

FURTHER NOTES ON WOODLARK MEGALITHS AND TRENCHES

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Based on two years of social anthropological research I recently described and interpreted some megalithic ruins, and trenches apparently associated with the ruins, on Woodlark Island in Milne Bay Province, Papua New Guinea (Damon 1979). Much of that paper tried to demonstrate relationships between the ruins and trenches and present Woodlark culture. In a recent return to Woodlark I re-examined most of the sites and in this paper I indicate something of what I have newly learned. The clear implication of this information is that once there was some kind of complex public works system on the island, a system that needs extensive investigation by someone whose archaeological competence extends beyond my own.

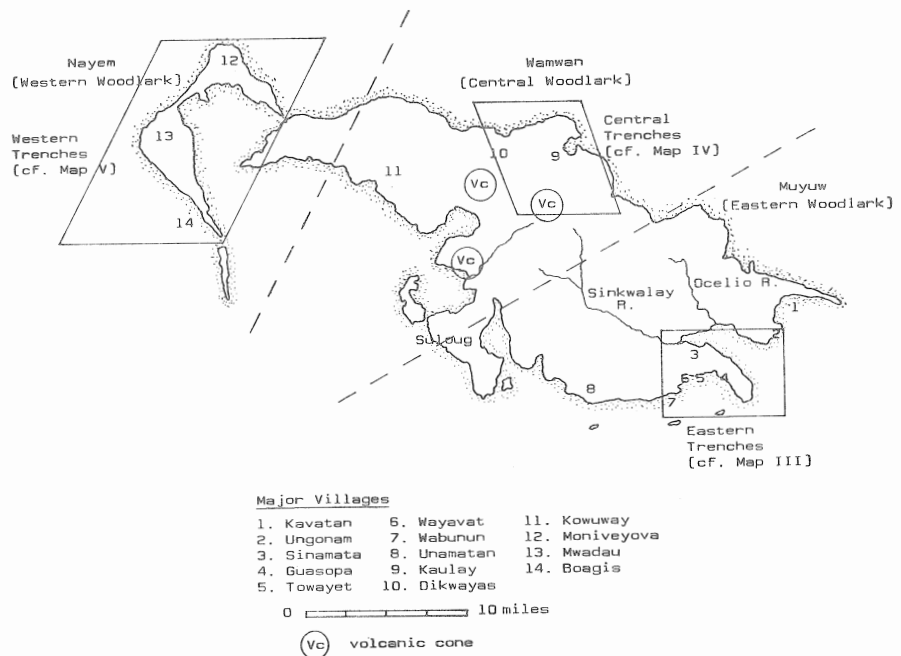
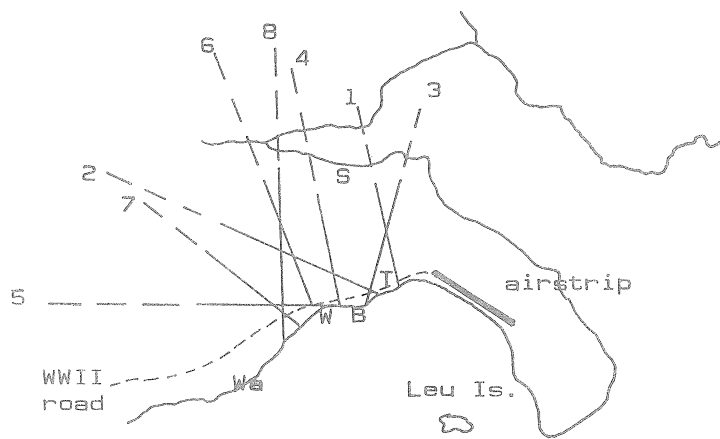


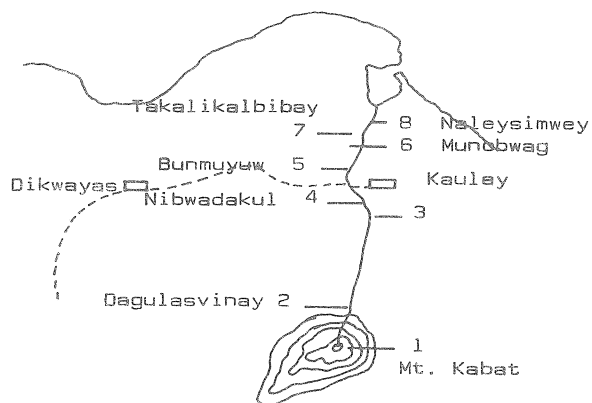
Figure 1. MUYUW (Woodlark Island).



Villages	Trench bearings
T — Towayet	1 349°
S — Sinamat	2 298°
B — Bomasiu	3 14°
W — Wayavat	4 348°
Wa — Wabunun	5 269°
	6 344°
	7 309°
	8 0° (est.)

All compass readings account for 6° magnetic declination.

Figure 2. Eastern Trenches.



0 1 2 3 4 miles

Figure 3. Central Trench and Megaliths.

There are three sections to the paper. In the first I make corrections and additions to my previous descriptions of the megaliths. In the second I add to the discussion of the trenches. Some of this counters my previous descriptions, since the new information tends to support a hypothesis that the trenches are remnants of an irrigation rather than a solar observation system. In the third and final section I give some ethnohistorical information and I hypothesize a shift from some sort of intensive system of agriculture to the extensive system that now dominates the island. The logic of this hypothetical shift is consistent with some changes brought about by Woodlark's colonial experience (see Damon 1983).

All social facts about the trenches and megaliths reported in my earlier paper were reproduced again during my most recent trip, often with new informants. I do not repeat these here. Maps II, III and IV of my 1979 article are here reproduced unchanged as Figs 1-3 (see Acknowledgements).

#### NEW OBSERVATIONS ON MEGALITHS MADE IN 1982 (Figs 1-3)

According to compass readings I made of each of the two main megaliths, Munobwag and Bunmuyuw (Damon 1979: Figs 1 and 2), two sides of each of these structures come close to a line with bearings of  $113^{\circ}$ - $293^{\circ}$  (TN). This bearing connects a December solstice sunrise with a June solstice sunset. I suggested in 1979 that this may be significant because most important Woodlark spatial models - villages, village and garden dwellings, and garden arrangements - are constructed with reference to the sun. I suggested that there might be, therefore, interesting relationships between the qualitative layout of the megaliths and qualitative aspects of Woodlark culture. I then went on to point out possible correspondences between quantitative aspects of the gardens, and the megaliths (1979:223-224). However, these only occurred to me after I left the island in 1975 so I was not able to ask any informants about them until 1982, when informants agreed to the inferences. However, given the quick nature of their responses I do not take these as major support for the hypothesis.

Based on the paths by which I was led to each of the megaliths in 1974 and 1975 I estimated then that Munobwag was about five hundred metres north-east of Bunmuyuw, and thus the two were too far apart to be used for solar, lunar, or perhaps stellar sightings. In fact Munobwag is about 200 metres north-west of Bunmuyuw on a bearing which comes close to the  $113^{\circ}$ - $293^{\circ}$  bearing in each structure.

About 1980 Kaulay people discovered a new set of stone structures several hundred meters north of the village and east of Bunmuyuw and Munobwag. I briefly examined these in 1982. They may be about the size of Munobwag, and some bearings might replicate the

113/293° figures evident in the other two main sets. However, the structures were in too poor a state to be quickly surveyed by me. I also examined another set of structures recently uncovered near Kowuway village (Fig. 1, no. 11). Although these were constructed of the same kind of compressed coral found in parts of Bunmuyuw, they were much smaller than any of the Kaulay sites. Myths Kowuway elders tell about these sites may relate to pre-colonial circumstances of Kowuway's economic base. Reports of Kaulay-like structures on peaks of several Suloug mountains were found not to be true, although several pieces of erected igneous rock were seen.

#### THE WOODLARK TRENCHES

In my earlier article I partially described ten trenches, eight in south-eastern Woodlark (Fig. 2), and one each in central (Fig. 3) and western Woodlark. During my return to the island in 1982 I rechecked all of the calendrical hypotheses presented in my 1979 article, but much of the time I devoted to these trenches concerned examining them to see if they might have once been irrigation ditches. Unfortunately I could not return to Western Woodlark.

I tried to walk the complete length of three of the south-eastern trenches. Based on my earlier report (1979:202) these are trench 1, another newly-discovered one near trench 4, and trench 8. The latter runs on a bearing between about 280° and 330° for a kilometre or more, and commences about 200 metres inland, where it is very distinct. In some places it is five metres wide; its sides are marked by many rocks and the mounds on either side are upwards of a metre high. Unlike all the other south-eastern trenches it is in garden land that has not been used in many years.

Trench 1 seems to be the longest of the three I examined. It may be found about 100 metres inland at Towayet village, and it then runs for two or three kilometres to the southern base of a hill called Sinamat. At this northern end of the trench there is a concavity called Obwanig, about 40 metres in diameter and about one metre deep. In its centre is another shallow concavity about ten metres in diameter. My informant found my idea that Obwanig might have been a reservoir for water, and the trench an irrigation ditch, an interesting idea. He, like most Woodlark people, thinks the trenches are extremely important. But exactly why they are important he, as others, find perplexing.

The concavity Obwanig seemed to lend some support to the idea that the trenches were irrigation ditches. So with another informant in August 1982 I began walking up trench 8. Although it came to an end after a kilometre or so its northern end was also a kind of concavity which ranged from five to ten metres wide and

about 100 metres long. It is bounded by what appears to be natural outcroppings of porous coral, more than a metre high in some places.

After careful examination of both trench 8 and its northern end I thought the evidence for an old irrigation system of some kind was fairly strong, but I wanted to examine one more eastern trench. I was shown one, by an elder from Wayavat village, which had about the same dimensions as number 8. It was a kilometre or more in length, often more than a metre wide, and frequently upwards of a metre deep. Its northern end also seemed to be defined by a concavity, but one much smaller than either Obwanig at trench 1 or the concavity of trench 8. However, in its centre there is a hole about a metre in diameter, just less than a metre deep, which may have been a well.<sup>1</sup>

My more recent examination of the south-eastern trenches thus exposed material not seen before, and the same thing happened when I returned to the central area.<sup>2</sup> In both 1974-1975 and 1982, Kaulay informants spoke of one central trench running from Kaulay lagoon in the north to Mt Kabat six or so kilometres to the south. But I found the real situation more complex. This complexity started to come into focus when I found two trenches rising from the south-east and north-east corners of Kaulay lagoon. Each can easily be followed for about 300 metres; they are not connected to each other. Another ditch exists just south-east of the Bunmuyuw megalith and can be easily followed to within fifty metres of it. In one place it is nine metres from crest to crest. About 1500 metres east of Kaulay another may be found and followed for several hundred metres on a north-east by south-west bearing. About 1500 metres west of Kaulay there is yet another which runs on a south-east by north-west bearing. If these last two maintain their southern bearings as I measured them then they would lead to or just south of a place called Kums.

Kums is Kaulay's water source. It is a sinkhole about 100 metres in diameter at the top, 10 at the bottom, and some 10-20 metres deep. Even in the most severe drought it does not dry up. A couple of hundred metres behind Kums three more sinkholes exist, plus several shallower concavities which, conceivably, could be man-made. Two of the three sinkholes are used as water sources when people garden by them, but both obtain water from simple ground seepage so they dry up easily. Kums, on the contrary, is fed by an underground stream. In short, if the Kaulay trenches are remains of an old irrigation system then the problem of where the water came from might be solved by these sinkholes.

In my 1979 article, in addition to describing the large rectangular-shaped ruins of Munobwag and Bunmuyuw, I noted six other named or unnamed rocks which were supposedly associated with the central trench. These are all igneous rocks, apparently from Mt

Kabat. In 1982 I saw an additional ten or so pieces of igneous rock, many of which have dimensions similar to those I earlier described. Most pieces seemed to be roughly shaped into rectangular or triangular blocks upwards of a metre in length. One stands at the apparent southern end of the trench rising from the south-eastern corner of the lagoon. One other may be found in the trench south-east of Bunmuyuw. Another larger piece is in the trench north-west of Munobwag. There are not just two between Kaulay and Kums as I originally reported (Fig. 3, nos 3 and 4), but many. Behind Kums towards the other sinkholes several may be found in recently cut gardens. And at the bottom of Kums another large piece rests beneath several cubic metres of compressed coral rock.

Therefore, I no longer have confidence that I know the limits of the public works system that once existed in the Kaulay area. But it may be suggested that, given the megalithic ruins, the apparent complex system of trenches, and the numerous pieces of igneous rock, what was there was big. Kaulay people themselves do not have a systematic understanding of what lies about them, but I think a careful and patient person could learn more from them than I could in a few weeks in 1974-1975 and a few days in 1982. The Kaulay region needs to be given a thorough archaeological survey.

One final bit of information seems consistent with the hypothesis that these trenches were once irrigation ditches, and this is the name Woodlark people employ for them, usually delikil in eastern, and dakalikil in central and western Woodlark. Kil is the common element in both terms. This could be related to three words, or meanings. The first comes from the word kelkil, which refers to a bird Woodlark people think flies to their island, from the Trobriands, about March every year. Its arrival announces the yam harvest, which may begin about March, but does not become earnest until June or July. The harvesting is done with a stick called kil, and when used as a verb the same word describes the action of harvesting yams. This is the second meaning of the term. The third, now unrelated to the first two, is also a verb, and it means to dip water out of a well. The Woodlark language expresses continuous action by duplicating all or part of the verb, and so to dip water continuously from a well is kilikil, or sometimes kelikil. In this form the term harkens back to the name for the trenches, delikil or dakalikil, and is not inconsistent with an interpretation of the trenches as irrigation ditches. I pointed this out to informants, and some of them recognized the relationship.

#### DISCUSSION

I am interested in this material for what it can tell us about the past and present social system in which Woodlark culture is embedded. The first issue I address is the possibility of a social hierarchy in Woodlark culture. Because Woodlark symbolism is so radically different from the concentric and hierarchical

principles easily observed in Trobriand culture, and because virtually no hierarchy is observable on the island, this is not an issue I took very seriously until just recently. About two years ago I deduced the possibility of hierarchy by comparing the consequences of certain kinds of exchanges. These exchanges occur between a number of different kinds of social units, the details of which need not be adduced here. But they all involve exchanging food, usually vegetable food, for some kind of craft product. Considered just as exchanges their manner seems to involve equivalence only. When one attends to how the exchanged things are used, hierarchy emerges. Domination in Woodlark culture is most often expressed by A being able to feed B, and controlling B because of that. In the food-for-craft-item exchange A gives B food and controls him thereby, and B's return of craft products reproduces the conditions whereby A dominates. This model is derived from present Woodlark culture, and when I applied it to what I had first learned in 1973-1975 the villages of Dikwayas and Kaulay in central Woodlark emerged as top-ranked. When I returned to Woodlark in 1982 I explored the model's implications with various informants. I now turn to the resulting ethnohistory.

Dikwayas and Kaulay villages each sit just south of the only two protected bays on the northern side of the island. Both are, therefore, well suited to be centres in an inter-island communication system. And, given that Kaulay's lagoon is better suited as a harbour for small sailing craft than Dikwayas's Waspimat Bay, it might be understandable that Kaulay rather than Dikwayas became a major centre. Although a few natural features of Dikwayas's immediate environment receive special or ritual-like elaboration, there is so far no evidence of anything like the megaliths, igneous rocks, or trenches around Kaulay. However, both Dikwayas and Kaulay elders told me that each village's present location follows 19th century European communication patterns, not indigenous principles. Until Europeans had the dangerous southern side of the island mapped, most vessels approached the island on the safer northern coast. Although informants thought that both the Dikwayas and Kaulay landings were used by Woodlark people before the arrival of Europeans, the previous incarnations of these two villages were towards the centre, rather than ends, of the six kilometre path that now connects them. Only with the arrival of Europeans did they move to their present areas, although 'Kaulay' first splintered - to avoid working for Europeans - before it was gathered just south of the lagoon.

The best known of these old villages is Kaulay's precursor, called Kuwmwasin. If informants' statements are correct this might have been a kilometre in length, with its western end near a hill, and its eastern end near the western-most trench some 1500 metres west of today's Kaulay. By today's standards this is an extremely large village. Seligmann (1910:675) refers to a village with 80 houses, probably Dikwayas, seen in the early 1890s. I did not

believe that figure until I heard of Kuwmwasin in 1982. Informants also find Kuwmwasin's size remarkable. Its name is an indication of this. Mwasin may be translated by "shame"; ku- is a second-person locative and -w is a distance marker meaning something like "a short distance away from both the speaker and hearer". The sense they give to the village's name is "You are ashamed when you arrive there because it is so big". I do not know exactly when this village collapsed, but from informants' statements 1850 is a reasonable guess.

Kuwmwasin was the first social fact I learned that began to fit the model of hierarchy I deduced shortly before returning to the island in 1982. Several other points, however, quickly followed. First, Kuwmwasin was big because central Woodlark people are of high status. Second, the term they employ for this rank is guyaw, a clear cognate to the Trobriand term used to describe persons of chiefly rank. In 1982 people both inside and outside of central Woodlark told me that that area was the location of the island's guyaws, although in the Trobriands guyaw status seems tightly bound up with the category subclan (dala), whereas in Woodlark it seems to be an attribute of people in a place. Third, central Woodlark people are buried sitting upright in a "guyaw position" whereas people in other places are buried flat on the ground. Fourth, for much of this century Dikwayas has dominated the island in the Kula. In other work (1980b, 1982b) I have interpreted this domination as a direct result of the colonial context, but there is now a possibility that some derived from a pre-colonial structure.

Another way some central Woodlark people account for their higher rank is by their potential ability to produce more food than other areas and to make bigger rituals. Woodlark people describe the soil along a "bitter"/"sweet" gradient; "sweet" soil is better for gardening than "bitter" soil. The further west one goes, even to the Trobriands, the "sweeter" the soil. Hence central soil is better than eastern, and western soil is better than central. Although some eastern villages think, correctly, that they produce more than central villages, they also think central people should be better gardeners than they are. And everybody knows that while western soil is better than central soil, there is not very much of it. So given Woodlark evaluations of their soil there is an environmental condition in the central area which could facilitate a high position in a rank system.

Given all the above the following characteristics emerge for central Woodlark: more focussed entrances and exits to cultures to north and west; more and/or better soil than other places; more vegetable food and larger rituals; larger villages; highest rank. While causal links between these characteristics might seem obvious, on the scale of comparative world ethnography there is no necessary correlation between garden productivity and concentrated populations. When, however, the craft item/food exchange is viewed



from the point of view of production, and when gardening is fitted into the dynamics of the Kula, these relationships make more sense.

By craft item I refer to such products as stone tools, wooden products (middle and small-sized outriggers, wooden platters, sago troughs and handles for sago hammers and adzes), and, in a specified context, pigs, coconut leaf skirts, sleeping mats and coconuts. The last four items come from Budibud (Laughlin Islands), a set of small islands to Woodlark's south-east; all were and are exchanged for sago or other vegetable food. All craft items require individualized production, or, as in the production of pigs, would seem to gain little if anything from large scale collective work. Some might suggest that gardening, in either intensive or extensive regimes, might be the same. But especially in an extensive regime there are occasions when large inputs of labour are a great advantage. In Woodlark this becomes even truer when gardening is linked to one of its main purposes, supporting the Kula.

I have described the relevant Kula dynamics elsewhere (Damon 1980a,b, 1982b). Briefly, a person Kulas to produce his name. He does this first by exchanging more Kula valuables with people usually outside his village. He initiates and maintains his relationships with these people by being able to assist them in their various Kula and kinship obligations, and this means supplying them with vegetable food, pigs, and other things. In other words, to expand his name, he must expand his Kula, and to do that he must either produce more non-Kula products or obtain them from other people. If he obtains this assistance from other people without facilitating their own Kula he is exploiting them, and they leave him. Hence wise Kula action involves building up larger sets of people who Kula together and who share in the full range of productive work that goes into the Kula. Institutionalised successful Kula must create more concentrated population centres. Dynamics like this are observable in this century (Damon 1980b), and it is likely that something like them operated in the past. I was told that most large Kula relationships went into both Kaulay and Dikwayas before about 1920; since then most have just gone into Dikwayas.

The existence of the Kaulay megaliths and standing igneous rocks is consistent with these dynamics. If these things were only involved in 'ceremonial' or 'ideological' issues they might have represented the ideological side of the domination of their builders over others in the culture. If the megaliths, igneous rocks, and trenches were part of an irrigation system instead then they might have been more directly involved in the conditions which created and sustained that domination, directly at the level of intensive production rather than indirectly at the level of ideology.

Two questions now follow. There were large villages west of Kuwmwasin, according to informants, but so far there is no

evidence, visual or oral, of trenches there. Why? Second, if trenches are associated with higher rank in central Woodlark how can they also be associated with lower rank in south-eastern Woodlark?

A possible answer to the first question is that many of the valleys in the area west of Kuwuwasin are swampy, and natural rather than canal irrigation may have been possible. To the second question some Woodlark ethnohistory might supply the answer. Central Woodlark people told me that in the past they concentrated on both yams and taro, as they do today. However, in south-eastern Woodlark the situation was different. There, in the past, taro was the main crop whereas now yams are the most important. The relative dominance of yams in this region can be tentatively dated to have occurred between about 1900 and 1930. As this change is understood today it is tied to the phenomenal rise and success of Wabunun. It might also be related to the collapse of a region called Kweyakwoya. Before indicating the relevant facts for each area let me describe what people think about yam as opposed to taro production.

Woodlark people think yams need less water than taro and are more resistant to drought than taro. They also think that with too much water yams either do not grow well or they tend to rot. But too much water is either irrelevant to taro production or advantageous to it. Although they prefer taro to yams for eating, yams are more prestigious as exchange items. At least one reason for this is that yams can be stored longer, and they also think yams are more productive than taro, soil conditions remaining constant. One man estimated the difference in a ratio of 5:2.

The elders in south-eastern Woodlark told me that in the past taro was grown more, and was more important than yams. This changed with the rise of Wabunun, who, until about 1978, gardened on land west of trench number 8 in south-eastern Woodlark. The land from there west almost to Unamatan and north to the Sinkwalay river is relatively flat and, for the southern side of the island, relatively high and dry. Correspondingly, although Wabunun has always maintained large taro stocks, its success came from dramatically increasing its yam gardens. It converted this success into an extremely powerful position in the Kula, and helped redefine the structure of the Woodlark mortuary system. In the past the mortuary rituals did not involve distributing large amounts of yams; now they do. To try to match Wabunun's success other villages started concentrating on yams in the same way.

Kweyakowya is the name of a region in south-eastern Woodlark that existed from the top of Sinamat hill west along the southern side of the Sinkwalay river, and also on the land just below Sinamat hill on its south-western side. When I was shown trench 1 and its northern end, the concavity Obwanig, I had several old Kweyakwoya villages pointed out to me. All are now overgrown, and they were south of Obwanig. Although trench number 1 clearly goes into the

old Kweyakwoya region, the other two trenches I examined in 1982 only went to its southern boundary. In 1974-75 several elder Kweyakwoya men told me about trenches that went through the region; these I did not see, although I may have seen their southern ends.

In the old Woodlark scheme of things Kweyakwoya's work was carving wooden materials. It was a craft-specialization area, and thus, given the ranking scheme through which I now view Woodlark culture, it was towards the bottom end of the system. It never had particular success in the Kula, but it is now remembered as the location of the island's fiercest warriors, a point consistent with my ranking system. Its inhabitants were not supposed to be very good gardeners; they exchanged their wooden products for vegetable food. But the gardens it did have were supposed to be taro gardens.

If this ethnohistory is correct then at least two points emerge. Trenches, and perhaps irrigation, existed in two different areas, but socially these areas were not identical. Central Woodlark grew both yams and taro, but south-eastern Woodlark not only grew just taro, but it was devoted to other productive activities as well, carving in the Kweyakwoya region and fishing along the southern shoreline. Carving requires great concentration and considerable time, and fishing, at least today, is organised by the island's tidal rhythms. Some of this I have discussed elsewhere (1982a). Hypothetically then the trenches in the central part of the island were part of that area's major activity whereas those of the south-eastern part were used to supplement major activities.

The second point this ethnohistory raises concerns a hypothesis to explain Woodlark's most recent social change. My argument here may be incorrect but to illustrate it I must provide information which might be useful for constructing a better argument.

The only real sign now of central Woodlark's high rank is the burying corpses in a sitting position. However rich that might appear from a symbolic point of view it can not be the basis of a rank system of any significance. Vegetable food, however, could be the basis of such a rank system, and central Woodlark people claim they can produce more than anybody else. But now they do not do that, and they do not significantly support other regions on the island. If they did so in the past it is significant that correlated with the decline is the generalisation of yam production throughout the whole island. All this implies that over the last 100 years the Woodlark social structure has been leveled, a by-no-means untypical response to the spread of commodity production. If a switch from an agricultural regime using intensive agriculture to one using only extensive methods is involved in such a process, what might be the logic to this?

Woodlark people classify their garden land into three main divisions, digadag, oleybikw, and ulakay. These terms describe both the numbers and sizes of trees on the land, and by means of these terms people describe fallow periods. Digadags have the most but smallest trees, and the soil is weakest. Such land is that having been gardened in the last ten to fifteen years. Far western Woodlark aside, this land is rarely used for serious gardening. Oleybikw refers to land which has fewer but larger trees, land not used in the last fifteen to 40 years. During my two research periods most people were gardening on such land. Ulakay refers to land not having been used in the lifetime of the eldest members of a community. Ambitious people try to use some of this land every year. The obvious inference from this is that Woodlark people garden under the assumption that their land is poor and requires a long time to regain its strength. The correlary of this is that each Woodlark village must have massive areas of land to set aside for such long fallow periods. This is not a problem now since the island's population is so small. But in the past?

There is another side to this issue. People now frequently cut down trees twenty and more years old with iron axes because they think they have to do that to garden on fertile soil. Although most enjoy that work they also wonder how their elders did it in the past with stone tools which, as they know, did not cut wood so easily. If, however, their elders had an irrigation system that required less forest clearance then perhaps it could be hypothesized that the present system is largely a product of the availability of iron.

If this inference is reasonable then it follows that irrigation agriculture was used on Woodlark in the 19th century. If that is true then why do people know nothing of it now? I can not answer that question, but I can report that they also know little of the process of producing stone tools, and the Suloug stone tool industry probably only went out of operation about 1870.

#### CONCLUSIONS

Much of the argument in this paper is deductive. I am aware of the serious limitations in such a method, and I am aware of how much needs to be known before we will really have a good idea about what the megaliths and trenches on Woodlark mean. A move from intensive to extensive agriculture seems "backward". But it ought to help pose new questions for future research, and if recent work in other tropical zones is of any significance, the movement may not be novel (see Mathewson 1977; Sanders 1973, 1977).

There may be a final point. With the arrival of a logging company on Woodlark in 1981 the island has entered a new phase of colonial incorporation. As a condition of that logging the island is being asked to initiate larger-scale capitalist agriculture. As I understand the government's requirements their model is based on

temperate zone agriculture. Perhaps Woodlark's past would offer a better model. Woodlark's artefacts make research into its past intellectually exciting. They might also provide a better model for the future.

#### ACKNOWLEDGEMENTS

Many thanks are owed to Mr Les Groube of the Department of Anthropology and Sociology at the University of Papua New Guinea for encouraging me to re-examine the trenches before I returned to Woodlark, and for discussing some of the relevant issues after I returned from the island; and to Dr Stephen Plog, Department of Anthropology, University of Virginia, for examining Woodlark pot sherds and discussing various other issues. I also must thank too many Woodlark people to name for their willingness to trudge through the jungle with me. Some are now less mystified about my interest in these trenches. I hope that their further investigation may not only lead to a new understanding of the island's past, but also to some positive recommendations for the island's control of its future.

Figures 1-3 have been reprinted from Archaeology and Physical Anthropology in Oceania (Damon 1979), with the editor's permission.

#### FOOTNOTES

1. The water source for this hypothetical irrigation system puzzles me, and all informants willing to consider the issue. They know of no springs between the south-eastern shoreline and the springs at the northern base of Sinamat hill. None of the available geological reports (e.g. McGee 1978) deal with the issue, although it is clear that below ground level much water exists. McGee (personal communication) believes that geologically the island is changing very fast. He thinks that as little as 1000 years ago the island might have had a noticeably different appearance. Might there have been more water near the surface in the past? Now most villages obtain water from the shoreline springs.
2. I received detailed descriptions of two trenches north and west of Unamatan village (Fig. 1, no. 8). Informants indicate much evidence of old villages in this area.

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