WHAT LABOUR ENGENDERS[1]: WOMEN AND MEN, TIME AND WORK IN THE NEW GUINEA HIGHLANDS

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Debates over equality in New Guinea have raged for years. While people may subscribe to egalitarian values, this seems hollow to some observers in the context of relations between women and men, notably the sexual division of labour. Some even talk of men exploiting the labour of women. This paper considers the validity of these claims in the Was valley of the Southern Highlands Province, using data collected in a time-budget survey conducted to document and assess differences between women's and men's activities. It also reviews ideas of time expended undertaking any activity, and the relevance of notions of work and labour to people's daily routines. It questions the propriety of introducing the capitalism's preoccupation with labour. Differences in the activities of women and men far from evidencing relations of inequality are significant for such stateless political orders in eschewing hierarchical arrangements, where no one exercises control over resources or capital needed by others to secure livelihoods.

[economic anthropology, time, work, gender]

The assertion of some writers that New Guinea societies feature institutionalised inequality (Strathern 1982; Jolly 1987; McDowell 1990; Kelly 1993; Wiessner 2002) has long perplexed me, as I take equality as a cardinal value (Sillitoe 1979, 1985, 2001). It is central I think to understanding how Wola material relations and political arrangements differ from those of capitalist society. According to some commentators the 'big man' complex demonstrates that some persons achieve positions of leadership above others (Berndt & Lawrence 1973; Godelier & Strathern 1991). Any man endowed with the required qualities can aspire to big man status. It is an achieved not an ascribed position inherited by virtue of birth (although it is suggested in some places that the sons of big men are in a better position than others to make the grade, if they personally have what it takes). It is an informal standing consequently, not an instituted office. The qualities that make a man big, or the emphasis put on them, vary from one place to another. They range from an ability to

[1] Acknowledgements to Rena Lederman (1986) for inspiration.

contribute to festivals and feasts and manipulate wealth in exchange contexts, to a capacity to orate and silver-tonguedly persuade others in argument, and from intrepid reputations as warriors backed up by aggressive personalities, to having specialised sacred knowledge, which may extend to fearsome reputations for sorcery. The status of a big man declines as these qualities wane with age: distinction depends on current ability.

The implications of big man status vary from one region to another. In some places such persons reportedly exert considerable political control over the activities of small, varyingly constituted, local groups, directing others' behaviour by force of character, proven ability, and by putting them in their debt. Some writers even refer to despotic big men (Strathern 1966; Watson 1967) who have authority to make decisions, issue directions and apply sanctions to other members of their community, and may even have recourse to force to back up their political authority. In other regions, such as the Was valley of the Southern Highlands, while some influence accrues to certain esteemed persons as first among equals - men paying more heed to their thoughts and advice than they do others' - they cannot be said to achieve, nor create for themselves, positions of political leadership. The value placed on equality ensures that while they are respected and admired persons of repute, they have neither political authority nor power.

Other commentators focus not on relations between men but those between men and women arguing that it is here that relations particularly feature inequality (Josephides 1983, 1985; Modjeska 1982, 1995; Strathern 1988). If it exists, such inequality undermines any notion of egalitarianism, for even if men subscribe to an ethic of parity in structuring their relations with one another, so long as they do not extend it to their relations with women, or in extreme interpretations manipulate these to dupe them, it is a sham. The view that gender relations are unequal is largely Marxist, arguing that Highland New Guinea cultures feature the exploitation of women, men taking unfair advantage of their labour. Put bluntly, women

do more work and men appropriate some of the product. The different amounts of time women and men put into cultivation, the engine of the Was valley 'economy' (which remains subsistence oriented), would seem to confirm this view, with women spending four times longer than men on agricultural tasks (at 11.2 hours per person a week compared to 2.8 hours – Sillitoe, Stewart & Strathern 2002, p. 106). This view associates labour with activities thought of as related to the 'economy', which in the absence of market arrangements and cash payments (as wages etc.) are identified with the subsistence domain and material aspects of existence.

The idea that work relates to material outcomes has a long history in Western thought from the enlightenment philosophers Locke and Smith through to their nineteenth century successors such as Ricardo, Marx and Engels, to many contemporary economic and social commentators. In Locke's words, "It is labour indeed that puts difference of value on every thing . . . I think it will be but a very modest computation to say, that of the products of the earth useful to the life of man nine tenths are the effects of labour" (1764, p. 25). This materialistic assumption has informed interpretations of people's behaviour elsewhere for many years. Malinowski (1929, pp. 33-34) for instance gives work an unambiguous material definition "labour must be defined in that it achieves something tangible and useful that serves to the satisfaction of man's essential wants. The search for food and its preparation, the procuring of material for housing, clothing, weapons, and direct objects of use constitute the most important types of labour. …. Labour should be defined as a purposeful form of systematic activity standardized by tradition and devoted to the satisfaction of wants, the creation of objects of luxury, value and renown." [2] Such activity is work, which we think of

[2] See also Malinowski 1925, pp. 926-30. Subsequent writers have taken a similar line, such as Wallman in a volume on the anthropology of work, who defines work "as the production, management and conversion of the resources necessary to livelihood" (1979, p. 20), and Firth (1979, p. 192) in the same volume, who tells us that the Tikopia had a concept of work, which indicates expenditure of energy for accomplishment of ends, at some

as laborious and assume individuals would rather not undertake, and if some spend more time on it than others, and have some of their output taken without repayment in the products of similar work, we say that their labour is exploited and that they are treated unequally. In part, the physical nature of the activities associated with subsistence informs the view that they are work. It is undeniable that such physical tasks are energetically demanding and that women consequently invest considerable amounts of energy in their homesteads' livelihoods (Sillitoe 2002).[3]

In capitalist society, the idea that physical work is labour is prominent, and here exploitation is often evident in the low wages paid to, for example, farm workers, building labourers and assembly line employees. The capitalist hierarchy depends to a large extent on the sort of work you do and, up to a certain point, the income that you receive and hence your material standard of living, and there is a tendency to import these values into interpretations of arrangements elsewhere. We seek to identify the work that people do and proceed to evaluate relations in terms of it. This paper seeks to explore these assumptions through two lines of evidence, one an analysis of how people spend their time, and the other how they assess their use of time and the activities they engage in. It acts on Gell's (1992) contention that "time-budgeting studies" should form the basis of anthropological investigations of time, that these should begin with "time-economics, 'objectively' understood" (1992, p. 321) and seek to combine the study of both the "domain of physical time" and "human (i.e. cognitive) time" (1992, p. 241), on the grounds that while everything happens in "the 'real' world" this is "not 'our' world", which is a "shifting play of images". The problem he thinks is that "no real effort has been made to bridge the gap between time-budget studies (a pretty dull subject

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sacrifice of comfort or leisure. Panoff (1977, p. 7) glosses work for the Maenge of New Britain as activity aimed at the production of useful things.

[3] But men make a contribution too, and the strenuous fits-and-bursts nature of their contributions to cultivation and construction compared to the steady character of women's outlays offsets the difference to some extent (Sillitoe, Stewart & Strathern 2002).

in the estimation of most anthropologists I know) and 'exciting' topics having to do with collective representations and the mediation of social processes" (1992, p. 322).[4] This paper is one attempt at bridge construction. While it does not deny that women and men have different responsibilities and commitments, it questions that one gender's duties and obligations are superior to the other's and facilitates exploitation of labour and unfair relations, even the existence of classes according to some (Godelier 1986, p. 143).

It is argued that the focus on equality is an error because persons differ, according to age and gender if nothing else, such that a young woman finds herself in a different position to a mature man (Josephides 1985; Kelly 1993; Jolly 1987). The implication is that persons cannot be equal, with young and old, capable and less able individuals. This is to associate equality with sameness, but as Salzman (1999, p. 42) points out, by taking individual differences such as those of "strength, energy, astuteness, luck, fierceness, fertility and many more . . . everyone, everywhere, could be deemed 'unequal'". There is I argue some confusion of difference with inequality (Josephides 1983). Persons do not have to be the same to enjoy political equality. Among the Wola such differences do not support a hierarchy of differential relations, some above others. Everyone has the same opportunities and rights to freedom of action within the established mores of their culture. All are politically equal, no one having authority over others (except adults over small children), nor consequently the power to enjoy a higher standard of living. Every person living in the Was valley has the same to eat, some do not go hungry while others have plenty, and all live in houses of similar dimensions and built of the same materials, and they have access to the same resources and equal opportunities to exploit them. It may occur that personal relations are asymmetrical,

[4] A recent collection of essays edited by James and Mills (2005) criticises this approach for omitting to consider history as a component of any appreciation of time. The criticism is misplaced, I think, rather like chiding the compilers of today's bus timetables for having no concern with the hostelries of former stage coaches. The implication is not that we should ignore history and mythical time, rather that they are different issues to those of contemporary reckoning and budgeting of time. While awareness of time past will inevitably inform understanding of time present, this is, I propose, a separate matter to the current use of time.

some men bully their wives, and some women scold their husbands, but beyond a certain point persons can withdraw from an irksome relationship. And while the talents of some persons may secure them a degree of influence in certain contexts, this is limited and does not translate into authority. Indeed I argue that the self-interested striving of individuals for status and respect feeds back to reaffirm social relations without openly detracting from others' socially circumscribed personal autonomy (Sillitoe 1979).

Ethnographic Background

Wola speakers of the Southern Highlands Province, like other New Guinea Highlanders, follow a wide-ranging sexual division of labour (Sillitoe 1985). A marked gender division, for example, informs cultivation, men undertaking the initial work of clearing and fencing and woman assuming responsibility largely for routine cultivation. They are swidden and fallow horticulturalists, their neat gardens dotted about their valleys. Sweet potato is the staple, typically cultivated in composted mounds; other crops include bananas, taro, various cucurbits and greens (Bourke *et al.* 1995; Sillitoe 1996). These people occupy five valleys from the Mendi river in the east to the Augu in the west, the data discussed here coming from the Nipa Basin Census Division, notably the Was valley in the west. The country is rugged, comprising sharp-crested mountain ridges. Watersheds and some valley areas are heavily forested, other settled parts are under regrowth, notably cane grassland. The region is described as peripheral in development terms, although the Highlands Highway runs through Wola territory. Cash crops are few to non-existent. But with gas and oil finds the position may change, with exploitation of these in the near future.

People live in homesteads comprising nuclear or extended families, scattered along the sides of valleys, indistinctly grouped together on territories, to which kinship structures access to land (Sillitoe 1999a), resulting in loosely constituted patrifilially biased bilateral kin

corporations. Wolaland is divided up into a large number of territories to which these kin composed groups, called *sem* 'families', claim rights collectively. The exchange of wealth between defined categories of kin on specified social occasions is a prominent feature of social life – pigs and cash today and previously sea-shells among other valuables (Ryan 1961; Sillitoe 1979; Lederman 1986). The transactions remain today a significant force for order in their fiercely egalitarian society with weak central government authority. Lawless 'rascal' activity is prevalent throughout the region. The government station at Nipa in the Nembi valley has some administrative offices, including nominally a police station, school and health centre, and several trade stores. Men who excel at exchange achieve positions of renown and influence locally, earning the appellative *ol howma*, approximating to big-men elsewhere. But they do not extend to authority to direct the actions of others. Women who regularly manage more pigs than others earn the appellative of *ten howma* for their widely respected ability; as with men this title carries no authority. Supernatural beliefs centred on ancestors' spirits causing sickness and death by 'eating' vital organs, others powers of sorcery and 'poison', and malevolent forest spirits. Sometimes people offered pigs to restrain these malicious supernatural powers. Today the majority profess to be Christians and attend mission services.

Time expenditure survey: methods

Time expenditure survey data afford an opportunity to appraise the extent of unequal demands on men's and women's labour, showing how individuals spend their time. These data come from two surveys that document the time budgets of a sample of women and men for nigh on a three month period. A review of the time they invest in various activities is one way to assess differences between them and any unfairness in work loads. Initially I arranged a pilot of twelve days duration in 1974, in which thirteen women and fourteen men

participated, and subsequently in 1977 a main survey of seventy-two days duration, in which thirteen women and twelve men took part (two of the women completed the survey jointly, when one of them dropped out, the other took over). The pilot established the feasibility of conducting such a survey and helped identify problems that needed attention to ensure smooth progress and the gathering of information of acceptable accuracy. Seven of the women who took part in the pilot participated in the full survey and five of the men; a total of eighteen women and twenty-one men co-operated in the surveys.[5] The surveys used the twenty-four hour recall method. The procedure was for the participants to come to my house daily to report on their activities over the previous twenty-four hours, and a standard survey sheet was completed for each person every day, the men came in the morning and the women in the afternoon.

The times that participants had spent on the activities in which they had engaged were estimated according to what they told us. A range of methods was used to make the estimates, including the position of the sun in the sky, the start or end of periods of rainfall or other events known in common to us. Also, I asked those involved in the survey to shout out to me if they passed my house or they saw me elsewhere during the course of the day. I gave three of my friends digital watches too and asked them to make a note of the time whenever they saw one of the survey respondents. Sometimes it was possible triangulate between these precisely timed events and the person subsequently meeting others participating in the survey sometime afterwards. On a few occasions I accompanied the participants during the day and

[5] I am grateful to all those who participated in the surveys, who received a token payment at the end, for their patience and good humour. The women (numbers in brackets indicate first and second surveys): Maenget Kwalten (1 & 2), Maenget Orlaem (1), Maenget Wariyn (1), Mayka Wen (1 & 2), Mayka Hendep (1 & 2), Mayka Nonk (1 & 2), Mayka Hundbin (1), Mayka Huwn (1), Mayka Lenday (1 & 2), Mayka Puliym (1 & 2), Mayka Morom (1), Mayka Nanainj (1), Mayka Naelomnonk (1 & 2), Mayka Wariyem (2), Puwgael Saliyn (2), Puwgael Piriyn (2), Maenget Ibnawaem (2), Mayka Ebel (2) and Maenget Sal (2). And the men: Huwlael Em (1 & 2), Wenja Olnay (2), Maenget Korobol (2), Puwgael Erow (1 & 2), Ind Mom (2), Wenja Puwn (2), Ind Pes (2), Huwlael Ton (1 & 2), Wenja Yogbal (1 & 2), Kolomb Pet (1 & 2), Mayka Muwlib (2), Maenget Tensgay (2), Huwlael Kot (1), Huwlael Pel (1), Huwlael Lem (1), Wenja Sol (1), Mayka Kot (1), Mayka Pes (1), Mayka Sal (1), Maenget Pundiya (1), and Ind Kobiab (1). I am also grateful to my wife Jackie for helping me with the survey, in particular ensuring the ready co-operation of women.

was able to time their activities, these data serving to check the plausibility of the estimated times. On balance, I judge that the estimates are within an hour, and sometimes considerably more accurate, as in addition to having the help of persons' comments about the time of day, I had a good idea how long various tasks took (such as to cook food in an earth oven, heap up a sweet potato mound, walk to various destinations, and so on).

The estimation of many of the times, with a margin of error up to an hour or more, is clearly a weakness; another is the gross documentation of activities – Waddell 1972, pp. 229-331, who conducted a similar survey with some Enga speakers, notes similar methodological shortcomings. Activities were recorded in coarse categories, often lumping several actions together.For example, cultivation tasks intermingled during a day in a garden (such as women burning refuse, tilling soil for mounds, heaping these up and planting) could not be disaggregated without being present to time the work.[6] A more closely monitored survey might have attempted to break down observed behaviour according to various tasks; for example, instead of just 'string making' it would have noted stripping bark off saplings, separating fibre, arranging fibre to dry, shredding it and rolling into string.[7] The omission of some activities is a further shortcoming, respondents not mentioning everything about their day's activities. They doubtless forgot some things and decided to leave out others. No one ever mentioned coitus, for instance, yet it seems improbable that all respondents observed chastity during the survey. In view of their attitudes to intercourse, it would have been embarrassing to have even intimated, let alone asked participants outright about it. Such insensitive questioning would have prompted respondents to stop co-operating in the survey entirely, as no one would wish to disclose such behaviour.

[6] Classified in this analysis according to the task the respondent said she had spent most time engaged on.
[7] I have attempted this level of documentation in other work that complements these time survey data (see Sillitoe 1988 on artefacts, Sillitoe, Stewart & Strathern 2002 on crop cultivation and Sillitoe 2003 on animal husbandry), such that interested readers can determine the likely proportion of time persons spent on tasks that make up activities, such as manufacturing various artefacts and different crop cultivation and animal husbandry tasks.

While the accuracy of the time budget data is open to critical review, these shortcomings do not invalidate them, only indicate the level of confidence one can have relative to any interpretation. So long as due care is exercised in using them, they are not expected them to bear more weight of an argument than they can sustain, such data can serve as useful evidence. The error margin is acceptable for the purposes of this paper, the data giving a sufficient indication of participants' time budgets. The documentation of people's daily activities more accurately would entail following them with a stop-watch in hand, giving a record to the minute rather than the hour. But such an intrusive method is likely to distort behaviour. It is probable that tailing people would affect their actions, such that they would no longer be leading their normal daily lives but putting on something for the observer's benefit. One way around this problem is to arrange random spot-checks of the behaviour of a sample of persons, as Grossman (1984a, p. 269; 1984b) did on 69 days for a village in the Kainantu region of the Eastern Highlands, extrapolating from the results the percentage of time spent on different activities. Salisbury (1962, pp. 216-220) had previously used such a spot-check method in the neighbouring Goroka region, but apparently without telling people that he was 'following' their activities. More recently, Umezaki *et al*. (2002) visited subjects hourly during a study in the Tari Basin region of the Southern Highlands, to check on their activities over a seven day period.. Even spot-checking or shadowing would miss some personal activities, as respondents would demand some periods of privacy. Accuracy has to be traded off against practicality; to achieve such coverage of the same sized sample of persons as in the Was valley survey would demand six years of non-stop field research, and the data from such a period of research would represent a fearsome analytical challenge, even with computers. Anyway, it is unlikely that participants would submit to such close surveillance for any period of time, and certainly not three months. So we should be

forfeiting duration of survey for accuracy of observation. Time expenditure data are partial, however collected.[8]

Time expenditure survey: results

The results of the time expenditure survey corroborate everyday impressions of women's and men's daily activities (Table 1). They confirm that women devote a considerable part of their week to agricultural tasks, particularly when we include time spent harvesting food; they spend on average about twenty eight hours a week engaged in such activities (16.8% of their time). The inclusion of foraging for food adds little to the time they spend on subsistence activities. Another activity that occupies a considerable amount of their time is travel. They spend 11.2 hours weekly walking to places; 9.1 of these hours relate to cultivation work too as time spent walking to and fro from gardens. Cooking and eating occupy a similar period of time each week at about eleven hours thirty minutes (6.8% of their time). Other activities occupy them for comparatively small periods of time on average, all of less than an hour any day. The manufacture of artefacts, the next most demanding activity, occupies a little over five and one half hours a week; including the collection of raw materials increases it by only forty-two minutes. Attending to pigs, which comes next, demands 3.2 hours weekly.

The contribution of men to subsistence activities is considerably less than women at twelve hours eight minutes a week in total, that is including gardening, harvesting, hunting and gathering pursuits (7.2% of their time). They spend a comparable amount of time to women travelling between places, at 9.9 hours weekly walking to locations to attend to

[8] For further discussion of methodological issues involved in time budget studies see Carlstein 1982, Gross 1984, Grossman 1984b, Ulijaszek 1995.

various pursuits; 2.8 hours walking to and from gardens. An activity that occupies a considerable part of their time is attending and participating in a wide range of exchange transactions, which demands ten and a half hours a week on average (5.6% of their time); some of the time men spend at funerals also concerns exchange issues. They spend a little longer than women cooking and eating food at fourteen hours weekly (8.3% of their time). Another activity that takes up a considerable part of their time is construction work, of houses largely, which demands about seven hours a week. Other activities occupy them for comparatively small periods of time on average, all of less than an hour a day. The collection and chopping of firewood is the next most demanding activity, it requiring three and a half hours a week to keep homesteads supplied with sufficient wood, or a little longer including the contribution of women. Attending and taking part in disputes, which comes next, takes up two hours weekly, and artefact manufacture one hour forty minutes.

It is convenient to review the overall time expenditure position by collecting together related activities. The pie diagrams summarise the position for women and men, grouped-activity slices matched to facilitate comparison (Figures 1 and 2). It is evident that men spend more time in the daytime resting than women, some seven hours a week more.[9] The implication is not that women have little opportunity for relaxation; they also spend periods of time resting, some three hours and ten minutes weekly on average. If we consider time resting and sleeping, the imbalance between the sexes is redressed to some extent as women retire a little earlier on average than men, such that women spend 95.9 hours a week asleep or resting and men 99.7 hours. The pie diagrams show clearly that men make up the difference in time that women devote to subsistence tasks by attending more often to public activities

[9] A reviewer of this paper suggested that men's rest and social time should distinguish the time they spent gambling, but at the scale of the comparisons attempted here (collecting like activities together into categories) this activity does not show up, with attendance at card games accounting for only 7 hours (0.0004%) of their total reported time. In Grossman's (1984a, pp. 216-19) time-use study, card playing together with beer drinking are prominent activities, increasing with the receipt of cash crop incomes, behaviour that he argues contributes to a 'subsistence malaise' that jeopardizes food security.

including various exchange transactions, funerals and disputes. This confirms everyday impressions, widely reported across the highlands, that men engage more frequently in community wide events, women's lives focussing more on the homestead sphere. While men may vociferously dominate such public events, women are not confined to the private domestic domain with no influence or say; they can exert considerable indirect influence via their male relatives, some individuals manipulating them to good effect (see Sillitoe 2003 on events involving pigs).

The survey conducted by Waddell (1972, pp. 98-102) among the Enga shows broadly similar results with women engaging more in subsistence farming, although the difference between them and men in participating in exchange and related activities is not so marked. Some further comparisons can be made with other highland New Guinea time-use studies, if one suspends doubts about the accuracy and representativeness of the various data sets (Table 2).[10] According to these data, the Wola and Huli have the least equal division between men and women (at about 40:60) of time spent on subsistence activities of these Highlands groups, and Huli men followed by Enga men actually work the fewest hours. The Huli and Enga women also work the fewest hours for women (about 31 hours), while the data for the other three groups show a convergence towards a female average of women spending 40 hours a week on such activities. The Duna support 1.1 pigs per person, the Enga 2.3 pigs and the Wola 3.8 pigs per person,[11] which translates into 33.2 hours of subsistence activity among the Duna per pig, 11.5 hours among the Enga and 8.6 hours among the Wola. A reviewer of this

[10] Direct comparison is difficult as Waddell and Umezaki *et al.* omit some activities from their analyses such as resting, preparing food and eating, and making artefacts. The results of Salisbury's (1962, pp. 217-19) time budget analysis are even more difficult to compare and considers only men, while Grossman's (1984a) include a range of quite different cash earning activities.

[11] The women surveyed in the Was valley had charge on average of 3.8 pigs each (1.3 adult, 0.6 adolescent and 1.9 piglets) and 0.1 cassowaries.

paper thought this variation either "raises strong doubts about the consistency of these studies" or "the Duna are for some reason highly inefficient pig producers".[12]

The Tairora data from the Kainantu region (Grossman 1984a) show what happens when cash crops arrive, the unequal distribution of subsistence activities between the sexes is offset by a reverse contribution to cash cropping and waged labour outside the village by men (although it is probable that women were not responsible for so many subsistence activities in pre-cash crop times). A similar reversal has been documented for Huli speakers (Umezaki *et al.* 2002). While this pattern may appear favourable to those who subscribe to the view that women's labour is exploited under the subsistence regime, the consequences of the shift from subsistence activities to cash cropping and waged labour can be considerable for food security. Grossman (1981, p. 232; 1984a, p. 218) has dubbed it as move from 'subsistence affluence' to 'subsistence malaise'.

While the time survey was conducted some years ago, the budgeting patterns revealed probably remain much the same today (from casual observation, not further data collection). Relations between women and men locally remain largely unchanged with respect to daily activities (on other dimensions of change, see Nihill 1994 on gender and development in the southern Nembi valley, and Knauft 1997 on Melanesia generally). The Was valley population continues to depend on subsistence agriculture for its livelihood with no significant technological innovations, and farming activities remain unchanged. People continue to make many of the things that they need and construct their own homes; albeit they have increasingly incorporated foreign materials into their manufacture (e.g. net bags may be made from unravelled synthetic material rather than locally made bark fibre string). The collapse of

[12] The inefficiency issue only arises if one thinks of people producing pigs in the New Guinea Highlands. If one thinks of them instead as converters of waste into useful product, the discrepancy is less of a problem because as numbers of pigs in a herd increase, so their daily ration falls, the waste produced by the household remaining the same (Sillitoe 2003, p. 315). In other words, if the people surveyed had different sized pig herds, this need not reflect differing pig keeping efficiencies, if they were varying the fodder fed to animals as herd sizes varied.

the state across the Southern Highlands has resulted in violent confrontations and armed hostilities may occur when disputes boil over, whereas at the time of the surveys colonial and new nation authority prevailed. Socio-political exchange transactions remain prominent, featuring pigs and money largely, albeit the use of the latter in commodity purchases is confusing the traditional transactional logic (Strathern & Stewart 2000). Money changes hands locally more often in these contexts than commercial ones, although some individuals seek to increase their access to cash by looking for waged work elsewhere, often in the Western Highlands, and if successful may absent themselves and their families from the valley for months and even years at a time, particularly if they have some education, and some of these persons are effectively lost to the region, becoming caught up in contractual relations elsewhere. These latter disappeared persons, together with the Member elected to the House of Assembly in Port Moresby, are the only manifestation of emerging class relations, as reported elsewhere in Papua New Guinea (Donaldson and Good 1988; Gewertz and Errington 1999).

The time expenditure data suggest that women and men are broadly speaking equally active. Both average about ten hours a day engaged in activities of one sort or another, which confirms the impression of a busy population. While individuals may vary in their industriousness, it is not the case that all women are engaged in tasks while men free load on their efforts. This is expectable in an egalitarian order where such exploitation of the labour of some by others would be inconsistent with ideals of equality. So why is it that so many see women as exploited by men? The answer appears to depend on perceptions of time and definitions of work. If you subscribe to the idea that time is limited and take the view that time spent on livelihood related tasks is work, unlike that devoted to other activities, then women, who we have seen put more time into subsistence occupations, necessarily labour more and have less time for other activities.

Concepts of time

The way in which the Wola conceive of time, and how they judge its passage, are critical to the reliability of these time expenditure data. If they have no idea of time that one can relate to a clock, this would call the twenty-four hour recall method into question. We also need some idea of their temporal perceptions to compare with our belief that time is in limited supply and assess the extent to which people think time spent on certain laborious tasks takes away from that available to participate in other more pleasurable activities, so that if some persons spend more time on these tasks than others it is unfair, even possibly exploitative. The pilot survey assessed the recall method's reliability. Initially I had expected some clashes between my clock driven view of time and the participants' diurnal rhythm one, and was pleasantly surprised at how readily they understood what I was after. This was due in considerable part to the congruence between the way they divide up the day and the clock's measurement of time's passage, and their acute awareness of changes throughout the day (such as changes in cloud formation, wind direction, the sun's transit and so on), which I could also monitor.

So far as I am aware the Wola have no word for time as an abstract concept. If they refer to something happening in the future they may use the word *tomb*, which is the nearest word to time known to me, although it more usually has the sense 'when' – for example, in the phrase *diyr bor tomb*, literally 'banana ripe time', or more freely translated 'when the bananas ripen'. If enquiring of someone when an event is going to occur, they may start the question by adding the interrogative prefix *ae* to give *aetomb* which translates as 'when?' – for example, *aetomb em pokesi*, literally 'when garden go-will-[you]?', or more freely 'when will you be going to the garden?'. Furthermore, they have words for now or today, which are *ngubiytomb* or *embiy*, and periods before and after the present, which are *ombez* and *maebort* respectively. Other temporal markers include *ereb*, which indicates later and *wen* for soon.

Today, it is common to hear people use the pidgin *taim* for time, particularly in relation to the European hourly system of time reckoning, another indication that their vocabulary lacked such an idiom. Intriguingly, people show a considerable interest in wrist watches (pidgin *klok* or *hanwas*), which I have found make popular gifts. They may ask the time as *klok aez*, 'what is the time?'. Ryan (1992, p. 224) catches the position well in the Mendi valley, when he discusses the system he devised to pay informants in his witty reflection on his research experiences, "although they had no clocks, and couldn't measure 'time', they knew that I could, and that one revolution of the big hand of my clock marked a unit of duration to which I apparently attached some importance. So they proposed . . . that each informant would have his personal string in which he would tie a knot for each revolution of that big hand. . . . [to calculate] the precise number of hours they would have to work" to earn the payment they sought – salt, knife, shell or whatever.

While the Wola may not traditionally have had a system that allowed the fine mathematical division of the day into hours and minutes, they have an extensive vocabulary for different times of the *hort* 'day'. The day starts with *ba biy* 'the singing of birds at dawn' and *hokob kebay* 'the first light over the horizon', followed by *hogowan* 'the morning', *hora* 'midday', *ombuna* 'afternoon', *nolai kay* 'dusk' (literally 'cicada talk', the time that cicadas start to drone) and *shomna* 'night'. They can qualify these terms further, such that *hogowan nat turiybiy* (lit. morning sun pleasant) is early morning when the sun is pleasantly warm and *nat taendabiy* (lit. sun hurts) is late morning when the sun is often uncomfortably hot; *hora haeguw* refers to the sun exactly overhead at noon and *ombuna hohola* is late afternoon. Another way to qualify these terms is with *henenj* which means 'true', in a way that is reminiscent of the pidgin use of *tru*, such that *hogowan henenj* refers to early morning and *shomna henenj* refers to the deep of night. People can further specify the time of day by the position of the sun in the sky, or at night the position of the moon (when visible, although

individuals are unlikely to be out and about – e.g. hunting - when there is no moon). When we combine the use of these time markers with local events known to all, such as the start of rain showers, lifting of cloud from valleys, descent of mist onto peaks and such, we have a handy time reckoning system that certainly proved sufficiently robust for time budget survey purposes.

Beyond the day and its parts, the Wola have an elaborate vocabulary to refer to the passage of days, which can recall back up to five days ago and extend forwards to seven days hence, as follows:

- *ordnduwmaen* = five days ago
- *aebnduwmaen*= four days ago
- *baernduwmaen*= three days ago
- *nduwmaen*= two days ago
- *ombaeka* = yesterday
- *embiy* = today
- *ponabiy* = tomorrow
- *nduwm* = two days hence
- *tundanay* = three days hence
- *menztundanay* = four days hence
- *aebentundanay* = five days hence
- *ordtundanay* = six days hence
- *orwatundanay* = seven days hence

The Enga have a similar vocabulary (Meggitt 1958, p. 75). There is no idea of collecting these thirteen days into a higher period unit equivalent to a fortnight. They are not static in this way but roll on with the passage of days. Another way of talking about the passage of days is to number them: *hort uwk mond, hort uwk kab, hort uwk teb*[13] – one day, two days, three days etc. In theory, although I have never heard it in practice, people could specify up to forty-four days in the past or forty-four days in the future using their counting system, and even further with recounts, although this is improbable (Sillitoe in press). The idea of the seven day week arrived with Europeans, which the Wola call *shaeret*, [14] although one is as likely to hear the pidgin word *wik*. And a mission invented names for the days of the week,[15]

[13] Literally day *uwk* one, day *uwk* two, day *uwk* three; the word *uwk* is a numeral classifiers (Sillitoe in press).
[14] The derivation of this word is unclear.
[15] The days of the week are as follows: *Horondon* ('big day' - Sunday), *Kongonmubon* ('first work' - Monday), *Kongonkabon* ('second work' - Tuesday), *Kongontebon* ('third work' - Wednesday), *Kongonmogon* ('fourth work' - Thursday), *Waeswaeson* ('wash-wash' - Friday), and *Horgenkon* ('little day' - Saturday).

although again one is as likely to hear the pidgin *Sande*, *Mande* etc. as *Horondon*, *Kongonmubon* etc.

The foregoing discussion makes it clear that while Wola concepts of time facilitate the sort of recall survey attempted here, it is difficult to equate their ideas directly with the expenditure of time as investigated in the survey. Although people can discuss their previous day's activities using customary categories such as "morning, when the sun was pleasant" together with markers like the position of the sun in the sky, they are not accustomed to discussing the time it takes to do things in the abstract (e.g. approximating how long it will take to fell a tree and coming up with an estimate such as "from midday until mid afternoon") or reckoning the time they spend on different activities, as there is no call for such calculations, as attempted here using the survey data.

The implication of having fairly full days is that people may consider time limited. We need some idea of their sense of time to assess whether or not, like us, they think time is a scarce resource, in order to justify the assumption that time spent on certain, say laborious, tasks detracts from that available to engage in other activities. It is a capitalist conception, caught in the aphorism 'time is money', that we only have a limited amount of time available to do things. While it is undeniable that time is physically limited for all humans, no one is immortal and there are only a set number of hours in a day for all of us, how we perceive of this is a culturally informed value judgement. The Wola system distinguishes the *ez* 'month', after *hort* 'day' discussed above. A lunar cycle marks the passage of a month; the *ez* being literally the moon. People mark the time of the month by the phases of the moon (Figure 3. It is during the later *dobat*, the *buwt* and the early *homuwk* phases that men may go hunting by moonlight, and they call this period the *sab ez*, the 'marsupial moon'.[16]

[16] According to Gell (1992, pp. 291-92) the Umeda people of the Western Sepik liken the moon to a tuber that varies in its growth cycle, as lunations vary in duration. I have never heard anyone allude to similar ideas in the Was valley.

While they have no vernacular names for the months, the year falls into two named seasons, called *bulhenjip* and *ebenjip*, which are the two largest periods by which the Wola traditionally mark the passage of time. There is considerable natural lore associated with these two seasons (Sillitoe 1996, pp. 55-63). The *bulenjip* season equates with the Southern winter, extending from April to September, and *ebenjip* with the Southern summer, extending from October to March. The Wola did not traditionally join the two seasons together to give a year, although today people do refer to the twelve months as *mol*, an abbreviation of the pidgin for Christmas, which they pronounce *Krismol*; they also use Pidgin *yia*. The reference to Christmas shows missionary influence, which is otherwise relatively limited in the Was valley with respect to notions of time, being largely evident in the institution of Sundays as *lotu* 'church' days and the introduction of Biblical millennial beliefs that do not affect everyday ideas of time.[17] In some senses the three time periods - *hort* 'day', *ez* 'month' and *bulhenjip/ ebenjip* seasons – do not comprise an integrated system marking the passage of time. The disagreements that occurred when I first tried to find out how many months in each season – responses ranging from four to six - indicate that they are not integrated markers of time, in the sense of comprising so many agreed 'moons'.[18] Nor do people reckon the number of days in an *ez* 'month', which is just as well with a synodic system that would otherwise gradually lose synchrony with the solar cycle.[19] This contrasts with some other regions of Melanesia that have marked seasons, such as the archipelago to the west of New Guinea where people have elaborate calendars (Austen 1939; Leach 1950; Damon 1981; Mondragón 2004).

[17] The impact of the adoption of the Gregorian calendar varies across New Guinea. On the nearby Papuan Plateau it has had a considerable impact, perhaps due to the small and vulnerable population, Schieffelin (2002) associating it with missionary attempts to obliterate the indigenous past as an impediment to Christian conversion.

[18] In the end, the only sure way I could determine the span of the seasons was to ask what the season was every month for a year and note responses in a diary. This brings to mind Turton and Ruggles (1978) account of disagreements among the Mursi of Ethiopia as to the month at any time.

[19] Meggitt 1958, pp. 76-77 notes the same issue for the Enga but maintains that they keep the lunar and solar sequences in step using a thirteen month year.

The daily through to monthly and seasonal time spans represent the limit of formal time reckoning in the Wola vernacular. While they have no Gregorian calendar-equivalent to mark the passage of longer, historical periods of time, they are able to conceive of and discuss such times past, although only in ways loosely connected with the above system of time keeping. One way refers to the unfolding of natural processes, such as the time that has elapsed since an area passed under fallow, which may be spoken of as when X had a garden at Y. Vegetation may serve here as a handy reference to time's passage, various regrowth communities taking different periods of time to establish themselves and become mature (Sillitoe 1996, pp. 217-224) – according to Waddell (1972, p. 77) the Enga focus on the growth of casuarina trees. Another point of reference is the life history and age of individuals, often spoken of relative to others, such as when A was like B's son C. The Wola have several words to mark the life progression of persons, from *nonknais konay na wiy* 'baby' (lit. girl/ boy sense not has) through to *ten* or *ol hunjiy* 'elderly woman or man', and including *nonk* 'girl', *nais* 'boy', qualified as *genk* 'small' or *onda* 'large', and markers for women (*ten*) and men (*ol*) as of child-bearing age (*ten ka*), newly married (*ten wen*), without children or a bachelor (*ten/ol hunuwmb*), and widowed (*ten/ol wiya*). Another way they have of marking the passage of time is the *ya pubung* 'knotted string' mentioned by Ryan above, where knots stand for periods of time, whether days or months. Sometimes people agree to something in so many month's time, such as staging an exchange transaction, and tie that number of knots in a length of string, which they untie one at a time as each month passes, until there are no knots, which marks the arrival of the agreed date. Going further back there is genealogical time, talking of events as occurring during a certain ancestral generation, such as "in the days of grandfather Nolai". And finally, when memories run out, there is mythical time, which is out of time in the sense that unreal things happened such as marsupials begetting human off-spring. The Wola do not have a single idea of time but conceive of it in

differing ways depending on context, for as Munn (1992, p. 116) put it they "are 'in' a sociocultural time of multiple dimensions (sequencing, timing, past-present-future relations etc.) that they are forming in their 'projects'".

Beyond the foregoing daily, monthly and seasonal ideas, and discussion of time according to the passage of natural events, I have always found it difficult to engage people in abstract discussions of time, and no one has ever intimated a systematic body of symbolic representation. Again Ryan (1992, p. 228) catches the position well, "If there was one impression that my life with the Mendi had consistently reinforced, it was that they were utterly practical, pragmatic, down-to-earth materialists: . . . insight, expressed in poetic metaphor, seemed totally alien to them". While somewhat exaggerated perhaps in the light of their myths, songs, spells and rites, this sentiment reflects my overall experience too. They differ from people elsewhere in New Guinea who present complex symbolic representations of time, such as the ritual identification of age grades with yam cultivation on the Sepik River (Harrison 1983). It is common in discussions of people's conceptions of time to assign them to one of two opposite classes. Either linear, as in European culture, where time is experienced as a one-way journey from the past to the future, sometimes thought as real time. Or circular, as in Australian Aboriginal culture, where time is conceived as going around endlessly with the past replicating itself in the present, sometimes presented as ritual time (Bloch 1977, p. 282; Gell 1992, pp. 23-36; Munn 1992, p. 101). The former characterises perceptions of time as scarce, whereas the latter has a more timeless quality to it, or as Gell (1992, p. 211) puts it, there are "societies which do not make very intensive use of time and which seem to have low opportunity costs, vs. those societies that make intensive use of time and in which people are very conscious of opportunity costs".[20] Neither representation

[20] Few of us today, I venture, would subscribe to the idea of 'static' time or 'timeless cultures' (Bloch 1977; Munn 1992, pp. 98-100; Perkins 2001, pp. 92-100), as opposed to conceding and seeking formulations that represent different cultural insights and conceptions of time and its passage.

catches the essence of time in the Was valley as I glimpsed it in people's comments and behaviour. The view of time there accords more with what I should call a natural rhythm with a focus on short term stretches of time, rarely extending beyond a life span and often concerning considerably briefer periods.[21]

In depicting the Wola sense of time, I should strive for something between the linear and circular models, and the nearest I can come up with is a spiral. This is my imagery not theirs, being reminiscent of Shakespeare's shuffling off the 'mortal coil'. Each generation or lifespan represents one turn of the helix, giving us circularity without returning us to the starting point as in closed circular structures, and each turn overlaps with the ones before and after it, such that over time we have spiralling along the helix, giving us a sense of linearity but with an element of repetition. This captures the intriguing point that time features both repetition (such as the cycle of the moon or seasons) and non-repetition (such as one's irreversible passage through life).[22] Each generation reflects the last generation, with ancestor spirits lurking from earlier coils. The Wola focus on the current loop of the spiral, they are here-and-now people who do not have an extensive history going back into the distant past.

Regarding the future, they do not appear traditionally to have considered it much generally speaking, assuming that it would unroll much like the previous helical loop; although they did have a concern for, even premonitions of disruption. So long as no such event occurred, change was gradual from one generation to another, each revolution closely resembling the one previous. Until, that is, the external world burst in on their valleys bringing extensive and rapid change. But such interference was not entirely unprecedented with the occurrence of occasional unsettling events such as famines and volcanic fall-out, and

[21] Gell (1992) puts considerable store by Gale's (1968) distinction of 'A-series' and 'B-series' time (A-series = past → present → future, and B-series = before vs. after). While the above Wola vocabulary might suggest an A-series conception of time, I think that there are other phrases that equally indicate a B-series before and after representation, such as *ombez ombez* and *ereb ereb* which are similar to English 'long long ago' and 'far far future'.

[22] Leach (1961, pp. 124-131) suggests a zigzag line while musing on Kachin and Greek conceptions of time.

to some extent they have accommodated to the outside changed order by latching on to cataclysmic parallels often cast in a millennial idiom, which gives some mission proselytising its appeal (Ungutip, Wabis & Sillitoe 1999). The idea that the 'end of the world is nigh' tinges their view of the future with a certain fatalism.

While time has a linear passing quality, which gives it a scarce property, it also has a circular feel, which militates against it. While time does not exactly repeat itself, there is an impression that it goes slowly around again and again, which diminishes any feelings of urgency about time being in limited supply. The prevalent attitude is one of 'what you do not finish today, you can always do tomorrow or the next day or sometime'. There is rarely any sense of stress, except occasionally such as at critical stages in gardening or house building or meeting exchange commitments. The Wola intriguingly combine a realisation of having to achieve a certain amount in some period of time to ensure their livelihood, yet are relaxed about taking the necessary action.

What is work?

In addition to their perceptions of time, it is necessary to know how people perceive of the differences in women's and men's contributions to different tasks, to further our understanding of labour arrangements. In short, how do they define work? The answer to this question is not straightforward because, so far as I am aware, the Wola language traditionally has no word for work, distinguishing this from any other activity, in the sense of involving particular effort or labour, or earning an income. This calls for some comment, although I do not wish to be side tracked into semantic mire. While I do not subscribe entirely to the so-called Sapir Whorf hypothesis that language determines thoughts, I think that if people do not have a word for a concept, such as work or time, this suggests that we must exercise care in importing such linguistically absent ideas on the grounds that we

assume they are universal. Everywhere people have to engage in activities with material outcomes in order to feed themselves, supply tools and other necessities such as shelter, and in doing so must invest labour in their production. The question is the extent to which they think of these materially related tasks as different from other activities, and if so, in what ways.

So what words do the Wola have for activities recorded in the time expenditure survey that might suggest the idea of work? They have a verb for 'to do' or 'make', which is *bay*.[23] It is generic and has wide application. It can refer to a range of activities such as *em bay* 'garden do', *aend bay* 'house make [construct]', *nuw bay* 'net-bag make' and *tesop bay* 'pearl-shell-fillet make'. There are a large number of terms for various operations that comprise these activities, such as for the different tasks involved in establishing a garden (Sillitoe Stewart & Strathern 2002), various operations in manufacturing artefacts (Sillitoe 1988) and building houses (such as levelling site, constructing walls, positioning rafters, thatching etc.). However, the verb *bay* also applies to a wide range of other activities that sit uneasily with a materialist definition of labour such as *saend bay* 'hostilities do [fight]', *ol bay* 'mortuary exchange do', *aeret bay* 'dispute do', *yort bay* 'self-decoration do [put on make-up]', and even *neb bay* 'play do'. The broad spread of activities to which this verb applies intimates that Wola perceptions of them have something beyond material outcomes or physical exertions.

The inhabitants of the Was valley further distinguish lazy from industrious persons. Those who tend towards idleness are *paeka* 'lazy' individuals. The opposite is a *buriy* 'strong' person, who may be spoken of as *hombunja* or *onduwp biy*, someone who 'everything' or 'much does'. Again, they use these terms not only in reference to activities

[23] They may extend this to *bayaib bay*, which is to do something. Another verb meaning 'to do' or 'make' is *waeray* but it applies to artefacts largely.

with material outcomes, such as subsistence related undertakings, but also for life's activities generally. They describe persons of renown as *buriy* 'strong', which catches something of the meaning of the *howma* epithet, which is not a political status as such (although the successful may find they have a certain degree of influence in some situations) but more a marker for active individuals who are doing well. They are the energetic doers, who achieve things – in the case of men participate in many exchange transactions and women manage efficient homesteads. The time expenditure data in Table 3 bear this out to some extent. Each column on this and the following table represents an individual's time record, the persons arranged according to their social standing with their ages. The three men of highest standing spent 9.7% of their time engaged in exchange activity (including attendance at funerals) and 58.3% resting or sleeping, compared to 4.4% and 61.9% respectively by the three men of least renown. They all spent similar amounts of time in cultivation activities at 3.9% versus 3.5%.[24] Similarly, the three women of highest standing spent 17.9% of their time engaged in cultivation activity (including harvesting crops) and 55.8% resting or sleeping, compared to 14.1% and 60.5% respectively for the three women of lowest standing (Table 4).[25]

These comparisons also show that individuals vary considerably in how they use their time, which is expectable. It is not only that socially ambitious men spend more time attending to exchange issues, supported by the industriousness of some female relatives, but also that families vary in their demands depending on their place in the domestic developmental cycle. In this regard, people's activities relate in some measure to household demography. The more young children, for instance, the more effort demanded of women,

[24] See Salisbury 1962, pp. 218-219 for comparative data on activities undertaken by men of different social standing, although they are difficult to interpret as the 'big men' suffered from considerable sickness during the survey.

[25] Differences in age confound these comparisons to some extent, as does the relatively short duration of the survey in relation to the frequency of some activities – e.g. men's exchange activities are dictated to some extent by the occurrence of social events over which they have no control [such as deaths], consequently those occurring during the survey period influenced participants' transactional activity in part.

although often they can rely on support from other kin such as mothers and sisters. As some of the children grow up, so they increasingly shoulder a share of the demands, but juveniles will not contribute as much as adults. The elderly are also less active and may depend to varying extents on younger kin to support them. The wide variations seen in the individual time data (Tables 3 & 4) challenge the standard anthropological focus on normative behaviour, which lumps persons together using customary devices, when they vary in their behaviour. One such device is the use of the word 'work' to label a certain category of activity involving physical effort and material outcomes, to collect people together, when we know that they do not all engage in such activity in the same way.

While traditionally there was no word in the Wola language equivalent to 'work', this changed with the coming of Europeans, keen to impart their obsession with work as the way to 'development'. The result was the neologism *kongon*, of uncertain etymology. It might derive from pidgin *kongkong* for a Chinese person, as Chinese were often labourers in the colonial era.[26] It came into currency when the Australian colonial authorities required people to maintain paths in good repair for the passage of government patrols that came up from the Kutubu lakeside patrol post – maintain bridges, put log walkways across swampy areas, clear bush back etc. – in addition to building and up-keeping houses for the use of patrols. A path that leads from the Was to the neighbouring Ak valley, and on to Lake Kutubu, is called *kongon haeret* 'work path'. The term *kongon* applies to labour demanded by the colonial authorities. It does not concern tasks people customarily undertake, garden work is not *kongon*, nor is house construction or artefact manufacture.

[26] Strathern 1988, p. 179 notes that the Melpa refer to 'work' as *kongon* too, and the word may conceivably have found its way into the Southern Highlands from the Hagen region. In the previous chapter of the same book she suggests abandoning the term labour and referring to purposive activity in the Hagen region because "there is no objectification of work apart from its performance . . . work cannot be measured separately of relationships" (1988, p. 160).

The focus of *kongon* subsequently switched when the administrative headquarters moved to the highlands, to refer to work on the establishment and maintenance of four-wheel drive tracks as directed by the colonial authorities, and initially welcomed by people as evidence of modernisation, linking them up with the wider country. But they soon came to resent the tracks as an imposition, the authorities requiring all able bodied men to work on maintenance (repairing culverts, collecting and breaking up stones, weeding out invading plants etc.) all day every Monday – hence the pidgin term *wok Mande* 'Monday workday' for it. It was irksome work and brought none of the imagined benefits, only allowing patrol officers and missionaries easier access to settlements, and occasionally the former would stage a spot check of workers and sentence any not present to a spell in prison. The word *kongon* 'work' acquired an unpleasant resonance, more akin to 'corvée labour' in English than 'remunerated labour', and associated in people's minds with *kalabus* (Pidgin for 'prison'); all foreign concepts in a stateless order. This was a brief interval in the region's recent history; many of the tracks have now disappeared, people ceasing maintenance work as soon as the overseeing stopped, and surrounding vegetation soon covered them over, leaving only footpaths. They concluded that they brought them no advantage, so why work maintaining them for the few persons who had access to vehicles to use occasionally? Nowadays, where vehicular tracks exist, men are as likely to charge drivers using them, for example to cross a bridge that they have maintained – such informal tolls making it worth their efforts. But the word *kongon* remains as a colonial legacy, for disagreeable labour, including waged work elsewhere such as the monotonous work demanded of migrant labourers on plantations. The impact of missionaries on work practices and ideology in the Was valley has been relatively limited in comparison, in that, for example, nothing equivalent to the Protestant work ethic has taken root; albeit one can perhaps detect efforts to introduce it in the mission inspired neologisms for the four days of the week from Monday to Thursday,

which all feature the prefix *kongon* 'work'. Interestingly, the Orokaiva, who traditionally also had no spoken concept equivalent to work, equate its colonial arrival with Jesus Christ (Schwimmer 1979, p. 287), although the implications of this are unclear, that is whether work, like Christ, is the salvation of the Orokaiva, or whether it is a Euro-American imposition disturbing local ways.

Those who propose to distinguish work as activity that results in material outcomes - such as those who argue for women's exploitation in the New Guinea Highlands - bring to mind Adam Smith's distinction between productive and unproductive labour. In his words, "There is one sort of labour which adds to the value of the subject upon which it is bestowed: there is another which has no effect. The former, as it produces a value, may be called productive; the latter, unproductive labour" (Smith 1993, p. 67). According to this distinction, some Wola activities such as gardening are productive, while others such as exchange are not. This way of thinking has given rise to, and continually reinforces, the narrow notion, either explicitly or implicitly, that work concerns the provision of material goods, which leads to some confusion. Economists carried related assumptions over into the 20th century but whereas they broadened their horizons long ago, many anthropologists continue (some openly, others less obviously) to equate work and the economy with activities that secure the material means of human existence.[27] The Wola apparently are under no such misapprehension.

In a market economy some people work on farms and in factories and produce goods in return for wages, and the objects of their labour are assigned prices and sold, while others receive an income for engaging in activities with no material outcome, such as academics, politicians, civil servants, lawyers and armed service personnel. (It is debatable whether the

[27] It is the existence of money in our society that shows the productive and unproductive labour distinction is unhelpful, the receipt of a wage defining an activity as work. Individuals are contributing something to earn money, and cash has subsistence connections in that we all use a part of our incomes for this purpose.

'unproductive' occupations exploit the 'productive' ones, as some Marxists argue, an issue that requires some yardstick to measure effort against income, which can also accommodate the different skills and experience that individuals bring to their work – complex issues that take us way beyond the straightforward point made here.) In a similar vein, it is reasonable for the Wola to equate time spent on cultivation tasks with that engaging in socio-political exchange transactions , taking part in disputes, and if these get out of hand, taking up arms in hostilities; these three activities comparing directly with the work of politicians, lawyers and soldiers.

The Wola lexicon suggests that the idea of labelling some activities as work is a foreign one. The comments of people on their activities confirm this impression. They point out that the activities of both women and men contribute to their well-being. While women may spend more time engaged in cultivation, men invest considerable effort, they say, in arranging and taking part in exchanges, sometimes walking long distances to do so. In portraying transaction as equally 'work', we can draw parallels with banking and insurance in capitalist economies, both of which involve income earning work, when they too yield nothing tangible in way of products. In this regard, I think that it is a misconception to characterise exchange as "social face-work . . . a cushy and enjoyable activity", as a reviewer of this paper put it. Men experience considerable stress in meeting their transactional commitments. They often talk about their worries and the immense efforts they are making to find sufficient valuables to meet forthcoming obligations. It demands effort to build up both wealth and relationships, and secure one's status.

This etymological discussion further challenges the propriety of the widely used production versus transaction dichotomy that I have employed as a heuristic device in previous work, the Wola making no such distinction verbally to my knowledge. It appears too blunt, even distorting in the light of the evidence cited here. The extensive vocabulary

they have for various productive tasks and different exchange transactions uses *bay* 'doing' to refer to activities that occur in both domains– for example on the production side *aend ka bay* (to lash roof lathes in place) and *paip pat bay* (to split fence stakes), and on the transaction side *injiykab sayak bay* (to make a contribution to a bridewealth) and *moraeret bay* (the reparation exchange sequence) – which suggests that they consider both production and transaction endeavours equally as activities, whether we call them work or not.

Furthermore, the effort expended on transactions intimates that men have to work to maintain social order. If they fail, they may be embroiled in violence. In relation to the question of what is work, some men mention that taking part in *saend* 'hostilities' is a 'strong' activity. While they are not continually locked in armed aggression, the potential is ever present, and men are obliged to ensure the safety of their families; they are rarely without bow and arrows, or today rifle of some description. Women do not bear arms and engage in hostilities, although they are sometimes caught up in the violence. In times of armed hostilities, although they are not engaged in fighting every day, men expend considerable energy, constantly alert checking for surprise raids and ambushes. It requires effort and skill aimed at securing certain outcomes. The parallel with armed forces in capitalist nations is clear, where service personnel earn incomes, again for producing nothing tangible. The time expenditure survey misses armed hostilities, conducted when none occurred in the Was valley region; following independence it was several years before the stateless order reasserted itself with open violence. Similarly, all the ethnography that has considered how women and men spend their time comes from the era of colonially imposed peace or soon after it, and omits to give armed hostilities due attention.

In relation to the behaviour documented in the time expenditure survey, it appears that we have two classes of activity: generic *bay* 'do' activity and, in contrast to it, rest, which may be *horshiyow beray* literally 'relax sit', or *uwpaelay* 'sleep'. This challenges the view of

Malinowski (1929, p. 33), in the paper quoted earlier, who asserts that "To identify labour with activity in general as has been done recently in a somewhat unsatisfactory text-book on *Primitive Labour* by L. H. Buxton is incorrect, for there are various activities, above all play and games, which are not labour in the economic sense". It seems that Buxton was right from a Wola perspective, either all activity is labour or none is. We find Gell (1992, p. 211) taking the same position more recently where he wants to "deny that there is such a thing as 'free' time at all. Something is always being 'produced', even if it is only 'conversation' or 'sleep'". The derivation of the word *kongon* is instructive, especially in contrast to the use of the ubiquitous *bay* verb. It suggests that to identify labour in some daily activities, and distinguish them from others as work, distorts the import of Wola behaviour and ideas. Panoff (1977) makes a similar point for the Maenge, that they do not distinguish 'productive' from other activities (including eating, sleeping, etc.). They challenge the assumption dating from the classical economic thinkers such as Marx (1994, p. 227) that labour, "as the creator of use-values, as useful labour, is a condition of human existence which is independent of all forms of society . . . Use-values . . . the physical bodies of commodities, are combinations of two elements, the material provided by nature, and labour".

A reviewer, who identified himself as a critical 'femo-marxist' and materialist, pointed out that while Marx's argument about labour and use-value is only a conceptual reality within particular social formations (with the emergence of wage labour and commodity exchange), and so are not universal categories understood everywhere, nonetheless they are "analytic (i.e. etic) categories applicable (from our perspective) to all societies". He accuses me of erroneously criticising this 'etic' theoretical perspective from an 'emic' local one. After all, Marx never said that workers would recognise their exploitation, for "exploitation is an objective matter, not a question of local recognition". Consequently, we can identify it anywhere. But only if we agree which activities qualify as labour and which do not. If you

specify only those activities that have material subsistence related outcomes as involving labour, and if you find that certain persons undertake more of these activities than others, then, as I have previously conceded, you might perhaps talk of exploitation. If it does not reflect people's way of classifying their activities, they will of necessity, from this perspective, be labouring under a 'false consciousness'. But you are not applying some universal and unchallengeable definition of labour, and if their classification of activities undercuts it, this must surely question the applicability of this definition and your subjective characterization of exploitation.

It is to force our categories and ideas on others to assume that labour must similarly be seen as the source of values and wealth elsewhere, such as in the New Guinea highlands. It results in inappropriate enquiries, such as attempts to calculate the labour value contributed by people to the things they produce (e.g. Godelier 1969; Modjeska 1985).[28] As Arendt (1998, p. 105) puts it, "the question arises why Locke and all his successors, their own insights notwithstanding, clung so obstinately to labour as the origin of property, of wealth, or all values and, finally, of the very humanity of man. Or, to put it another way, what were the experiences inherent in the labouring activity that proved of such great importance to the modern age?"[29] The answer in part relates to the peculiar property relations and focus on material possessions that dominate the capitalist order, viewed as the products of labour, which contrast strongly with a focus on possessing things to give to others as in the Wola order, where it is the obviation of labour, I argue, particularly in relation to things of value, which is central to the polity (see Sillitoe 2003, pp. 309-12 for discussion of implications in relation to pig keeping).

[28] The Baruya comment that work is something they forget as it belongs to the past (which is puzzling in applying the labour theory of value - Godelier 1977, p. 146), fits in with the interpretation ventured here.
[29] While this paper draws on Arendt's (1998) phenomenological discussion of activity, it questions the distinction, which draws on deep-rooted European assumptions, between three forms of activity as fundamental to the human condition, namely biological labour, cultural work, and social action.

Working for equality

While time is limited for all of us, the evidence suggests that the Wola do not think that this poses a problem for labour. Indeed they do not distinguish labour, defined as work to produce something, from life's other activities, and their approach to these generally is relaxed and does not evidence the pressure we experience in capitalist society with its perception of time as in short supply. They are not exceptional in this respect, as Wallman (1979, p. 10) notes in a comparative context, there are cultures where "no time cost is computed – i.e. time, as such, appears to have no value" which limits the use of "time as a measure of value". Consequently, it is questionable to view the sexual division of labour as a gendered arrangement of exploitation because women spend time on certain tasks (often with material outcomes), and men on others (often with immaterial outcomes). Both women and men engage in necessary and counterpart activities, they complement one another in a political-economic partnership that is central to the stateless constitution where the values of personal autonomy and equality are paramount (Sillitoe 1985). This complementarity is quite different to relations between bosses and workers, a comparison made by a referee of this paper, as neither party employs the other. There is also a moral dimension to the sexual division of labour regarding relations between persons. Gendered activity roles pertain to rights and responsibilities, tasks undertaken with respect to others are an acknowledgement of relationships of which they comprise a significant aspect, although I should not go so far as ascribing to them aesthetic significance (Demian 2000).

On another tack, the reviewer quoted above seems to agree with this argument, commenting that "unfair relations rest not so much upon what one does, but upon how one comes out of the domestic and extra-domestic transactions that complete the cycle which production begins". Again, in terms of what they produce, both women and men consume about equal amounts, having the same standards of living. This leaves, from this materialist

perspective, men's vying for status through participation in socio-political exchanges, which may involve things produced, as defining the unequal relations. It is here, I argue, that the distinction between transaction and production is unhelpful. The obfuscation of connections between these domains, as evident in Wola non-labour distinctions between activities, is critical to the stateless order. These arrangements prevent anyone seeking to control production. It is an aspect of acephalous relations that keeps power out of the reach of any persons or groups and makes the subjective capitalist idea of exploitation redundant.

We should not allow some men sometimes speaking of women's activities in a derogatory way (or some women, come to that, speaking poorly of their men folks' carryings on) to deceive us into thinking that this signals or justifies unfair labour arrangements. There is good reason why women and men are taught to shun some of one another's activities, namely that they do not aspire to interfere and exert control. While on occasion they may undertake tasks normally done by the opposite sex, it is embarrassing to do so; for instance men till soil and plant sweet potato or women cut down cane grass, if their partners desert them for some reason. People consider it risible for a man to heap sweet potato mounds or a woman to fell trees, and normally adjusted persons do not aspire to do so, unless an unusually urgent situation arises. Nonetheless the sexual division of labour is not inviolable. One woman known to me refused to move on marriage from her natal place where she participated in various exchange transactions like a man, until finally, after the birth of two daughters, her husband tired of her behaviour and married a second wife and went to live elsewhere, leaving his first wife to what he considered her own eccentric devices. I also know men who have remained bachelors all their lives,[30] who net their own bags and sometimes till soil in their gardens; I was told that they remain youthful for many years as they do not expose themselves to the debilitating consequences of sexual congress (see Bowers 1965 on bachelorhood in the

[30] These are not inadequate or retarded men called *ol dimb*, who invariably do not marry either.

Kaugel valley). Such persons are rare, and they are tolerated, if thought odd, even pitied for their eccentricity. Before we applaud such behaviour for challenging the established order, in the name for instance of female emancipation, we should consider the implications of the arrangements for egalitarian relations.

The ancestors of those living in the Was valley evolved certain patterns of behaviour to accommodate certain values, one of which I think is equality (which is not to imply that ideals necessarily have priority over material issues, as any political-economic order has to accommodate both). While women and men often engage in different activities, this does not signal unfair relations but the occupation of different and complementary socio-political positions necessary to the egalitarian constitution. Both occupy key domains. They comprise a partnership, relying on each other. The implications of the partnership, I argue, extend beyond the family and homestead to the wider community in the Was valley because the division of labour is a key feature of the acephalous polity. The gender difference in contributions to 'productive' and 'unproductive' tasks is necessary to the constitution of the stateless order. The engagement of men in wealth transactions and armed hostilities, which represent the positive and negative sides of political interaction, suggest a further reason why they may not be relied upon to undertake the routine activities involved in gardening, such as tilling the soil, planting and harvesting many crops. Sometimes engaged elsewhere either in exchanges or fighting, families would go without on occasion if they depended on them, whereas they can rely on them to undertake irregular heavy work that they can do in bursts of activity, such as clearing and fencing gardens.

The sexual division of labour that features here, serving egalitarian arrangements, is quite different to the occupational division of labour that supports social hierarchy, such as the capitalist class system. As I have argued elsewhere (Sillitoe 2001), in relation to pig keeping: "Far from featuring exploitation, labour arrangements are frustrating it. The structural

implications for the egalitarian Wola polity are considerable. If we apply the logic of western capitalist or Marxist thinking . . . we should expect persons to attempt to exert some control over the production of pigs. . . . It would be a short step from controlling one aspect of life, such as pig production, to seeking to extend the attendant authority to others. The structuring of labour relations between women and men in pig production is one of the many aspects of Wola life that make capitalist or marxist logic redundant." And the defence of individual autonomy that I think central to their polity applies equally to both women and men. There are countless instances of women acting freely against the interests of husbands and other male relatives. For example, wives tired of their husbands' behaviour moving away to join their brother's or son's homesteads, and daughters forcing their father's hand in a marriage by threatening to elope or even doing so. And those few rebels or oddballs with a mind to can, as noted, undertake activities normally assumed by the opposite sex.

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MEN				WOMEN			
Activity	*Time (hrs.)*	*Hrs. (per week per person)*	*% ($24hrs^{-1}$ $person^{-1}$)*	*Activity*	*Time (hrs.)*	*Hrs. (per week per person)*	*% ($24hrs^{-1}$ $person^{-1}$)*
Artefact	242.9	1.68	1.00	Artefact	783.2	5.53	3.27
				Child care	138.4	0.98	0.58
Construction	994.1	6.93	4.11	Construction	56.9	0.42	0.24
Cooking	1105.0	7.7	4.57	Cooking	852.5	6.02	3.56
Dance	14.8	0.07	0.06				
Dispute	292.8	2.03	1.21	Dispute	68.5	0.49	0.29
Eating	901.1	6.23	3.72	Eating	781.2	5.46	3.26
Exchange	1342.7	9.31	5.55	Exchange	176.9	1.26	0.74
Fetching	158.4	1.12	0.65	Fetching	53.6	0.35	0.22
Firewood	503.1	3.5	2.08	Firewood	119.3	0.84	0.50
				Foraging	116.0	0.84	0.48
Funeral	311.7	2.17	1.29	Funeral	151.2	1.05	0.63
Gardening	1224.8	8.54	5.06	Gardening	1869.9	13.16	7.81
Gathering	157.4	1.12	0.65				
Government	59.3	0.42	0.24	Government	9.6	0.07	0.04
Harvesting	216.5	1.47	0.89	Harvesting	2150.7	15.12	8.99
Hunting	150.7	1.05	0.62				
Illness	160.4	1.12	0.66	Illness	112.0	0.77	0.47
Mission	74.0	0.49	0.31	Mission	230.3	1.61	0.96
Other	154.3	1.05	0.64	Other	297.2	2.1	1.24
Personal	8.6	0.07	0.04	Personal	49.6	0.35	0.21
Pigs	149.2	1.05	0.62	Pigs	446.9	3.15	1.87
Raw materials	5.3	0.07	0.02	Raw materials	59.9	0.42	0.25
Resting	4799.3	33.32	19.84	Resting	3751.8	26.32	15.68
Sleep	9551.0	66.36	39.48	Sleep	9907.7	69.58	41.41
Trade	188.2	1.33	0.78	Trade	145.8	1.05	0.61
Travel	1426.5	9.94	5.90	Travel	1599.1	11.2	6.68
TOTAL HRS.	24192.0	168	100	TOTAL HRS.	23928.0	168	100

TABLE 1 Time spent on all activities – surveys conducted 1974 and 1977 (see key for details of activities).

TABLE 1: KEY TO ACTIVITIES

WOMEN:

Artefact includes rolling string, unravelling old bag & material (for string); netting bags (*nuw*) & men's aprons (*haenaep*) & hats (*tenj*); making pig tether, water container, reed skirt (*hurinj*) & rain cape (*saebort*); sewing clothes; erecting bed.
Children includes comforting baby & sick child, feeding baby, collecting nappy leaves, searching for lost child, & chastising children.
Construction includes collecting materials to build house (e.g. *kunai* grass for thatching), helping thatch houses, pulling down old house, lighting fires to dry new house, sweeping out house, clearing/weeding houseyard, & planting trees in houseyard.
Cooking includes lighting fires; preparing food; baking, roasting and boiling; preparing food for earth oven; waiting for food to cook.
Dispute includes participating/ witnessing disputes over following: crop theft, pig damage to garden, pigs attacking/ killing other pigs, proprietorship/ return of pig, slander, whereabouts of lost item, disagreement between spouses, regularising *de facto* marriage, premarital sex, dissolving marriage, child care arrangements, disagreement with son over where residing, and arrangements for funeral.
Eating includes some other activities, such as talking with others.
Exchange includes includes spectating and participating in following exchanges: *gwat* & *olbay* mortuary exchanges; bridewealth exchanges; *ol komb* reparation payment; settling *saen* debts; taro distribution; pig fostering *maha hentiya* payment; attendance at pig kills
Fetching includes collecting items from elsewhere (such digging stick left in garden), borrowing/lending (*twem*) things, helping others carry heavy loads, and collecting water.
Firewood includes collecting, chopping & stacking firewood, and piling wood on top of pig stalls.
Foraging includes collecting pandan (*aenk* & *aendashor*) nuts & leaves (for raincape), & retrieving buried pandan nuts; collecting edible fungi & tree fern fronds; catching frogs, rats & insects (e.g. *mol* crickets).
Funeral includes attending *hombera* wake, pig kill and pork distribution.
Gardening see Table 8.1
Government includes participation in election.
Harvesting covers various crops (inc. sweet potato, taro, beans, maize, greens, *Setaria*, pumpkin, banana stem heart), & delivering food to men's house.
Illness includes time spent at home unwell (also some time under resting), visiting aid post (*haus sik*) for medicine, attending baby clinic, keening over sick baby, collecting nettles (*niysh*), & visiting the sick.
Mission includes attending church (*lotu*) activities (inc. work at community school).
Other includes time spent on this survey, searching for missing objects, packing up possessions, distributing fungi, yodelling messages, and encounters with spirits.
Personal includes washing, and hair cutting.
Pigs includes fetching/ delivering animals elsewhere, pig & cassowary foddering, checking animals, quietening fighting pigs, searching for lost pig, inspecting sick animals, releasing animals, tethering to stakes, stalling pigs, cleaning pig stalls, castration, mating animals, singeing piglets' bristles, arranging *maha* fostering, mourning dead pig, rectifying pig damage to house, collecting fruit for cassowary, & recapturing escaped bird.
Raw materials includes collecting bark fibre for string (*ya*), pandan (*aendshor* & *aenk*) leaves for rain capes (*sabort*), firelighter cane, sedge for skirt (*hurinj*), bamboo for water container, and wood for trap.
Resting includes sitting alone (e.g. waiting out rain) or with others & talking (e.g. waiting for earth oven to cook), visiting, delousing hair, entertaining children, singing & story telling.
Sleeping records time persons retire, they may continue talking (nights can be disturbed, persons rekindling fires); includes dozing in day.
Trade includes buying/selling food & other things (including to anthropologist); attending station market; making store purchases; & selling area of standing crops.
Travel includes walking to places (forest house, gardens, to attend events, visit others etc.).

MEN:

Artefact includes making arrows, axe handle, digging stick, bark girdle (*heg*), water container, pig tether; mending bow; sharpening axe; rolling string; scraping pearl shell, tying on knitted fillet (*minyaeb*) & decorating fillet.
Construction includes collecting & preparing materials to build/repair house (e.g. *polpen* rafters, *kunai* grass for thatching), levelling house site, building & repairing houses, clearing out/ pulling down old house, building garden shelters (*pugenda*), lighting fires to dry new house, strewing leaves on floor, furnishing (making bed, digging out fire places), putting taboo 'no entry' sign (*showaip*) on path to new house, clearing/weeding

houseyard, erecting fencing & digging trench around house, discussing construction of house & vine bridge, rebuilding vine bridge, felling trees onto path for walkway.
Cooking includes lighting fires; preparing food (inc. pandan [*wabel*] oil); baking, roasting and boiling; collecting stones for, and preparing earth oven; butchering pigs & marsupials; waiting for food to cook.
Dance includes attending drum dance, admiring dancers, and disco at Nipa.
Dispute includes participating/ witnessing disputes over following: land rights, ownership of firewood trees, compensation for pig damage to garden, man killing pig that broke into garden, dogs killing cassowary and pig, return of an exchange payment, non-payment for pig, payment for pork, payment for help on house, who to sleep in women's house, disagreement between spouses, regularising *de facto* marriage, premarital sex, disagreement with daughter about marriage, argument with son in law for hitting daughter, and searching for miscreant.
Eating includes some other activities, such as talking with others.
Exchange includes discussing, displaying and participating in following exchanges: *gwat*, *ol soba, tobway* & *olbay* mortuary exchanges; *injiy kab* & *hogol* marriage exchanges; *ol komb* & *showmay enjay* reparation payment; *henk ish shor* reimbursement payment; *ser* exchange cycle transactions; settling *saen* debts; making *ponay* gifts; inspecting ochring & parcelling up shells; taro distribution; cassowary fostering *shiyort maha hentiya* payment; attendance at pig kills (see Sillitoe 1979 for details).
Fetching includes collecting various items from elsewhere (such as food from women's house, axe, ember to light tobacco), borrowing/lending (*twem*) things (such as tobacco, seeds), collecting water (including digging holes in stream bed to catch water).
Firewood includes collecting, chopping & stacking firewood, and building wood shelter.
Funeral includes attending to corpse & mourner who chopped off finger, discussing and participating *hombera* wake, pig kill and pork distribution.
Gardening see Table 8.1
Gathering includes checking & collecting pandan nuts (*aenk* & *wabel*) & lashing rat barriers on pandan trees; collecting edible fungi & tree fern fronds; gathering leaves to wrap tobacco & *Areca* palm fruits to chew; collecting caterpillar silk cocoons (to wrap pearl shells).
Government includes corvée labour on tracks and participating in election.
Harvesting covers various crops (inc. tobacco, bananas, cordyline leaves)
Hunting includes stalking with bow and arrow, setting & checking traps, and clearing hunting path.
Illness includes time spent at home unwell (also some time under resting), visiting aid post (*haus sik*) for medicine, collecting & rubbing self with nettles (*niysh*), helping the injured & visiting the sick.
Mission includes attending church (*lotu*) activities.
Other includes time spent on this survey, searching for missing objects, persons & dog, examining objects, fire fighting, yodelling messages, and hanging tobacco leaves to dry.
Personal includes washing, smearing mud on body, and preparing feathers (*serep*) to wear.
Pigs includes collecting materials for and making/repairing pig stalls (*kuwl*), fetching animals (inc. ferrying across river), pig & cassowary foddering, searching for lost pig, inspecting sick animals, and chasing pigs out of gardens.
Raw materials includes collecting vine, firelighter cane, bark for girdle (h^eg), and bark fibre for pig rope.
Resting includes sitting alone or with others, smoking & talking, visiting, delousing hair, entertaining children, watching/ card game, singing & story telling.
Sleeping records time persons retire, they may continue talking, smoking etc. (nights can be disturbed, persons rekindling fires); includes dozing in day.
Trade includes buying/selling food (including pork), tobacco, pigs, axe handle wood, cosmetic oil (*wombok*), ochre paint, pearl shells & knitted fillets (*minyaeb*); attending station market; selling artefacts to anthropologist; making store purchases; attending 'business' pig slaughter.
Travel includes walking to places (gardens, to attend events, visit etc.); cutting/clearing paths.

Group	Female		Male		Total
	hrs/wk/person	%	hrs/wk/person	%	hrs/ wk/person
Duna					
subsistence	40.6	55.7	32.3	44.3	36.45
Huli					
subsistence	31.5	61.8	19.5	38.2	25.5
Raiapu Enga					
subsistence	31.2	59.0	21.7	41.0	26.45
Wola					
subsistence	39.6	60.5	25.5	39.5	32.75
Tairora					
subsistence	33.3	62.4	20.1	37.6	26.70
cash sector	5.75	24.3	17.75	75.7	23.50
combined	39.0	50.75	37.85	49.25	50.20

TABLE 2 A comparison of time spent on subsistence activities in different highlands regions.[31]

[31] I am grateful to a reviewer of this paper for suggesting this table. Subsistence defined as the following activities: gardening, harvesting, pig herding, hunting, gathering, firewood collection, construction work, artefact manufacture, and procurement of raw materials.

	Ol howma			← increasing - *Status* - decreasing →								*Ol ora*
Age (yrs.)	>60	30-34	25-29	40-44	50-54	25-29	25-29	25-29	35-39	25-29	30-34	30-34
Artefact	0.98	1.52	1.10	2.24	1.21	1.84	0.30	0.61	0.49	0.92	1.52	0.36
Construction	5.65	3.06	11.77	7.51	5.56	1.48	1.91	1.93	1.58	4.26	3.73	9.02
Cooking	5.49	4.30	3.14	4.38	4.07	3.42	3.98	3.06	5.04	3.97	5.95	3.32
Dance	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.25	0.00	0.03	0.00	0.00
Dispute	3.27	1.19	0.51	0.45	1.91	1.82	2.10	2.73	0.67	1.13	1.09	1.41
Eating	2.97	3.39	3.57	3.33	3.44	3.82	3.73	3.58	3.50	3.23	3.26	3.06
Exchange	6.22	11.74	4.36	5.66	8.54	6.71	7.52	6.13	4.46	2.13	5.99	3.70
Fetching	0.20	0.85	0.77	0.18	0.42	0.42	1.19	1.81	1.15	1.48	0.39	0.57
Firewood	1.63	1.90	0.93	1.99	1.91	1.25	1.25	2.07	2.07	3.67	1.64	1.19
Funeral	2.98	3.30	0.34	2.98	1.97	1.00	0.70	1.47	0.98	0.00	0.78	0.47
Gardening	2.06	6.07	3.41	1.85	2.61	7.26	2.91	7.94	8.56	3.92	4.83	1.70
Gathering	0.00	1.15	0.31	0.27	0.52	0.92	0.62	0.49	1.53	0.45	1.08	0.60
Government	0.12	0.09	0.15	0.06	0.03	0.13	0.42	0.48	0.03	0.00	0.42	0.06
Harvesting	1.21	0.47	0.97	1.33	1.06	0.46	0.86	0.84	0.78	0.68	0.61	1.74
Hunting	0.00	1.37	0.04	0.00	0.01	0.03	0.00	0.03	1.67	1.52	1.54	2.54
Illness	0.87	0.03	1.60	0.05	0.19	0.05	0.13	0.00	0.46	2.31	0.02	0.08
Other	0.74	0.78	0.68	1.01	0.74	0.69	0.63	0.76	0.82	0.64	0.71	0.69
Personal	0.00	0.00	0.05	0.03	0.01	0.27	0.09	0.04	0.01	0.00	0.01	0.00
Pigs	0.25	0.98	0.80	0.25	0.72	1.32	0.56	0.16	0.26	0.04	0.54	1.15
Raw materials	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.06	0.02	0.00	0.09
Resting	20.53	15.63	21.51	18.42	22.35	21.84	23.58	23.10	18.56	24.90	20.02	24.41
Sleeping	40.96	37.14	39.19	40.90	37.83	39.89	40.78	35.83	39.05	38.25	39.01	39.21
Trade	1.00	0.66	0.88	1.43	0.34	0.38	0.76	1.71	0.36	1.10	1.61	0.08
Travel	2.87	4.38	3.33	5.69	4.56	4.98	5.97	4.94	7.90	5.34	5.26	4.55

TABLE 3 Percentage of time that men spent on different activities according to status and age (ex. pilot data).

	Ten howma			← increasing - *Status* - decreasing →								*Ten ora*
Age (yrs.)	25-29	30-34	25-29	30-34	40-44	25-29	50-54	20-24	35-39	35-39	50-54	25-29
Artefact	2.33	3.01	3.70	2.08	6.59	2.14	5.43	5.79	1.75	2.15	4.40	3.37
Children	2.45	0.10	0.15	2.90	0.00	0.81	0.19	0.35	0.00	0.30	0.00	1.62
Construction	0.02	0.05	0.01	0.19	0.97	1.31	0.23	0.10	0.00	0.27	0.00	0.27
Cooking	3.15	3.78	3.81	3.79	2.89	2.88	2.91	3.97	2.86	3.88	2.66	3.56
Dispute	0.23	0.29	0.12	0.12	0.12	0.44	0.36	0.12	0.92	0.27	0.40	0.67
Eating	3.19	2.83	3.64	3.19	2.30	2.39	3.04	3.50	2.50	4.02	2.36	3.04
Exchange	0.40	0.38	0.27	0.60	0.09	1.66	1.45	0.40	0.39	0.25	0.48	0.55
Fetching	0.33	0.08	0.12	0.25	0.39	0.48	0.31	0.37	0.09	0.11	0.10	0.54
Firewood	0.66	0.51	0.58	1.34	0.38	0.35	0.37	0.67	0.77	0.39	0.04	0.66
Foraging	0.80	0.65	0.88	0.64	0.42	0.10	0.34	0.09	0.12	0.89	0.10	0.84
Funeral	0.73	0.80	0.48	0.46	0.73	2.59	0.60	0.55	0.24	1.40	0.24	0.19
Gardening	8.07	10.98	7.14	6.83	11.67	9.30	7.17	5.35	7.42	8.36	6.52	5.63
Government	0.08	0.06	0.00	0.00	0.00	0.00	0.09	0.10	0.00	0.06	0.00	0.17
Harvesting	10.73	8.28	8.56	6.94	8.74	8.32	8.42	9.62	11.93	8.46	6.65	6.75
Illness	0.26	1.09	0.70	0.37	0.03	0.95	0.31	0.38	0.07	0.40	0.06	0.99
Mission	0.00	0.60	0.33	0.06	0.15	0.19	0.31	0.21	0.52	0.12	0.00	0.00
Other	1.78	1.37	1.33	1.42	1.99	1.41	1.41	1.41	1.38	1.36	1.33	1.46
Personal	0.11	0.15	0.27	0.23	0.10	0.12	0.07	0.23	0.08	0.21	0.06	0.44
Pigs	2.42	1.35	1.31	1.66	4.43	1.50	3.58	1.62	2.11	0.75	1.29	3.22
Raw materials	0.09	0.33	0.24	0.16	0.64	0.21	0.28	0.15	0.09	0.54	0.05	0.30
Resting	16.02	12.72	14.97	18.59	9.86	14.00	14.47	17.11	17.31	13.40	24.51	17.80
Sleeping	38.87	42.63	42.16	42.89	40.36	43.85	40.96	40.47	42.20	41.66	43.33	40.88
Trade	0.00	0.00	1.34	0.26	1.10	0.50	0.56	0.22	0.36	2.27	0.00	2.03
Travel	7.31	7.95	7.90	5.04	6.06	4.50	7.15	7.21	6.88	8.49	5.41	5.02

TABLE 4 Percentage of time that women spent on different activities according to status and age (ex. pilot data).

Figure 1: Men's daytime activities

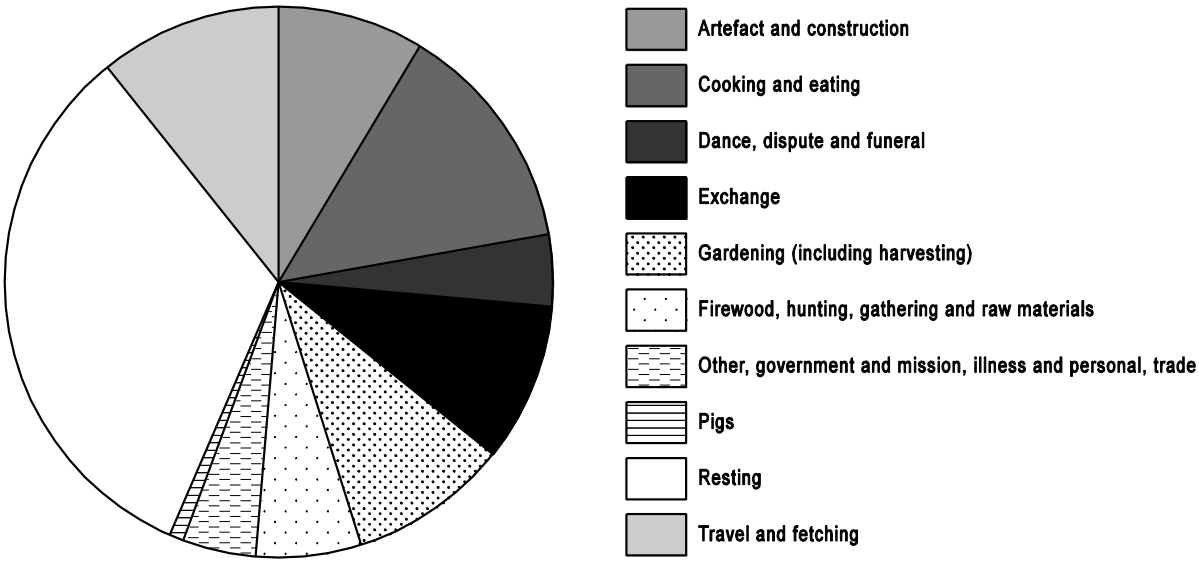
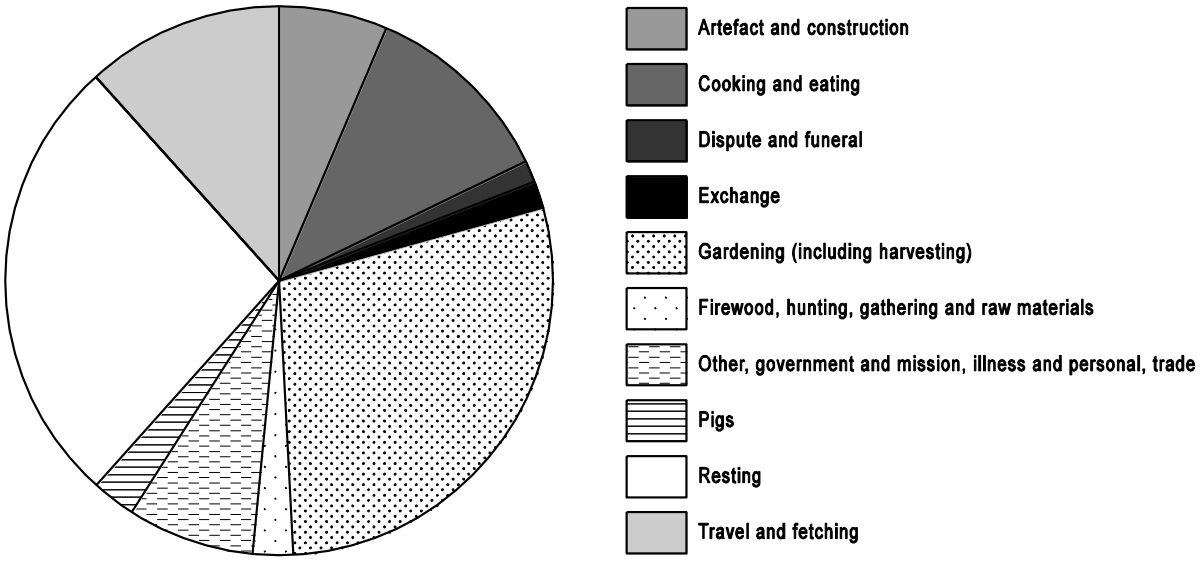


Figure 2: Women's daytime activities



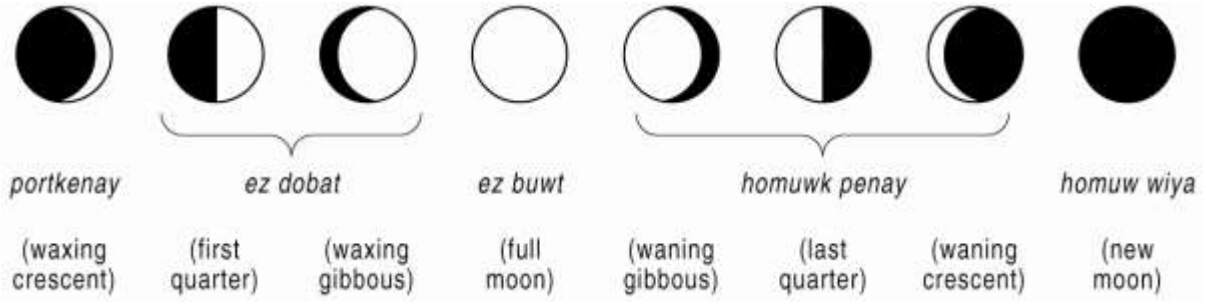


Figure 3 Phases of the moon.