makers of Lapita pottery some three to four thousand years ago. Investigations have not sustained that deduction, but recent work raises related possibilities (see Tochilin et al. 2012).
21. First the island's igneous core would be removed, then its sixty-five-kilometer-long coral shelf, then the Coral Sea, because gold was everywhere. Although the geology behind the plan was logical, the model is a millenarian fantasy. I've discussed it with André Iteanu—gold is the encompassing value of our times.
22. Through 2009 all of the Australian miners I met knew who Flannery was, yet they paid no attention to global warming and did not care to follow Flannery's move to that issue.
23. I discussed Alfred Gell's use of "*anticipatory joy*" (1992: 184. Italics in original) with an Auridiam official. He reported that most mining CEOs are well off; what fascinates them is the challenge, not the money. This challenge is the encompassed value of these forms, thus forming one of the dualisms of our times.
24. My son and I were invited to a dinner with many of Woodlark's executives at their headquarters, Bomagai, on August 1, 2009. Like virtually all of the Europeans I've met on the island, these are extremely interesting, interested, thoughtful, and experienced people. Its CFO, John Wadkin, was hired because he had successfully capitalized the Highlanders who "owned" the land on which the extraordinarily successful Porgera Gold Mine was located. Ideally, he would work the same magic for Muyuw. Their operation was not con-

- ceived to be of the cut-and-run variety; they desired plans for the long term, their own future and what they understood to be that of the Islanders.
25. During the first decade of the twenty-first century they fought off repeated attempts to turn the island into an oil palm plantation. I participated in these efforts and helped forge ties to other persons—Tim Flannery, Christopher Norris (a member of a team from Oxford that studied the island's endemic cuscus in the 1980s), Glen Barry from Ecological Internet, Jeremy Hance from MongaBay.com and others. If a majority of people on and off the island sought to prohibit this activity, there was a split on and off the island. I have friends and close associates on each side of the divide.
 26. The elders who did much to fund the new church had almost died out before it was realized with considerable ceremony in 1996. Since my original arrival on the island I have maintained a reserved and unsympathetic relationship to the church. When I explained that they could have maintained an east/west orientation and not only preserved Muyu's fundamental axis but the axis of many Christian churches throughout the world, I received an unsympathetic scowl.
 27. During my earliest fieldwork the brilliant Kula elder Molotaw worried about the church's ability to garner the region's brains. He thought they were needed and put to better use in the kula where they would achieve responsibilities for the *whole*. People in Wabunun alerted me to the intelligence shift by remarking how people now advancing in the church had not excelled at school.
 28. Joel Robbins's work centers around this literature. See Robbins 2004, 2009 (and Damon 2009).
 29. The effort lodged against Sipum's wife in August 2009 is part of this new stance to the world.
 30. None of these people were experienced in tropical soils; one of their hopes was that they would learn from what I discovered. I received advice about gathering soils from experts at Australian National University, which was countermanded, correctly, by an experienced soil scientist with much tropical experience who was based in the University of Hawaii; this scientist's findings were later confirmed through Robin Hide's friendly commentary whenever I visited Canberra. Hide's contribution to this work is enormous.
 31. Throughout this volume I specify scientific identifications with respect to the voucher specimens I collected. Damon 181 refers to the one hundred eighty-first specimen in the collections I made and deposited in various herbaria.