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Resource Management in Asia-Pacific

Working Paper No. 11:

Changing relations of production in the creation of the Ok Tedi mining enclave in Papua New Guinea

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Paper presented in the Mining in Melanesia Seminar Series
Research School of Pacific and Asian Studies
7 June 1995

The correct citation for this publication is:

Author: David Hyndman

Year of Publication: 1997

Title: Changing relations of production in the creation of the Ok Tedi mining enclave in Papua New Guinea.

Series: Resource Management in Asia-Pacific Working Paper No. 11

Publisher: Resource Management in Asia-Pacific Project, Division of Pacific and Asian History, Research School for Pacific and Asian Studies, The Australian National University

Editor: Anne Casson

Place of Publication: Canberra

ISSN – 1444-187X

Resource Management in Asia-Pacific

Working Papers

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Abstract

The interplay of mining, miners and indigenous peoples increasingly threatens the interdependence of cultural and biological diversity in Papua New Guinea. The mode of production concept provides anthropology with a useful theoretical tool for examining the survival of communities based on subsistence and simple reproduction. Mining characteristically transforms the cultural appropriation of nature and social relations of production among indigenous peoples. The survival of a community and their environment in the face of a mining project is conditioned by its production logic combined with relevant cultural and ecological particularities. The analytical significance of the mode of production concept is illustrated with a case study of Wopkaimin and their changing relations of production during the creation of the Ok Tedi mining project in the 1980's.

Changing relations of production in the creation of the Ok Tedi mining enclave in Papua New Guinea

Mode of production: concept and analytical significance

Marx's writings on the concept of mode of production have been distinguished according to at least three uses of the phrase: (1) a descriptive usage, as in agricultural mode of production; (2) an epochal usage, to differentiate dominant modes of production according to historical periods; and (3) as a secondary modes of production reference, which were never dominant in historical periods, but characterised certain aspects of those periods (Roseberry 1989:155-156). The mode of production concept here is deployed in its descriptive, but not ahistorical, usage and is used here to refer to a partial system or a localised segment, but not necessarily isolated in some static existence. The place-based peoples of bioculturally diverse Papua New Guinea have historically specific systems of subsistence production with structures and dynamics in their own right and should not be situated within the epochal trap of evolution or transition of modes of production. This was a theoretical pitfall that has characterised authors within this tradition who have been, by and large, influenced by the orthodoxy of French structural Marxism (Wolf 1982). Despite conceptual shortcomings, which can be attributable greatly to Marx's captivity in the societal realities of his own time, mode of production does provide a seminal concept from which a powerful analysis of contemporary production systems of any society can be developed.

Marx gave the mode of production concept a reified structural property, thus overlooking the fundamental fact of human agency in the transformation of nature (Roseberry 1989:155-156). Communities have cultural and locality-specific strategies for survival, but they historically stand in definite relations to a superordinate structure, which in Melanesia typically involved an elaborate gender-based division of labour and access to land guaranteed by the operation of some combination of locality, residence, descent, ego-oriented kinship or gift exchange (Wesley-Smith 1989; Strathern 1982). There is a wide range and diversity of systems of subsistence production across the different regions of Papua New Guinea that reflect both cultural and ecological particularities. The expansion of the mining frontier and other capitalist forms of organisation of production threaten these systems of subsistence production. Behind this articulation are varying histories within an enduring mode of production. It is within this context that Wopkaimin changing relations of production during the creation of the Ok tedi mining project in the 1980's is analysed.

Subsistence mode of production vs capitalist mode of production

The concept of subsistence production was not discussed in any elaborate detail by Marx, other than acknowledging it as an intrinsic and essential element of the production process of every human society (Bennholdt-Thomsen 1982:247). It is to an anthropologically informed political economy that a rigorous cross-cultural concept of subsistence production can be credited. In particular, Godelier (1979:17) distinguishes between 'a mode of subsistence and a mode of production'. Accordingly, a mode of subsistence is the forms of the appropriation of territory and natural and human-altered resources employed by a specific human population in a specific historical period. A mode of production is characterised by the cultural appropriation of nature and the social relations which determine the forms of access to resources and the means of production, organises the labour processes and determines the distribution and circulation of the products of social labour (Godelier 1979:17). The notion of subsistence production, then, combines the analysis of both the mode of subsistence and modes of production.

Subsistence production underlies every mode of production. It is part of the general process of the reproduction of human life, considering that social reproduction is the process through which human life and vital capacity are continuously produced and reproduced (Bennholdt-Thomsen 1982:242). Its theoretical significance can be best appreciated when contrasted with the capitalist mode of production. This juxtaposition is useful and necessary because of the way that it points to the "markedly different implications the two forms of organisation have in terms of the human appropriation of the natural environment" (Schmink and Wood 1987:40). In Papua New Guinea, Gregory (1982) has referred to this as the juxtaposition between gifts and commodities.

Capitalist production is composed of two specific areas of social reproduction: extended reproduction or accumulation and subsistence production. However, by its very nature, the predominant goal of production is the realisation of surplus and the private accumulation of this surplus. Propped by

a class structural system and a generalised commodity exchange, subsistence products (and the forces and means) in a capitalist mode of production are expropriated from the direct producers by the socioeconomically privileged sector of the society. In some cases, the situation of extreme separation of production and consumption has evolved, in association with urbanisation and industrialisation. As a consequence, the direct producers tend to lose the autonomy and control of their livelihood.

Under subsistence production, by contrast, peoples usually do not produce any significant market surplus. They evolved strategies that usually combined efficient, although not necessarily simple, appropriation of the different aspects of their natural environment. A highly diversified environment allows opportunities for the division of productive activities such as forest resource extraction, horticulture, hunting and fishing. The manner of exploiting the natural environment is usually small-scale because the fundamental goal is simple reproduction of the household and not production of surplus for the market. This mode of production, therefore, has a strong ecological rationale. With such a level of resource exploitation, long-term sustainability of production is better assured, although it is considered underproductive from the standpoint of capitalist relations of production.

Division of labour under subsistence production in Papua New Guinea is usually defined by kinship, age and gender that are legitimated by the local culture. Kinship practically underlies the social organisation of work and the distribution and circulation of the products of social labour. Subsistence producers measure their product in terms of use-values, they do not calculate the exchange-value of their products in advance (Bennholdt-Thomsen 1982:245). Any surplus realised in production is usually appropriated in reciprocal exchanges through feasting, gift-giving, and other communal rituals. Underpinned by the value of reciprocity and social obligation, the kinship network and community rituals constitute levelling mechanisms that facilitate redistribution of goods and products among the members of the community. Simple reproduction in subsistence production covers not only the fundamental reproduction of the household but also, significantly, the reproduction of community social relations. This system whereby subsistence production is social production, and social production is subsistence production has been referred to by Scott (1976:26-29) as the sociology of subsistence ethics.

Ok Tedi: at the vulgar fringe of the mining resource frontier in Papua New Guinea

Capitalist relations of production represented by the Ok Tedi Mining Limited (OTML) project have always been uncritically regarded by the Australian colonial administration and the Papua New Guinea (PNG) National government as the standard of modernity and a goal for the Wopkaimin and other peoples of the Fly River socio-ecological region (Fig.1). From the outset of the Ok Tedi open-cut gold and copper mining project started in 1981, Barth and Wikan (1982:8-9) countered that "a construction camp, or a mining operation, in fact, provides no model or blueprint for the social and cultural institutions of a whole population. What is demonstrated in Tabubil cannot be exemplary for settlement patterns, social life, family organisation, or even major sectors of household economies." Mining ushered in a clash between kinship and capitalist relations of production and thereby, posed a threat to Wopkaimin social and cultural reproduction which will be discussed in the context of the cultural appropriation of nature, the mobilisation of social labour and the distribution and circulation of the products of social labour. As this vulgar fringe of the modern world system became the only image and model of new relations of production for the Wopkaimin, community schooling, instruction from outsiders in training centres and employment experience at the mine failed to provide the organisation and lifeways necessary for transformation to capitalist relations of production.

Cultural appropriation of nature

The majority of the Wopkaimin initially lived away from the Kennecott prospectors who first arrived in the late 1960s (Hyndman 1994a) and maintained subsistence production autonomy in their ancestral rain forests. When the Kennecott prospectors invaded, the Wopkaimin surrendered small portions of communally-owned land in expectation of receiving money for the first time. Kennecott and the Ok Tedi Development Company had initiated free room and board co-educational schooling for the Wopkaimin in the 1970's, but this ended under OTML in the 1980's. The Wopkaimin community school was destroyed in 1981 when Tabubil was converted into a mining

town and for a long time there was only an exclusive international school catering to children of expatriate staff. Eventually, a co-educational community school was built on the fringe of Tabubil without free room and board. Schooling from the first grade was in English, which was totally alien to the children and relating the curriculum to their routine life experiences was unresolved (Barth and Wikan 1982:29). Initial positive attitudes towards schooling and training were a poor measure of the depth of internalising the Western world view and capitalist relations of production.

About a dozen Wopkaimin workers and their families lived for several years in Tabubil until 1981 when the OTML consortium was created to start the gold and copper mining project. The transnational construction giant Bechtel was contracted to convert the entire Tabubil plateau into an instant township to house over 5000 outsiders. As white executives and their families moved into Tabubil, all Wopkaimin workers with their families were forced out. Tabubil, the operational and residential centre of the Ok Tedi project, is a highly stratified township with a few family houses provided for the wealthy, mostly expatriate, elite employees. The thousands of single male, mostly outsider PNG nationals are housed in crowded dormitory accommodation. Colonial invasion started with single male patrol officers and was followed by single male prospectors. Today there are still very few women represented in the mining enclave of Tabubil. The nearly all-male Ok Tedi mining operation exaggerates the importance of male technical-productive activities over other values.

Employment for Wopkaimin men, rather than lease payments, was initially perceived as the main source of benefits to be derived from the mining project (Barth and Wikan 1982:24). Schooling and job-training to enhance skills and experience for personal participation in the mining project capitalist relations of production were, therefore, valued. They perceived promised wage earning, education and health facilities as beneficial but they had no clear idea of the land requirements of the Ok Tedi project or of the substantial socio-ecological impact it was to have on their way of life.

By the time of stage one gold production in 1984 almost all Wopkaimin had relocated from their ancestral rain forest hamlets to Woktemwanin and Finalbin (Fig.2), locations previously used as temporary base camps for sago processing and hunting and fishing expeditions. First expanded into small hamlets and then into new roadside villages, Finalbin and Woktemwanin became extremely congested by Wopkaimin standards and by 1985 they each accommodated over 350 residents. Although residents were predominantly Wopkaimin, other Mountain Ok from the Sepik Source Basin had moved in as well. Non-Wopkaimin were permitted to reside in the roadside villages but not to hunt or garden, so the migrants were totally dependent on trade store commodities for subsistence.

Traditional houses were oval in shape with a central hearth and were constructed of *Pandanus* with sago leaf thatching. Houses in the roadside villages were a bricolage of packing crates salvaged from the Tabubil rubbish tip. They were erected in a rectangular shape with several interior rooms and doors were fitted with tradestore Chinese padlocks. Cooking over wood fire was external to the house, usually on cut-down 60 litre metal drums located on the veranda. These "monuments to the petty accumulation of cash and commodities by individuals and households" financed from wage labour at the mine have also sprung up among the Fegolmin and elsewhere in the adjacent socio-ecological region (Polier 1990).

Social class was conspicuously absent in Wopkaimin subsistence production. Land was used for production and symbolic purposes. Membership in cognatic descent groups (*kinumits*) were the essential basis for claiming use rights to land. There was no sense of rights to alienate or lease land and each kinumit was linked to certain tracts of ancestral rain forest. Community membership formed the basis for production and embraced the right to build houses and hamlets and fostered an awareness of shared rights for all within the homeland. Purchase or compensation for usufruct to Wopkaimin land was not extended to non-Wopkaimin in the roadside villages, and was granted without precedent for OTML operations. However, their ancestral rain forests were also endowed with a sacred geography and certain sites were associated with recurrent ritual activity. It was also recognised that mythical significance could be bestowed on the same cultural landscape by different and competing Mountain Ok peoples and this formed the basis for permitting non-Wopkaimin to reside in the roadside villages.

Coffee, cattle and *bisnis* (Melanesian Tok Pisin for economic ventures leading to involvement with the cash economy in virtually any capacity other than as wage earner) have extensively monetised kinship relations of production across the Highlands, often creating an efflorescence of gift exchange (Gregory 1982). These activities were absent among the Wopkaimin and other Mountain Ok peoples in the socio-ecological region. The previous lack of cash-earning activities relegated the Wopkaimin to a peripheral, unskilled wage-earner role in the Ok Tedi project. Over half of the Wopkaimin men worked at the mine during the Bechtel construction

phase of the project (Jackson and Ilave 1983:26) because they wanted to fully participate in the new capitalist relations of production. The job of preference was heavy machine operator or big truck driver, but only a few men attained the qualifications.

Mobilisation of social labour

Men and women maintained highly distinctive lives socially and spatially under Wopkaimin subsistence production. Men monopolised public life and formal religious activity but women participated in decision making on matters other than the secret male cult. There was little difference in authority in the family unit of production and husband and wife normally made decisions by consensus. However, gender so permeated relations of production, distribution and consumption (Hyndman 1995a) that men and women could exercise similar sanctions of withdrawing into temporary self-sufficiency and isolation. Wopkaimin social and cultural reproduction emphasised distinctive gender-based spheres of production with a roughly equal possibility of men and women to influence one another. Gender relations altered dramatically in the roadside villages.

Wopkaimin roadside villagers used the term 'corners' to refer to the aggregate of disparate neighbourhoods formed around their previous residential and descent group affiliations. Established patterns of domesticity and sociality were significantly modified. Nuclear families resided together in co-resident commensality. Men did not have a men's house in which to congregate at the expense of conjugal ties, but they tended to maintain bedrooms separate from the wife and children. With household sovereignty in consumption, food was no longer segregated by gender and food prohibitions were abandoned. This reversed male-directed sharing of meat from the men's house, a pattern which had previously denied household autonomy and separated the sexes.

The overt emergence of nuclear families appeared modern and was encouraged by the state and OTML. What seemed like loss of gender distinction with co-residence in family dwellings actually did little to initially further equality between the sexes. Such co-residence without a men's house precluded male cult activities but it introduced a sharp discontinuity between mothers and daughters who were formally very close and a created a loss of one of the wife's counterweights to her husband's influence (Barth and Wikan 1982:15).

A pattern of great man-based gender relations (see Godelier 1986; Jorgensen 1991) continued with a separate realm of male production in the roadside villages. Only men were wage earners and they were far more exposed to capitalist relations of production. Initially women's work virtually disappeared in the roadside villages because of non-participation in capitalist relations of production and the abandonment of subsistence gardening. This led to a reduction of women's social status and a stronger identification and dependence of wives on husbands.

A process of household nucleation and privatisation of consumption in capitalist relations of production swept through the roadside villages. Each corner in the roadside villages had a trade store and rice and tinned meat and fish became dietary staples and commodities to be sold rather than shared reciprocally, even among neighbourhood residents. In the 1970's the Wopkaimin still practiced subsistence production and were dietarily self-sufficient. By the 1980's the Wopkaimin had become increasingly dependent on a diet with fewer and fewer subsistence resources; especially of the staple *Colocasia* taro. As *Colocasia* taro dropped out of the Wopkaimin diet, sweet potato (*Ipomoea batatas*) became the new subsistence staple, while store-bought and imported Western foods continued to be the main sources of energy and protein for those families with income from wage earning (Ulijaszek, Hyndman and Lourie 1987).

The ancient Wopkaimin taro monoculture (Morren and Hyndman 1987) all but disappeared during the Bechtel construction phase of the mining project. By the time OTML started gold mining operations in 1984 wage earning opportunities for the Wopkaimin men had dropped-off drastically. The women again turned to subsistence production and gardening was shifted from the Lower Montane Rain Forest heartland of *Colocasia* taro cultivation in the Kam Basin to the lower altitude Foothill Rain Forest located near the roadside villages. The area around the confluence of the Ok Kam and Ok Tedi Rivers was extensively cleared and Bombakan hunting shelter grew into a full-sized hamlet.

The new gardens were planted to sweet potato, banana and *Xanthosoma* taro in the cultivation pattern of "fell the trees on top of the crop" described by Schieffelin (1975) for post-colonial Papuan Plateau peoples. Men felled the trees but the new sweet potato gardens were planted, maintained and harvested by women. They yielded in about half the time of the high altitude *Colocasia* taro gardens but were exhausted after a single harvest, which placed pressure on Foothill Rain Forest near the roadside villages.

By the time OTML started gold mining operations the Wopkaimin had shifted to roadside villages with women in subsistence gardening and men participating as wage labourers in a transnational economic enclave. Gender distinctions in labour continued to be rather strict with men selling their labour for a wage and women taking on a greater share of subsistence production, a pattern which spread among the southern Mountain Ok of the socio-ecological region. Wopkaimin women were not smallscale commodity producers, unlike Fegolmin women (Polier 1990). They did not produce market vegetables for sale to OTML, nor did they sell portions of their garden production at the Saturday Tabubil market. Rather, it was the Wopkaimin who purchased the subsistence crops and fresh pork sold by the Ningerum and other southern Mountain Ok producers at the Tabubil market.

Distribution of the products of social labour

In Wopkaimin subsistence production daily reciprocities between husband and wife were powerfully symbolised in the imagery of men's hunted game from the ancestral rain forests for women's harvested and baked taro. This in turn was mirrored in male sacrifice of game to the ancestors in return for taro fertility. With capitalist relations of production in the roadside villages, the gender imagery of game for taro was replaced with sweet potato produced by women and tinned meat or fish purchased by men.

A significant feature of distribution and consumption in Wopkaimin subsistence production was the limited degree to which rate of production and form of consumption were linked (Barth and Wikan 1982:36). The ecological basis and means of production created a system of subsistence production without storage. Taro, slaughtered domestic pigs and hunted game all had to be consumed quickly. There was no saving and accumulation, only programming the relations of producing, harvesting and sharing. Sharing based on the men's house directed the allocation of meat and insured extensive redistribution because of the obligations of gender and taboo present in every act of consumption (Hyndman 1994b).

Capital accumulation and management had no precedent in subsistence production. During the early Bechtel construction phase, capitalist relations of production in the roadside villages were characterised by plenty on the cash side and shortage on the supply side (Barth and Wikan 1982:37). Wopkaimin wage earners were not permitted to purchase in the Tabubil commissary at that time because it was restricted to executive (mostly white) employees. Instead the Wopkaimin had to confine their purchases to an inferior and irregular supply of goods from the town tradestore. Opportunities for purchase were scarce and the only new prestige commodity available to the Wopkaimin was beer. Wages were used for family consumption of rice and tinned fish or meat and for male consumption of beer.

Wopkaimin wage earners worked long, difficult 60 hour work weeks and it was years before they were granted annual leave enjoyed by outside PNG nationals and expatriates. With beer the only new luxury to buy and little time to exercise the option of consuming extras, accumulated money tended to be hoarded in pass-book savings. When OTML finally started operations a large general merchandise and food store was opened to anyone with money wanting to make purchases. Ironically, by this time far fewer Wopkaimin men were employed and women were actively involved in subsistence production again.

The process of proletarianisation initiated by the Bechtel construction phase was far from complete by the time gold mining started in the mid-1980's. Wopkaimin bisnis in the roadside villages was virtually absent, earning a wage remained the preferred participation in the new capitalist relations of production. A few men opened tradestores and fewer still black-marketed the sale of beer and sold the services of prostitutes, but they lacked prestige in the eyes of the community. Certain corners based around previous residence and descent affiliations formed the basis of limited male bisnis groups in the roadside villages. They used accumulated wages and compensation money for the purchase of 4-wheel drive trucks, which were offered for passenger hire to Tabubil or Kiunga. Most of the vehicles have gone off the road and are irretrievable wrecks along the steep slopes.

Wopkaimin men began economically manipulating the marriage system as a form of bisnis. Money entered prestations at marriage. Barth and Wikan (1982:35) noted that at the outset of the mining project in January 1982 fathers were demanding up to K300 for their daughters. By 1985 one Woktemwanin man had paid K3500 for a second Wopkaimin wife and another had paid K9000 for a wife from Central Province. Women became ranked according to inflated money prestations at marriage. Marriage manipulation as a form of bisnis devalued women in the eyes of their men and themselves, a situation that also occurred after mining started on Bougainville (Nash 1981).

Adultery and prostitution became easier as women's sexuality was alienated from themselves and controlled by men.

A major social problem spawned in the new roadside villages was the introduction of alcohol, which had previously been absent in the Wopkaimin diet. Initially when the Tabubil commissary was only open to higher paid workers residing in company houses, Wopkaimin men focused on beer as the only new prestige commodity available to them. Gender restrictions excluded women from beer drinking. During the construction phase of the project in 1982, as the Wopkaimin first started drinking, 62 percent of men over 15 used beer compared to only 10 percent among women of the same age. By 1986 beer drinking became institutionalised as a male domain, with an increase in consumption to 70 percent among men over 15 and a drop to only one percent among women over 15 (Lourie 1987). Aggressive drunken behaviour, black-marketing, fighting and adultery associated with heavy beer drinking in the roadside villages threatened family life.

The Wopkaimin used the Melanesian Tok Pisin term *spakman* not only to refer to excessive beer drinkers but also to contrast those who moved into the new roadside villages from those who continued to reside in the former mountain hamlets. On my last visit an old friend who had already made the *spakman* transition to Woktemwanin was proud to tell me that "my older brother is a *spakman* now." He meant he was pleased to have his brother residing with him in Woktemwanin. However, it brought with it the contradictions of abandoning male cult traditions based on the culture heroine Afek and taking up drinking in the new social order. *Spakmen* are married and unmarried men under 35 years of age. Loose beers are known as *wokmafuk* (vernacular for bad drink) and cases of 24 bottles are known as 'tool boxes'. Night-long, all-male drinking sessions typically lead to vomiting and urinating in the open, fights and adultery, all in violation of established cultural norms.

The use value of beer in the new capitalist relations of production was structurally similar to the use value of meat under subsistence production. Beer and meat are both concerned with an exclusive masculine realm of production and the absence of formal prestations by socially defined categories of men. In Wopkaimin subsistence production there was the nodal position of the men's house and the emergence of leaders through the volume of meat sharing. Feeding meat to male visitors was the conspicuous feature of sharing based on the men's house. Meat was the supreme valuable and was shared, not circulated. Meat only had use value, it was not alienated for its exchange value. Thus, masculinity was defined by production and consumption of meat, which accentuated gender differences and monopolised male privilege.

Each corner in the roadside villages occupied a nodal position like the former men's house. The host exclusively allocated each beer and made exaggerated claims that his generosity in sharing beer was like the sharing of meat from the men's house. Sharing beer with male visitors had become the conspicuous feature of the new masculine sphere of production. Beer, in becoming the new supreme valuable, was thus shared, not circulated. It only had use value and was not alienated for its exchange value. Beer was not institutionalised in the circulation of wealth and men were not differentiated by controlling its circulation. Consuming beer accentuated gender differences and monopolised male privilege.

Moreover, the *spakman* acted out a kind of fantasy of himself as a white by communicating in Melanesian Tok Pisin and listening to Western cassette music, a pattern that occurred among the Nasioi when the Bougainville mining project started (Ogan 1966). Nevertheless, obvious gaps remained between the desired and the actual social situation and this generated tensions which were discharged in drunkenness and the extreme behaviour associated with it.

Wopkaimin men regularly propositioned new white women they saw in Tabubil with the sexually provocative Tok Pisin phrase *fortnight o?*, which had the double meaning of 'can you accommodate me sexually?' and 'will you last here longer than a few days?'. The prevailing white and PNG national staff attitude to indigenous women of the socio-ecological region is even worse. In 1985 most of the PNG national women clerical staff allegedly made more money at night selling sex than they made from their wages. This, and certain Wopkaimin men selling some of their women's sex, accommodated working men in Tabubil. Men working in temporary camps away from Tabubil reportedly kidnapped and raped indigenous women gardening near the road.

The nickname "GBH", for the fighting that regularly broke out in the new roadside communities over adultery and rape, originated from the frequency of Grievous Bodily Harm charges heard in the new Police Station and Court in Tabubil. The few Wopkaimin men remaining in their mountain hamlets in the Kam Basin viewed becoming a *spakman* with ambivalence because they were fearful of subjecting their families to GBH. Likewise, the *spakman* was fearful his wife would be assaulted in the roadside villages while he is away earning wages or hunting.

Crises of articulation

Once Bechtel constructed enough of the intended infrastructure to phase in gold processing in 1984, the Ok Tedi project became known to the Wopkaimin as the "place without work." During the height of Bechtel construction in 1982 over 60 percent of the Wopkaimin men were employed. Employment for Wopkaimin men had dropped to only five percent by the height of OTML's gold mining operation in 1986 (Lourie 1987). With gold processing most Wopkaimin men lost work or became dissatisfied with the role of unskilled wage earner. Enthusiasm for active participation as wage earner in the new capitalist relations of production was removed with realisation that vast disparities in wealth and status separated them from the white controllers of the mining enclave.

Previously as men rose through the highest grade of initiation, they gained cultural understanding and knowledge to enable them to compete for status as great men. Schooling and job-training did not fulfil great man expectations. As the mining project progressed, Wopkaimin men increasingly realised that they would be relegated to insignificant roles as pupils and apprentices throughout the duration of the project. The Ok Tedi enclave required complex skills and the time never came for Wopkaimin men to wield authority and become anything else than apprentices to a succession of authoritative outsiders (Barth and Wikan 1982:32). Although females participated in schooling, they never engaged in job-training or wage earning.

The Wopkaimin continued to recognise the authority of their traditional leaders (*kamokims*). These leaders remained in the former hamlets and continued subsistence production in the ancestral homeland. However, there was leadership competition in the roadside villages. A limited number of Wopkaimin men escaped the roadside villages and were allocated white helmet status with housing in Tabubil. Unskilled workers like the Wopkaimin are allocated yellow helmets. They were distrustful and suspicious of those Wopkaimin men who had become white helmet workers and tended to view their class position as a contradiction in terms. One of the Wopkaimin white helmet workers exploited his status ambiguity in a bid to politically bridge the gap between the Wopkaimin and OTML. He competitively used his broker position to build personal wealth through control of the largest trade store in Woktemwanin. However, this only succeeded in further alienating the roadside villagers who generally did not see local *bisnis* entrepreneurs as enhancing their quality of life. Black-marketeers had limited influence as power brokers because they were seen as sustaining anti-social behaviour. In 1985, in the community interest, black-marketeering was banned in Woktemwanin under the sentiment that "the *spakman* lives off compensation and gardens, the *bisnis-man* and black-marketeer lives off everyone."

Within the Ok Tedi enclave, squatters outnumbered the Wopkaimin by the end of the 1980's, which dramatically altered the character of the roadside villages. The Wopkaimin became a demographic minority in their roadside villages. Outsider '*pasendia*' (an aeronautical Melanesian Tok Pisin metaphor for the wives, children, parents and siblings visiting workers, or those seeking work) flooded into Tabubil. Northern Mountain Ok *pasendia* circulated in and out of Finalbin and Woktemwanin, southern Mountain Ok *pasendia* circulated in and out of Wangbin and Migalsim and Lowland Ok and Aekyom established themselves across the Ok Maani from Tabubil (Fig.2). Wangbin is the largest roadside village with over 2,500 residents and Woktemwanin is next in size with between 800-1,000 residents who are mostly non-Wopkaimin *pasendia*. The greater Ok Tedi enclave fluctuated to over 10,000 residents, divided roughly in half between workers and *pasendias*.

Once gold mining operations started there was a reversal of the proletarianisation process and the roadside villages were not united by commitments and obligations to OTML and the State. As in subsistence production, there was continuity of separate men's and women's spheres of production. Women had subsistence control of *Xanthosoma* and sweet potato gardening and this feminine sphere of production was not commoditised. The masculine sphere of production was no longer based on wage earning, but rather on control over beer and compensation money.

Land leases eventually appropriated by OTML amounted to over 18,000 ha (Pintz 1984:63). The Wopkaimin alone lost 7000 hectares to the Ok Tedi project (Fig.2). The National government used their renegotiated arrangements for compensating Bougainvillean land owners as a precedent for the Ok Tedi project. Lease rates of about K25/ha per year were established for 1) payment of occupation fees, 2) payment for restricted access, 3) payment for cleared land, 4) payment for physically used land, 5) payment into a trust fund and 6) payment of about K650 for each Wopkaimin per year. Because Mt. Fubilan is within the Iralim Parish, Woktemwanin and Finalbin residents also received annual royalty payments between K600 to K1000 per person depending on prevailing copper prices. However 'occupied land' compensation for most Wopkaimin was only around K1 per person per day with an equivalent sum placed in a trust account. Moreover, 'occupied' mining land

destroyed nearly 10 percent of their homeland. This represented a substantial loss to the ecological basis of Wopkaimin subsistence production and compensation was inadequate to even substitute the daily diet with the purchase of rice and tinned fish or meat. Nonetheless, the non-wage income of the Wopkaimin in Woktemwanin and Finalbin was three times above the national average (Pintz 1984:164) and became the source of the masculine sphere of control over beer and compensation money.

Conclusion

Two main social transformations were initiated by the Ok Tedi project. A spatial division of labour developed between the Ok Tedi enclave and portions of the socio-ecological region closest to the mining project, and as well as a gender division of labour occurred in which men attempted to sell their labour and women took on an increasing share of gardening (Polier 1990). However, the dialectics of changing relations of production associated with the Ok Tedi project, as with the Panguna mining project on Bougainville, provided another example of "a general truth about Papua New Guinea: even where introduced capitalist relations of production have had the greatest effect, they have not completely eliminated those that existed before colonialism" (Wesley-Smith and Ogan 1992:261).

Capitalist relations of production increased inequalities between the sexes and accentuated the separation of feminine and masculine spheres of production. However, proletarianisation initiated by the Ok Tedi project dropped away dramatically once gold and copper mining was underway. Articulation to capitalist relations of production remained primarily through the masculine sphere of control of compensation money. There was no commodity production in women's control of subsistence gardening.

When Ok Tedi became the place without work and the roadside villages filled with pasendias, it emphasised a sense of Wopkaimin identity and they became more active in defence of their interests and ancestral domain. Class formation was complicated by ethnicity, a pattern which also occurred in association with the Bougainville mining project (Hyndman 1991; Nash and Ogan 1990; Wesley-Smith and Ogan 1992). Bombakan grew into a major new Wopkaimin hamlet used by many families as an alternative to Woktemwanin. The Wopkaimin significantly revitalised their Afek male cult traditions (Hyndman 1995) and substantially abandoned Woktemwanin to pasendias and relocated themselves in Bombakan and elsewhere in the hamlets of their Kam Basin homeland. Most Wopkaimin returned, or regularly circulated back and forth, to their ancestral homeland and continued subsistence production with internal consumption of surplus.

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