Deborah Fahy Bryceson
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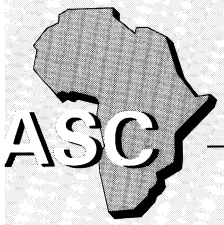
Rural Household Transport in Africa: Reducing the Burden on Women?



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Rural Household Transport in Africa: Reducing the Burden on Women?

January 1993

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Abstract

Rural household travel patterns have been largely ignored in African transport studies. Over the past ten years, however, village-level surveys have been undertaken which reveal the pre-eminence of female porterage in rural transport activities. Donor agencies are now focussing efforts on 'appropriate' transport technology interventions to directly enhance rural mobility and to indirectly improve agricultural productivity. Preliminary evidence, however, suggests that men rather than woman are the main beneficiaries of appropriate transport technology. This paper asks why and suggests a number of methodological refinements to future rural transport studies to generate the necessary information for devising programs with a higher likelihood of effective assistance to rural women transporters.

Abbreviations

ART African Rural Transport

ILO International Labour Office

IMT Intermediate Means of Transport

SSA Sub-Saharan Africa

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Rural Household Transport in Africa: Reducing the Burden on Women?

1. Introduction

Recently three separate strands of development literature have converged to highlight the significance of African women's role in rural transport. Feminist study of the female working day in Sub-Saharan Africa (SSA) has generated a profuse literature during the last two decades, pointing to the centrality of women in African agricultural production systems and the serious labour constraint most rural women producers face.[1] Curiously, the transport element of female labour time expenditure has rarely received careful observation or measurement. A growing interest in intra-village and household travel patterns led transport planners into data collection that revealed the remarkable pre-eminence of women in rural load carrying. The fact that these findings arose amidst development agencies' programs to address the African agricultural crisis, in turn led to advancement of the proposition that a reduction in female transport time and effort could be redirected at improving agricultural production and rural household welfare.

This paper offers a brief review of salient findings on rural household transport demand emanating from surveys and literature reviews in East and West Africa, which henceforth will be referred to as the African Rural Transport (ART) literature. Evidence of the extent of women's participation in rural transport and attitudes towards their transport role are discussed, before considering the main exogenous factors determining household transport requirements and the allocation of intra-household transport tasks. The array of policy interventions currently being proposed and tested by different development agencies are outlined. Finally, the authors offer a critique of the research methodology and policy proposals that have so far been advanced to alleviate African rural women's transport burden, arguing that there is a need for a 'reposturing' of external agency involvement in line with the perspective of African women transport suppliers. Certain vital dimensions of female transport work are not incorporated in current survey methods

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[1] To name just a few see Hafkin, N. and Bay, E.G. Women in Africa: Studies in Socio-Economic Change, Stanford, Stanford University Press, (1976); Bukh, J. The Village Woman in Ghana, Uppsala, Scandinavian Institute of African Studies, (1979) and Bay, E.G. (ed.) Women and Work in Africa, Boulder, Colorado, Westview Press, (1982).

and their omission is likely to have a distorting effect on policy proposals and, ultimately, a detrimental effect on African women transporters.

2. Rural Household Transport Demand

The arrival on the African continent of the lorry, the landrover and the airplane has had little direct impact on the spatial mobility of rural households. Their goods and services are transported primarily in the manner observed by nineteenth century European explorers, i.e. by means of human porterage. The lack of reliance on pack animals[2] is related to the prevalence of tsetse over vast stretches of territory, as well as inadequate control of other animal diseases such as African Horse Sickness, East African tick fever, etc. The limited potential for animal transport no doubt contributed to the historical absence of wheeled transport in Sub-Saharan Africa.[3]

Poor household mobility is not counterbalanced by good locational accessibility. In most areas, low population densities and shifting cultivation practices have resulted in an extremely dispersed rural population and land-extensive farming practices. Agricultural fields tend to be fragmented and spatially distant from the homestead.[4] Centralized village settlements are not a common feature and, given the low level of economic development, social infrastructure such as health facilities and schools as well as productive infrastructure, notably retail outlets for agricultural supplies, are few and distantly placed from most settlements.

The recorded transport history of SSA over this century has dwelt on the establishment of *'modern'* rail and road networks.[5] Early European colonial efforts to establish rail lines to facilitate the export of major cash crops such as coffee, sisal and cotton merely succeeded in providing hinterland outlets to the sea for bulky export commodities produced by African peasants and European settler plantations. During the latter years of colonial rule and post-independence, more than 10,000 km. of new rail line have been opened, but the export orientation remains.[6]

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[2] Ethiopia is a notable exception to this generalization.

[3] Pingali, P., Y. Bigot, and H.P.Binswanger, Agricultural Mechanization and the Evolution of Farming Systens in Sub-Saharan Africa, Baltimore, John Hopkins University Press, (1987), 144-45.

[4] McCall, M.K. 'Significance of Distance Constraints in Peasant Farming Systems with Special Reference to Sub-Saharan Africa', Applied Geography 5, (1985a), 325-345 and McCall, M.K. 'Assessibility and Mobility in Peasant Agriculture in Tropical Africa', in Cloke, P. (ed.), Rural Accessibility and Mobility, Centre for Rural Transport, Department of Geography, St. David's University College, Lampeter, (1985b).

[5] See Hofmeir, R. Transport and Economic Development in Tanzania, Munich, Weltforum Verlag, (1973) for an East African country example and Hopkins, A.G. An Economic History of West Africa, HongKong, Longman, (1990 (1973)) for a general discussion of transport development in West Africa.

[6] Howe, J. 'The Future of Surface Transport in Africa', African Affairs, 74(296), (1975), 314-325.

Emphasis has been placed on road building, directed first at establishing a more extensive main road network and then rural feeder roads. In most countries, the result of road and rail investments is a skeletal network with the majority of rural communities beyond the effective reach of modern transport services, to say nothing of the difficulties of maintaining the existing network in a usable state.[7] Nonetheless, the focus of transport studies over the last three decades is these *'modern'* transport networks, their development, maintenance and function in terms of commodity movement. Analysis of the modern transport system has been pursued to the exclusion of the study of rural household transport characteristics. With the aim of rectifying this omission a series of village transport studies were initiated in the late 1980's primarily under the auspices of the International Labour Office (ILO) and World Bank.

A 1987 World-Bank-funded village transport survey in the Ashanti, Volta and Northern regions of Ghana,[8] using a specially developed methodology for measuring rural household transport demand, revealed just how inconsequential the modern transport system was to rural dwellers' travel patterns. In a sample of 51 households, respondents reported that their travel was predominantly by foot. Within the village, collection of water and firewood, and trips to the fields for crop production and harvesting were done exclusively by walking and headloading. For external marketing, more produce was carried by headload (3.7 tonne/household) than by motor vehicle (0.8 tonnes). Only 27% of the survey households owned any form of transport , i.e. bicycles, and these were overwhelmingly concentrated in the Northern region. None of the households owned motorized vehicles and there was a total of only ten motor vehicles found in the nine survey villages comprising some 21,000 people. Considering travel by household members, 73% was internal to the village, with load carrying travel even more heavily weighted towards the village (76% of the total). Most external travel from villages was in fact to places in the surrounding area. Longer distance travel accounted for an insignificant proportion of total trips (less than 0.6%). The majority of load transport by weight was devoted to basic needs provisioning, notably water and firewood collection. An average household of 11.4 members (6.5 adults) transported over 220 tonne-kms per year, taking approximately 4800 hours (equivalent to

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[7] Howe, J., S. Carapetis and H.L. Beenhakker, The Supply and Quality of Rural Transport Services in Developing Countries: A Comparative Review, World Bank Staff Working Paper No. 654, Washington, D.C., (1984).

[8] Howe, J. and Barwell, I. Study of Potential for IMT: Executive Summary and Main Report (Ghana), I.T.Transport Consultancy Report commissioned by World Bank, (June 1987).

more than half a year of day and night effort) to do so. This can be visualized as a 7-tonne lorry load transported over a distance of approximately 31 kms. The load carrying effort between regions ranged from 160 to 300 tonne-kms amounting to between 2740 and 6210 hours per household per annum.

Using the same methodology, the ILO-sponsored Makete Integrated Rural Transport Project[9] involved a study of village transport and sustained follow-up development work in Makete district, Tanzania.[10] Makete is a remote mountainous areas where cashcropping is not highly developed. A sample survey of 431 households was conducted in 1986 and 1987 which reinforced the finding that motorized travel on roads and long distance travel generally is extremely limited.[11] Ninety percent of all trips, 80% of time spent on transport, 95% of the total weight of goods and 80% of load carrying effort was transport within and around the village. Walking was the predominate form of transport with only an insignificant number of households owning bicycles or donkeys. Travel by bus or other motor vehicles was restricted to trips outside the district. Household transport activities have a roughly similar functional pattern in Makete compared with Ghana. Transport for basic needs provisioning remains foremost. Makete households, however, have to devote more time and effort to fulfilling their transport requirements on a per capita basis. The average Makete household size is 5.0 members (2.5 adults), less than half that of the Ghanaian households, yet transport activities occupied about 2500 hours per annum, i.e. 48 hours per week, the equivalent of an eight-hour job for six days a week. Thus, assuming that all children under 15 represent a 0.25 adult equivalent, transport activities occupy 15.4 hours per capita per week in Makete. In Ghana, the figure is 11.9 hours per capita per week. It is noteworthy that the Makete villages differed from the Ghanian study sites in terms of representing more difficult physical terrain and a more subsistence-based agricultural economy.

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[9] Funded by Swiss Development Cooperation.

[10] Initiated in 1986, the project has been operating for six years and continues at the time of writing (July 1992).

[11] Barwell, I. and C. Malmberg, 'Makete Integrated Rural Transport Project: Preliminary Findings from Village Survey', I.T.Transport, U.K. Consultancy commissioned by International Labour Office, Geneva Rural Transport Paper 4, (October 1986), Howe, J. 'Makete Integrated Rural Transport Project: Report of Work carried out in Makete, May 1986', I.T.Transport Consultancy commissioned by ILO, (April 1987), Calvo, J. 'Makete Integrated Rural Transport Project: Transport Services in Makete District', I.T.Transport Consultancy commissioned by ILO Rural Transport Paper 15, (November 1988) and Barwell, I. and C. Malmberg Calvo, 'Makete Integrated Rural Transport Project; The Transport Demands of Rural Households: Findings from a Village-Level Travel Survey', I.T.Transport Consultancy commissioned by ILO, Rural Transport Paper 19, (February 1989).

3. Women 'Heading' the Way

Estimates of average per capita transport time allocation are, however, extremely misleading since household transport activities are not equally divided between adult members.[12] Nor are they allocated on the basis of any physical attributes like body weight or muscle power. Furthermore, convenience and time availability are not critical factors in their intra-household distribution. Responsibility for transport is based primarily on local consensus regarding the sexual division of labour in the household. In this respect, women are allocated the bulk of travel, especially load carrying. Indoctrination and physical training for the role of transporter is introduced early in a young girl's life.[13] By adulthood, women are extremely adept load carriers accustomed to transporting 25 kg or more on their heads and/or backs daily over considerable distances.

Women's importance as household transporters is clearly evidenced in the Ghanaian village transport survey. Men allocated only about 35% of the time women did to transport activities and, in terms of tonnage transported, their effort was only equivalent to 25% of women's carrying performance (Figure 1). Men's main transport contribution was in the realm of agriculture-related travel associated with crop establishment, weeding and especially helping with the transport of harvested crops. Women, on the other hand, were more active in these tasks than men, as well as doing virtually all the transport work associated with basic needs provisioning and crop marketing.

The men of Makete were even less involved in transport than the Ghanaian men. They contributed only about 25% of the time women did to transport and were performing approximately 11% of the load carrying effort (Figure 2). Like their counterparts in Ghana, the majority of their transport time contribution was associated with agricultural activity. However, they refrained from active involvement in harvested crop carrying. This could be related to the more subsistence nature of agriculture in Makete, i.e. the absence of significant amounts of cashcrops requiring transport from the field and men's custom of leaving women fully responsible

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[12] Children were reported to be responsible for roughly 12% of household transport activities (Barwell and Calvo, (1988), 81).

[13] For a description of the indoctrination process amongst the Fulani of Niger see Dupire, M., 'The Position of Women in a Pastoral Society', in Paulme, D. (ed.), Women of Tropical Africa, London, Routledge & Kegan Paul, (1963), 55.

for food provisioning, from its production in the field, transport to homestead as well as preparation and cooking.

Rural African women's role in transport has always been apparent to even the casual visitor. Nineteenth century European explorers remarked about it .[14] Ironically, it appears that the ubiquity of women's role as transporters throughout Sub-Saharan Africa has resulted in their work in this sphere being taken largely for granted. Numerous detailed studies of women's labour time allocation, documenting women's arduous workday in agricultural tasks and basic needs provisioning, have nonetheless overlooked the transport element.[15] Time spent transporting goods and services is subsumed into a categorization of tasks based on net output. Thus, transport of water becomes ' water collection', travel to fields becomes 'agricultural activity', etc.

Recently, this oversight has been receiving attention. Researchers have begun to distinguish transport time and load carrying effort within output-directed activities such as water and firewood collection. The findings complement the village field study data reported above. Curtis cites survey data from rural Kenya showing round trip water collection time ranging from less than one hour (9% of those sampled) to over 6 hours (27% of the sample) during the dry season.[16] Cecelski's world-wide review of fuel collection studies reveals time variability of between one hour per household per week in a forested area of Nigeria to 38 hours in Uttar Pradesh.[17] Fikerte Haile's study focuses on women fuel carriers supplying Addis Ababa. In her sample of 276 women carriers, on average individuals carried firewood 11.7 kms which weighed 36.2 kgs. amounting to a load of 75% of body-weight . Seventeen percent of the women were carrying loads heavier than their body-weight.[18] What is evident in this work is not only the sheer volumes of goods being transported by women vis-a-vis the local economy and environment, but the material duress under which this work takes place. Curtis is attentive to the physical side of

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[14] E.g. in 1874, Cameron observed the incoming traffic of people to lake-side Nyangwe on market day. "At the landing place the canoes were hauled ashore when the men shouldered the paddles and sauntered slowly to the market-place, leaving the women to bring up the merchandise. This they carried in large baskets slung on their backs by a strap across the forehead, like the creels of the Scottish fishwives." (Cameron, V.L. Across Africa, London, George Philip & Son, (1885), 287.

[15] For a comprehensive review of the findings of labour time allocation studies see Goldschmidt-Clermont, L. Economic Evaluations of Unpaid Household Work: Africa, Asia, Latin America and Oceania ,Geneva, ILO, Women, Work and Development Series 14 (1987).

[16] Curtis, V. Women and the Transport of Water, Intermediate Technology Publications, (1986), 26.

[17] Cecelski, E., 'The Rural Energy Crisis, Women's Work and Basic Needs: Perspectives and Approaches to Action'. Geneva, Rural Employment Policy Research Programme, ILO, (1985), 70-1.

[18] Fekerte Haile, 'Women Fuelwood Carriers and the Supply of Household Energy in Addis Ababa', Canadian Journal of African Studies 23(3), (1989), 446-7.

women's efforts, examining the different postures for load carrying, their relative efficiency and the damage that can be inflicted on women's physique. She cites Kenyan medical sources showing the high incidence of backache amongst Maasai women as well as the treatment of 'Kikuyu bursa', an osteo-arthritis of the soft tissue of the knee caused by load carrying.[19] The women fuelwood carriers in the Ethiopian survey complained of eye, chest and back pains, high rates of miscarriage and the danger of falling down.[20]

In view of women's already onerous workload with respect to agricultural production and basic needs provisioning, it is worth asking why human porterage in Africa is so restrictively women's work? In most other cultures in the developing world, not necessarily characterized by chivalrous attitudes towards women, men are expected to take the brunt of physical load carrying. In contrast, African rural dwellers tend to discount transport submerging its costs in the use value of a more specific object-oriented activity. Skjonsberg, in her detailed study of labour allocation in a Zambian village, as seen through the eyes of the villagers, reports that their attitude is: "[f]irewood and water are women's responsibility. Men can and do, of course, help, but it is not their job. It is a woman's job for they have stronger necks than men."[21] It is interesting that physical strength is used as a rationalization, but the notion of women's superior physical strength is qualified: "[m]en are stronger than women and that is why they do all the important work. Women have stronger necks than men and that is why they must carry things on the head."[22]

Anthropologists speculate that the sexual division of labour was more balanced before colonialism when men were hunting and defending their villages from intruders.[23] With the disappearance of these activities, men have not rechanneled their time into agricultural pursuits and homestead maintenance to the degree required to balance the workload between the sexes. But an explanation which rests on historical residuals is unlikely to provide the full explanation. Current social, economic, political and legal factors no doubt are contributory causes. African women

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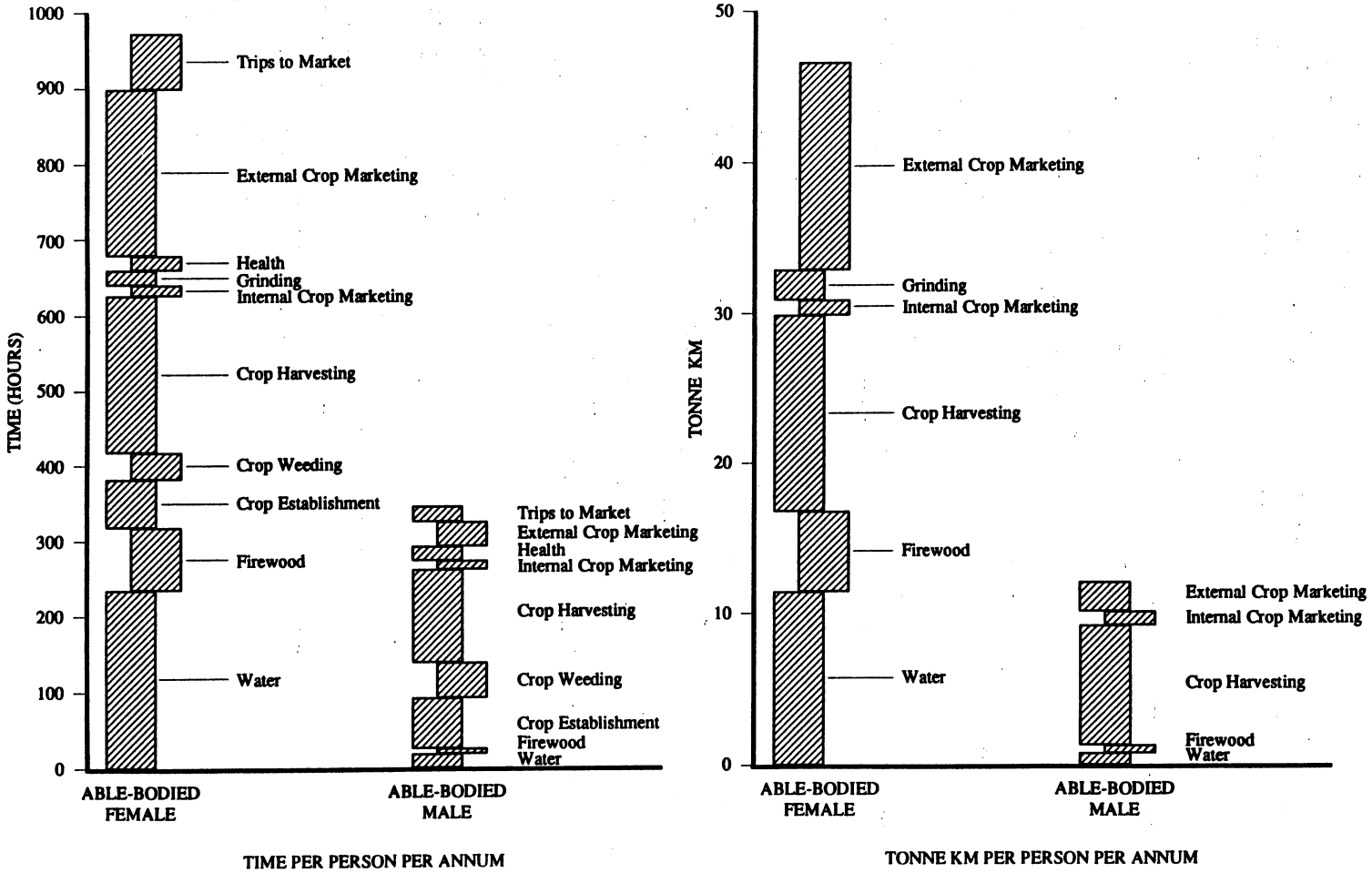
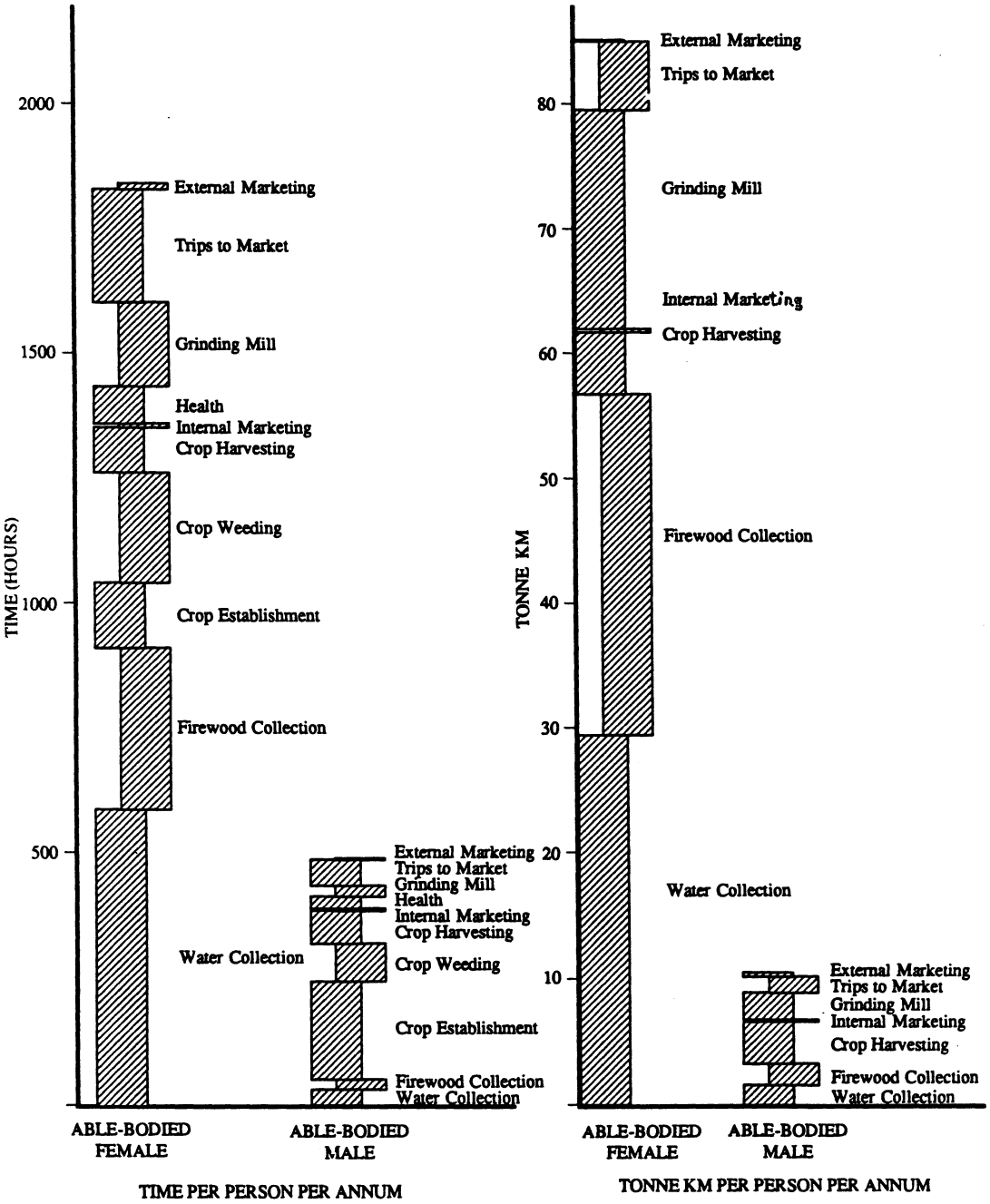
[19] African Medical and Research Foundation communication in Curtis, (1986), 9-10.
[20] Fekerte Haile, (1989), 444.
[21] Skjonsberg, E. Change in an African Village: Kefa Speaks, West Hartford, Connecticut, Kumarian Press, (1989), 87.
[22] Quote of Mr. Sandikonda Daka (Kefa villager) in Skjonsberg, (1989), 140. Kaberry's interviews in the Cameroons revealed that men held the view that women were better suited to load carrying because they had 'stronger foreheads' (Kaberry, P.M. Women of the Grassfields: A Study of the Economic Position of Women in Bamenda British Cameroons, London, Her Majesty's Stationery Office, (1952).
[23] See Richards, A.I. Land, Labour and Diet in Northern Rhodesia, London, Oxford University Press, (1939 (1969)), 381-405.

Figure 1: Transport Activities by Sex in Rural Ghana



Source: Ghana Survey, Howe and Barwell, (1987), 45

Figure 2: Transport Activities by Sex in Rural Tanzania



Source: Makete, Tanzania Survey, Barwell, Howe & Zille (1987) p.28

themselves frequently express the view that the imbalance arises from the fact that rural men pay brideprice which imposes labour obligations on wives. In this respect, a woman's load carrying is merely another service that she is expected to perform for her husband and household.

An intriguing insight into the question of load carrying is provided by a case study of the Luguru people of central Tanzania. As a traditionally matrilineal people, brideprice is not a feature of the society. The Luguru are known to have a comparatively balanced sexual division of labour which is symbolized by the riddle "Do you know why we can say that a Luguru male can give birth? - Because he can carry his child on his back."[24] Men carry small children on their backs in a *khanga* cloth harness in the same manner as women and can be seen doing so on their way to agricultural fields, taking children to a health dispensary, etc. This suggests the close mental association made between women's 'natural' infant carrying role, be it a fetus within the womb or an infant on the back, and the belief that women are more naturally suited to carrying loads bodily. Skjonsberg's evidence supports this. She observes that it is not load carrying *per se* that is women's purview. Headloading is equated with women's work, whereas men actively engage in load transport involving other means of carrying.[25]

The historical roots of women's designated responsibility for headloading are highly speculative. It is clear that at present a woman's role as a transporter is inextricably linked to her role as the household's primary basic need provisioner of food, water and fuel. In many parts of Africa, the colonial period re-inforced, if not rigidified, the divide between women's homestead based work and men's more outward directed economic activities. Men were recruited for mining and plantation work over vast tracts of eastern and southern Africa. Elsewhere, men were encouraged to grow newly introduced cashcrops, leaving women to cultivate the traditional, unimproved food crop varieties on a subsistence basis. With the physical removal of men or their pre-occupation with cashcropping, women assumed almost exclusive responsibility for provisioning the household's essential basic needs with its heavy transport component.

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[24] Lassale, T. and B. Marquet, 'The Sharing of the Pumpkin Seed: Some Gender Aspects of the Upper Mgeta Rural Community and its consequences on Rural Development', Department of Agricultural Education and Extension, Sokoine University, Morogoro, Tanzania, (November 1991).

[25] 'It is only headload transport that is women's work. The moment oxen, combusion engines, or even bicycles enter the rural scene, transport is no longer considered a woman's affair but that of men' (Skjonsberg, (1989), 62).

4. Impact of Demographic and Economic Change

Besides the exigencies of meeting household basic needs, there are several extra-household factors which influence human energy and time expenditure on transport. On the supply side, the nature of resource accessibility and availability of transport technology are the most influential determinants. On the demand side, the commodity and labour market opportunities and social services generate travel from the homestead.

The actual time and effort entailed in women's household transport work has probably increased alongside rural population growth and the transition to more cash-oriented agriculture. Traditional subsistence agricultural systems, using shifting cultivation and inter-cropping techniques, produced smaller harvests that ripened in a staggered sequence. Thus agricultural transport from field to homestead was less taxing. Furthermore, with lower population densities, the supply of firewood and water was no doubt more readily available. Shifting cultivation involved physically moving the homestead after twenty years or more to ensure soil fertility.[26] The choice of a new location took account of accessibility to adequate supplies of firewood and water.

Over this century, the tendency has been for more and more fixed settlement beginning with the colonial powers insistence on specifying tribal boundaries for administrative purposes. Shifting cultivation was considered primitive and encouragement was given to permanent cropping. This has been intensified under post-colonial governments who have sought to introduce capitalized food cropping using fertilizers, improved seed varieties or hybrids. In any case, as the rural population expands, open space for shifting settlement declines. Crop fallow periods are reduced and eventually permanent cropping becomes an imperative.[27] The villagization programs of some African governments have pushed this tendency even further.[28]

Rural household's agricultural fields tend to be locationally dispersed and fragmented to spread crop failure risk over a range of micro-environments. Walking time to fields is

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[26] Allan, W. The African Husbandman, Edinburgh, Oliver & Boyd, (1965).

[27] For a country case study illustrating these tendencies see Bryceson, D.F. Food Insecurity and the Social Division of Labour in Tanzania, 1919-1985, London, Macmillan, (1990), 19-55.

[28] Ethiopia: Cohen, J.M. and N-I Isaksson, Villagisation in the Arsi Region of Ethiopia, Swedish University of Agricultural Sciences, International Rural Development Centre, Rural Development Studies No. 19, Uppsala, (February 1987) and Tanzania: McCall, M. 'More Burdens but Less Weight: Impacts of Villagisation on Women in Tanzania', Enschede: Twente University, Technology and Development Group, Working Paper No. 18, (1984).

considerable. Furthermore, the use of improved inputs on fields adds a new dimension to household transport requirements. Generally, there is an inverse relationship between field input application and distance to fields. Farmers choose to practice 'improved' farming practices on the fields closest to their homesteads, if they are at all agronomically suitable, to reduce load carrying requirements. The utilization of wheelbarrows, carts or other devices for load carrying to fields is unusual due to a combination of severely restricted availability, affordability and poor track conditions to fields.

Inter-household allocation of fields within a village is based on traditional norms, local concensus, government regulations as well as raw power. Often, it is the economically and politically strong households who gain the best fields, most conveniently placed vis-a-vis their homesteads. One recent Zambian field study shows that it was primarily male, commercially-minded farmers who cultivated larger than average fields proximate to the village using improved inputs and modern agricultural techniques.[29] The farmers who cultivated distant, scattered fields on the basis of traditional agricultural techniques were predominantly women. Thus, women's travel time to fields was greater than men's. Similarly in Congo, men are beginning to mechanically cultivate large areas of land close to villages while women are obliged to go further afield to cultivate.[30]

Already well-documented is the increasing distances rural women travel for collection of firewood and water.[31] In many areas, population growth has reached critical levels triggering environmental degradation. Declining fuel availability is marked by successive stages, with changing impact on rural women's labour allocation. In areas of adequate supply, women collect firewood on their way to and from farm plots. As supplies contract, they have to make special trips to search for firewood. Over time, they are forced to walk further and further to gather adequate household supplies. It has been shown that as travel time increases women eventually cut back on their use of fuel due to reduced time for cooking and to economize on the firewood

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[29] Airey, T. and Barwell, I. 'Village-Level Transport and Travel Surveys and Related Case Studies: Report on Interim Analysis of First Village-Level Survey in Zambia', I.T.Transport Consultancy commissioned for the Sub-Saharan Transport Programme by the ILO/World Bank, (October 1991).

[30] Zegers, M. 'Strategies for Women and Development in the Republic of Congo', International Labour Office, Labour and Population Series for Sub-Saharan Africa, Working Paper, (1992), 6.

[31] Cecelski, E., 'Energy and Rural Women's Work: Crisis, Response and Policy Alternatives', International Labour Review, 126(1), (Jan.-Feb.1987) and Sow, F., Femmes et Projets d'Energie au Senegal: Impact sur le Travail Feminin et le Bien-Etre Familial, Geneva, ILO Technical Cooperation Paper, (1986).

collection effort. Household nutrition, particularly of children, suffers as a consequence. After a critical threshold women seek alternatives to firewood. Switching to dried dung is a common solution, which sets in train intensified environmental deterioration, by robbing the soil of replenishing nutrients.

In a more positive vein, the time and effort household members devote to transport has increased in response to improvements in social services. The most outstanding increase which remains largely undocumented is children's travel time to schools in areas where hitherto there were none. Travel to dispensaries is also a factor that women are heavily involved in. Finally, waged job opportunities often entail travel outside of one's homestead or village. Until recently rural wage employment was primarily to plantations which hired men almost exclusively. Several authors have noted, however, that female hiring, usually at inferior wage levels, is a growing feature of African plantations. In many places, female heads of households, who tend to be amongst the most asset-poor households in a community, are most likely to seek employment on plantations, earning low wages which are further depressed by heavy travel time costs.[32]

5. Rural Africa's Development Axis: Women, Agriculture and Transport

A welter of tendencies are embedded in the entangled inter-relationships between transport, women's activities, and agriculture. This makes it difficult to identify the central core of the problem, its separate components and its various levels of manifestation.

At the household level, the main tendency has been for transport requirements to intensify over time as described above. However, this intensification process has differentially affected men and women because of the sexual division of labour and because of the marked differences between men's and women's participation in the commercialization of agricultural production. Women have tended to remain more rooted in subsistence agriculture due to their responsibility for household food provisioning.

To a large extent, the viability of traditional subsistence agricultural practices rests on the availability of a wide range of what could best be called *'free goods'*. These include land, water, seeds, firewood, etc. As population growth and commercialization reduces the supply of these

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[32] See Vaughn, M. and G. Chipande, Women in the Estate Sector of Malawi: The Tea and Tobacco Industries, Geneva, ILO WEP Working Paper 40 (1986) and Sender, J. and S. Smith, Poverty, Class and Gender in Rural Africa: A Tanzanian Case Study, London, Routledge (1990).

free goods, their spatial accessibility to women agricultural producers declines. Consequently, women have to spend additional time travelling to distant locations to obtain supplies. Men, living alongside women in rural villages, face the same scarcity of free goods but their superior economic and political power places them in a better position to accomodate themselves. With cash in hand, men can buy themselves better access to village resources if and when the scarcity of these free goods causes them to assume an exchange value in the form of local rent charges. Alternatively, as will be discussed in the next section, men can buy *improved* means of transport which can offset the growing inaccessibility of local resources. Underlying the expanding sphere of monetized transactions, village consensual politics, rooted in men's greater decision-making power, has over the years accorded men an advantaged position in the locally defined sexual division of labour. Thus, women's rural transport burden is part and parcel of their low economic bargaining position in rural society, their entrapment in subsistence agriculture and their fundamentally inferior political power vis-a-vis men.

At the sectoral level, which is the level of perception of most donors as well as in-country government agencies, the rural transport time and energy expenditure data has provided a fresh perspective in development thinking regarding women and agriculture. The limitations of rural transport mirror agricultural sector constraints. Both entail labour-intensive methods coupled with low productivity and uncertain returns. The rural transport constraint is in fact a main contributor to the agricultural sector's low output. Because rural transport is primarily performed by women and women's labour generally constitutes the major share of African agricultural effort in the predominant hoe-based farming systems,[33] an hypothesis has been advanced that rural transport improvements will free women's labour time - time that they can devote to increasing agricultural output - thereby increasing their household's food security and cash income. According to Riverson and Carapetis, "[f]emale labor availability in terms of quantity, seasonability, location, labor quality, and incentives, is therefore the key to agricultural improvement."[34]

However, devoting time savings to agriculture may not be a priority for many women. There is a trade-off between the time women devote to agricultural production as opposed to childcare and provisioning the household's basic needs. UNICEF and various authors have

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[33] See Boserup, E. Women's Role in Economic Development, New York, St. Martin's Press, (1970).
[34] Riverson, J.D.N. and S. Carapetis, 'Potential of Intermediate Means of Transport in Improving Rural Travel and Transport in Sub-Saharan Africa', Transportation Research Record 1291, (May 1991), 82.

argued that women's heavy involvement in field agriculture can restrict the number of feeds they give to their infants and the number of meals other household members receive.[35] A decline in the frequency of meals is especially detrimental to babies and young children, whose food intake capacity is restricted at any one feeding. In areas where infant mortality and child malnutrition is already high, women's time may be better spent in more meal preparation and ensuring the general health and welfare of children.

Where African rural women's time savings are mentioned in the development literature, stress is usually placed on the potential benefits to *households* rather than to the women themselves. Moser[36] identifies this perspective in development agency initiatives generally, describing it as the failure to give priority to women's strategic needs, by giving precedence to practical needs. This essentially sidesteps the deep-seated political and economic dimensions of women's subordination in society, in favour of non-controversial attempts at addressing basic needs. Carr and Sandhu directly challenge the latter approach, arguing that there is scant evidence that any labour time savings women garner through the use of appropriate technology get rechanneled to agriculture, nor should they necessarily be.[37] In view of current evidence of women's relentless labour day, any time savings might best be utilized as leisure by women. Certainly, Curtis' and Fikerte Haile's[38] stress on the over-work and health hazards connected with load carrying suggests that a prime benefit of reducing women's load carrying burden is a potential improvement in women's well-being.

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[35] Tanzania and UNICEF,'Analysis of the Situation of Children and Women and the Priorities for Child Survival and Development', UNICEF, Dar es Salaam (1985) pinpoints the severity of the female work load as the single most important factor causing infant malnutrition and mortality. See also Raikes, A. 'Women's Health and Healing in Modern Africa', Social Science and Medicine, 28(5), (1989), 447-459.

[36] Moser, C. 'Gender Planning in the Third World: Meeting Practical and Strategic Needs', World Development 17(11), (1989), 1799-1825.

[37] 'Given women's existing work load, any technology which saves time and energy is obviously of benefit, but there appear to be many factors which constrain women's access to such technology and which limit the amount of time released even when women do gain access. Tracing how released time is used is also problematic since total time savings are often dispersed among all members of a household (rather than just one woman) and between many different tasks. Factors other than shortage of time such as lack of access to land or credit can and do affect the way women decide to reallocate released time - in particular, they bias decisions in favour of domestic activities or leisure (Carr, M. and R. Sandhu, 'Women, Technology and Rural Productivity', Rugby, U.K., Intermediate Technology Consultants Ltd. commissioned by UNIFEM, September 1987).

[38] Curtis, (1986)and Fekerte Haile, (1989).

6. Directions in Rural Transport Alleviation

Discussion of benefit allocation resulting from saving women time presupposes that successful measures to alleviate rural transport constraints have already taken place. However, outside agency attempts to improve rural transport at the household level are still in their infancy. The Makete Integrated Rural Transport Programme and World Bank financed efforts in Ghana are to date the most comprehensive attempts. There is as yet no evaluation documentation available on them or any other household and village level rural transport improvement programs. The literature that exists is primarily one of advocacy regarding the importance of addressing rural *household* transport constraints. Emphasis is on the narrowness of conventional transport analysis and the expense and gross inadequacies of developing a modern road network which has virtually no direct and limited indirect impact on peasant producers.

Operational programs to improve rural transport are being developed firmly within the framework of an appropriate technology approach. Transport improvement is seen as two-pronged: to increase accessibility and to enhance mobility using local materials and skills as much as possible. The former entails the spatial planning of villages and village installations so as to minimize transport distance. Characteristically, the provision of village wells, woodlots and grinding mills proximate to settlements are recommended. It is recognized, however, that villagization programs that nucleate settlement around schools, dispensaries and other social and physical services may result in villagers having to travel further to their agricultural fields. Daily travel and load carrying by household members betweeen homestead and agricultural fields can cumulatively add up to more time and effort than the less frequent visits to dispensaries and other centralized services.[39] Thus, there is a travel time trade-off operating in any programme to *rationalize* African rural settlement. Local conditions and villagers' activity schedules have to be taken into account in trying to plan interventions which actually improve accessibility.

The issue of enhancing rural mobility revolves around promoting the more widespread availability of *'appropriate'* means of transport or *'intermediate means of transport'*[40] (IMT)

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[39] McCall, (1985a), 325-345.

[40] Defined as "those means of transport which are *intermediate*, in terms of initial cost and transport characteristics - payload, range, speed of travel *and* route requirements - between the traditional methods of walking and headloading, and conventional motor vehicles...[and]...intermediate in *time*, i.e. they are a stage in the process of developing from a traditional to a modern transport system" (Bryceson, D.F. and J. Howe, 'An Investigation into the Potential for the Wider Use of Intermediate Means of Transport in Ethiopia', I.T.Transport Consultancy commissioned by the World Bank, (April 1989), 1).

which offer any improvement on performance superceding that of headloading, i.e. hand-carts, wheel barrows, bicycles, improved animal panniers, animal-drawn carts, mechanically powered vehicles like motor bikes, etc. Appropriateness is decided in terms of the local terrain, type of usage, affordability, local maintenance capability and cultural preference.

There are four main components to the introduction of these new or improved means of transport. First, it is generally assumed that distribution will be on an individual rather than group basis and that it will take place through the market place. The ILO/World Bank Rural Travel and Transport Project has adopted this as one of three key working hypotheses.[41] Second, efforts are made to provide suitable transport infrastructure, notably track improvement. Third, provision is often made for skills training to both make and maintain the transport devices. Fourth, improvements are targetted for *local-level transport*,[42] especially the short-range, drudgerous, encumbered transport that burden women and which constitute the bulk of rural transport activities. This is in distinction to the provision of better access to long-distance transport which functions to make it easier for villagers to emigrate.

7. Women's Access to Improved Means of Transport

What is emerging very quickly from the literature is that men are much more likely to adopt new intermediate forms of transport than women.[43] Some of the reasons for this pattern have already been mentioned, namely women's lack of purchasing power relative to men and secondarily, in some places but by no means all, women's acquisition of improved means of transport is circumscribed by notions of cultural impropriety. The bicycle is a case in point. In rural Eastern Uganda where bicycle usage is very prevalent, very few women ride bicycles and

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[41] The hypothesis is: "[t]hat the returns on such investments in appropriate low-cost infrastructure and intermediate means of transport (IMT) - ranging from wheelbarrow to motocycles - to farm families themselves are so high that they will be undertaken by private individuals, and that government's role can therefore be largely facilitative and promotional rather than requiring direct investment (sic.)" (Urasa, I. 'Women and Rural Transport: An Assessment of their Role in Sub-Saharan Africa', Rural Travel and Transport Project, Sub-Saharan Africa Transport Programme (SSATP), Geneva, ILO, Infrastructure and Rural Works Branch, (September 1990).

[42] *Local level transport* is defined as 'the means whereby the majority of the rural population transport themselves, their families and their goods'; or 'that which people in rural communities use in their attempts to fulfill basic needs for shelter, food, water, clothing, health services, education and markets for produce' (Howe, J., 'A Conceptual Framework for Defining and Evaluating Improvements to Local Level Rural Transport in Developing Communities', Geneva, ILO, World Employment Programme CTP 19 (1983)).

[43] Howe, J. 'Social and Economic Implications of Carts and Wheelbarrows on Women', I.T.Transport Consultancy commissioned by the United Nations Development Fund for Women (UNIFEM), (February 1989); de Leyser, D. 'Review of Literature relating to the Use of Intermediate Means of Transport in Sub-Saharan Africa', I.T.Transport Ltd. Consultancy commissioned by the World Bank Sub-Saharan Africa Transport Programme, Rural Travel and Transport Project, Working Paper 2, (March 1992).

those that do are considered "too liberated" and "acting like men".[44] Male bicycles with crossbars are most commonly available which exacerbates the fact that African women's normal clothing, i.e. long waist-cloth wrap-around skirts, does not make it easy for them to ride a cycle.

Despite impediments to women's adoption of improved means of transport, it has been observed that in some cases men who adopt a transport innovation take on transport functions that were previously shouldered by women.[45] Furthermore, with the spread of the innovation, its novelty and scarcity value decline and women gradually get direct access.[46] This process has been described for the spread of ox plough usage.[47] Gender transfer seems most effective in rural areas of male out-migration where women take over men's productive roles in their entirety.[48] In less feminized settings, the process of gender transfer is more a hypothesis than a proven fact.

The theory that men take over women's transport tasks when availed improved means of transport requires further scrutiny. It has been recognized that men's possession of IMT is often triggered by status consciousness rather than practicality.[49] Bicycle usage is again illustrative. In several parts of SSA where bicycles are used, it is men, particularly younger men, who monopolize ownership. Bicycle ownership can be compared with sports car possession in the industrialised world. The vehicle is not used for fuelwood, water or crop transport if the purpose of ownership is to impress. Wear and tear imposed on the vehicle would seriously depreciate its value as a status symbol.

If and when men acquire IMT with the practical objectives of load carrying in mind, it is frequently with commercial intentions.[50] Wheelbarrows, handcarts and ox-carts are used on a hire basis for firewood and water collection as well as crop transport. This could serve to alleviate women's load carrying burden indirectly, but it is likely to do so selectively. Women from

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[44] Malmberg-Calvo, C. 'Intermediate Means of Transport, Women, and Rural Transport in Eastern Uganda', I.T. Transport Consultancy commissioned by the World Bank Sub-Saharan Africa Transport Programme and the ILO Rural Travel and Transport Project, (Janauary 1992), 50.

[45] E.g ox cart adoption in Tanga region, Tanzania, see Lauer, M., 'The Impact of the Oxenisation Project at Mwanumba on Women', Tanzania Integrated Rural Development Plan (TIRDEP), Tanga, (1984) and Bryceson and Howe, (1989), 20.

[46] de Leyser, (1992), 33.

[47] Tobisson, E., 'Women, Work, Food and Nutrition in Nyamwigura Village, Mara Region, Tanzania', Tanzania Food and Nutrition Centre Report No. 548 (1980) and Kjaerby, F., Problems and Contradictions in the Development of Ox-Cultivation in Tanzania, Copenhagen, Centre for Development Research, Research Report No. 66, (1983).

[48] E.g. Dawson, J. and P. Zille, 'A Survey of Scotchcar Producers and Users in Zimbabwe and the Development of an Assessment Strategy for the I.T. Wheel Bender and Jig', I.T.Transport, (September 1989).

[49] Howe and Barwell, (1987), 68.

[50] Howe, (1989), 9-11.

wealthier households will be able to pay for the service, whereas women from lower income families, less integrated in the cash economy, will not. It also introduces the disconcerting prospect that low-income women load carriers will have to compete with male commercial agents for the communities 'free goods', with the likelihood that the men's enhanced mobility will win the race to water supplies and firewood stocks.

Growing evidence from rural Africa suggests that both the impetus for and acquisition of IMT is tied almost exclusively to commercial market usage. The corollary is that men rather than women gain access to the IMT and rarely relinquish its usage for domestic purposes. A striking example of this is the widespread reliance on bicycle transport in rural Eastern Uganda documented by Malmberg-Calvo.[51] In the vast majority of cases the bicycles have been purchased and are utilized solely by men in their business pursuits, notably transport of trading commodities or back seat passengers. This development has not arisen due to women's ignorance of the bicycles' potential for relieving drudgerous labour. Rather the main hindrance is the capital outlay required to purchase a bicycle. What is increasingly apparent is that *most IMT from the perspective of African rural dwellers, particularly female rural dwellers, are not low cost.* In rural Tanzania, for example, a new bicycle costs the equivalent of almost a year's minimum wages, to say nothing of the cost of inner tubes, tyres and other spare parts needed to keep it in working order. Similarly, the price of wheel barrows, handcarts and ox carts is prohibitive for farmers who are primarily subsistence producers. Hathaway and Mandel argue that ox cart hiring is essential if ownership is to be economic, but this undermines its use for the routine domestic tasks performed by women.[52] Ayre calculates that only commercially-minded farmers with large holdings of 4 ha. or more can viably make an investment in animal-drawn carts.[53] In his review of IMT case studies, de Leyser concludes that "[t]he single greatest factor inhibiting the wider ownership and use of the various forms of IMT is that of affordability."[54]

Thus, there is a possible contradiction in the rural transport alleviation efforts of development agencies with respect to the introduction of IMT. International agency commitment to

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[51] Malmberg-Calvo, (1992).
[52] Hathway, G. and S. Mandel, 'The ITDG Animal Cart Project: Report on a Visit to Kenya and Tanzania', I.T. Transport consultancy, (May 1985).
[53] Ayre, M., 'Prefeasibility Study for Development of Animal-drawn Transport in Rukwa Region, Tanzania', I.T.Transport Consultancy, (June 1988).
[54] de Leyser, (1992), 42.

the *market* dissemination of IMT could operate to derail the target of addressing women's drudgerous, load-carrying work.[55] It is apparent that local infrastructural development efforts, especially path improvement[56] are more likely to beneficially affect women, regardless of their income standing.

8. Critique: Unloading or Off-loading Women?

The household transport demand methodology has brought into focus African rural women's transport effort. However, this section will argue that certain key aspects of women's transport work have not yet been taken into account. Thus, the formulation of policies on the basis of these partial findings could exacerbate rather than alleviate women's transport constraints, by widening the gap between the transport capabilities of men and women, and in the process, fail to address the gulf between their socially defined household transport responsibilities.[57] The deficiencies in the methodology are rooted in its underlying assumptions regarding African rural households and female labour. This section reviews these assumptions in turn.

Unitary Household Transport Demand Assumption

The household transport demand methodology employed in most of the references cited so far, and which one of this paper's authors[58] has been involved in developing, is implicitly premised on a revised market demand model. The methodology incorporates the concept of basic needs provisioning as a way of accomodating the primarily subsistence nature of the majority of rural households in SSA. *'Household transport demand'* is defined as "the movement of people or goods for any conceivable purpose, including the collection of water or firewood, by any

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[55] In her incisive review of women and rural transport interventions, Doran notes '[g]iven what opportunities transport can permit including the considerable time and energy savings to women, then serious consideration should be given to the possiblity of subsidies in view of the affordability constraint' (Doran, J. 'A Moving Issue for Women: Is Low Cost Transport an Appropriate Intervention to Alleviate Women's Burden in Southern Africa?', Gender Analysis in Development Sub-series No. 1, University of East Anglia, U.K., (October 1990), 75-76. It should be noted that some international and bi-lateral agencies are not committed to promoting the market dissemination of IMT. For example, UNICEF has run a very successful improved water collection project in Ethiopia, based on women's group ownership of a donkey cart. The vital stipulation that ensures the project's continuity is that donkey feeding and care is performed by a labourer paid from the monetary contributions of the women beneficiaries (Bryceson and Howe, (1989), 27).

[56] Dixon-Fyle, K. and I. Frieling (1990), Paths in Rural Transport: A Study of Makete, Tanzania, International Labour Office, Geneva, CTP 100, (May 1990).

[57] For discussion of household capabilities and responsibilities see Sen, A.K. 'Women, Technology and Sexual Divisions, Trade and Development, Study prepared for UNCTAD/INSTRAW, New York, United Nations, (1985) and Bryceson, D.F. Women and Technology in Developing Countries: Technological Change and Women's Capabilities and Bargaining Positions, Santo Domingo, UNCTAD/INSTRAW, (1985).

[58] John Howe.

conceivable mode, including walking or headloading."[59] Demand is measured in terms of energy expenditure units related to number of trips, time, distance or weight carried. Household transport demand is seen as a response to a spectrum of needs from 'core needs', which are 'life-sustaining', to those which are 'life-enhancing' and finally 'life-enriching'.[60] The author now acknowledges that there are a number of contradictions in the overall working concept of household transport demand centering primarily on the question of transport demand determination.

Standard market demand models are premised on individual choice. The danger of devising a *household* demand model is that the notion of unified demand on the part of a group of individuals will be incorporated into the model. This is precisely what has happened in the household transport demand methodology and the ART literature generally. The rural transport surveys previously cited in this article assume the neutrality of household demand, i.e. individual household members' demands are lumped together as a homogeneous unity. This assumption is facilitated by the stress placed on the close association between household transport and the provisioning of basic needs, and gives rise to equating the need for transport services with transport demand *per se*.

The concept of household transport demand requires refinement. In the context of subsistence households, there is a two-staged process at work. In the first stage, the felt basic needs of individual members are translated into transport service requirements. If the determination of transport demand stopped at this stage, with individual members meeting their own need for transport services, it might be valid to speak of the aggregate as an amalgamated household transport demand. The measurement of individual demand would coincide with individual members' transport needs, adding up to a total household demand. However, in the second stage, the demand for transport services within the household is exerted on specific members of the household who are designated as the main transport suppliers. As the surveys have invariably revealed these transport suppliers are primarily women. Through their transport activities, they express a measurable transport demand which reflects their specific transport service demands as well as the service demands of other household members.

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[59] Barwell, I, J. Howe and P. Zille, Household Time Use and Agricultural Productivity in Sub-Saharan Africa: A Synthesis of I.T.Transport Research, I.T.Transport Ltd., Oxon. U.K., (November 1987), 3.
[60] Howe, (1983), 12-16.

Under the existing household transport demand model, it is assumed that task performance by individual household members meets a *household demand* with undifferentiated apportionment of benefits and costs of this work performance to household members. In reality, by serving as the actual means of transport, women experience a disproportionate share of transport costs and only some of the benefits. Treating all household members as consumers of transport, the issue of gender bias at the intra-household level does not arise. It surfaces at an inter-household level instead. Concern is expressed for the impact of restricted access to IMT on female heads of households as opposed to male heads of households, rather than considering the dilemma as it exists between husbands and wives and other male and female members *within* the household.

Ultimately, these misperceptions can be traced to applying a market demand model to what is largely a subsistence-producing household which allocates its survival tasks on the basis of cultural norms rather than the optimizing principles of the marketplace. The methodology makes the household's physical survival and cultural imperatives synonymous with market choice. While it is generally assumed that demand declines as scarcity of supply and price increase, the transport demand of African rural households is relatively unresponsive to the *costs* of transport suppliers' increasing energy expenditure. This again relates to the two-staged determination of transport demand. Within the household, members who are relatively free of culturally-ordained transport responsibilities can demand transport services while remaining insensitive to the costs incurred by the female members' intensified efforts as household transport suppliers. The supply and demand feedback mechanism is stymied by cultural dictates. As energy costs steepen, African women's transport demands remain inelastic or increase perversely because they are compelled by community sanctions regarding the sexual division of labour and do not exercise free choice in transport provisioning. Furthermore, they are responding to basic need requirements of the household and as household caretakers will often feel obliged to raise their efforts in the face of adversity despite the costs.

Lack of Household Transport Supply Analysis

The ART studies might have benefitted from the import, in a modified form, of a body of concepts referred to as the New Household Economics (NHE) first popularized by Becker in the

1960s.[61] The NHE considers the household as the locus for demand *and* labour supply. Labour supply allocation is understood in terms of a market response, namely the household's maximization of income-earning. Feminist theory has advanced more complex analyses of intra-household labour supply based on a large range of economic, social and political variables.[62]

With the limitations of market analysis in mind, recognizing the household as the locus of transport demand *and* supply constitutes a step forward. Once analysis switches to the supply side there is a far wider range of transport features which can be probed. Apart from *who* supplies transport services within the household, *how far* they travel and the *main purpose* for their travel there is the extremely important matter of *how* they supply these services. A large body of literature on this issue exists in conventional transport analysis. The supply considerations and logistics of road and rail haulier firms has received detailed attention.[63] In marked contrast, and despite striking evidence of the dominance of women as transport suppliers, the ART studies have not given sufficient analytical weight to the nature and logistics of female load carrying. This would require going beyond household level enquiries to research travel and load carrying from the decision-making perspective of women themselves.[64]

Many questions immediately arise once the issue of women and transport logistics is raised. What methods are women using to carry loads? What types of materials are used - cloth harnesses, baskets, clay pots, plastic buckets, etc.? What types of loads are women carrying in terms of weight, bulkiness, number, etc.? How do they schedule load carrying, seasonally, weekly and on a daily basis? Does temperature and weather affect load carrying? For example, do women try to avoid carrying loads during the daytime heat? How are loads carried during the rainy season, when paths are especially slippery? [65] Do women engage in group transport and is

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[61] Becker, G.S. 'A Theory of the Allocation of Time', Economic Journal 75, (1965), 493-517 and Becker, G.S. A Treatise on the Family, Harvard University Press, (1981).

[62] Evans, A. 'Gender Issues in Rural Household Economics', IDS Bulletin 22(1), (1991), 51-59.

[63] E.g. Edwards, S.L. and B.T. Bayliss, Operating Costs in Road Freight Transport, London, Department of Environment, (1971) and Harrison, A.J. 'Scale Economics and the Structure of the Road Haulage Industry', Oxford Economic Papers, Vol. 15, (1963), 287-307.

[64] A useful guide in this line of enquiry is Anderson, M.B., 'Technology Transfer: Implications for Women', in Overholt, C., M.B.Anderson, K.Cloud and J.E.Austin (eds.), Gender Roles in Development Projects: A Case Book, W. Hartford, Conn., Kumarian Press, (1984).

[65] Dixon-Fyle and Frieling document that during the rainy season in Makete, women have to negotiate the steep, muddy slopes in a sitting position (Dixon-Fyle and Frieling, (1990), 15).

cooperative load carrying a regular feature of the rural economy?[66] Most critically, how do women manage their transport and load-carrying activities amidst other housekeeping and childcare tasks?

Women's transport activities are embedded in a complex web of multi-tasking.[67] None of the above logistical questions can be taken for granted by women transport suppliers without enormous time costs and an inability to combine multiple tasks in their busy working days. The seeming naturalness of female load carrying for African rural producers, and its ubiquity as observed by outsiders should not be confused with effortlessness. African women's load carrying requires foresight, planning and opportunity costs which result in many disbenefits to the women themselves.

Ignorance and lack of concern for women as transport suppliers can reach an extreme. Goe reports that Zimbabwean men with animal carts, when given a choice between conserving the energy of their animals or their womenfolk favoured the animals.[68] In the men's eyes, women were not only a *means of transport* on a par with draught animals, they were a comparatively *free* means of transport, considered to be more enduring and hence more exploitable.

ART studies implicitly incorporate the cultural biases of the community. The sexual division of labour, which allocates rural women in Africa the role of load carrier, is taken as immutable and unaddressable *within* the household. While women's transport contribution is amply recognized, complacency with the household and community status quo, leads to the formulation of untargetted measures for improvement of local transport. The outcome is predictable. Men garner the direct benefits of transport interventions with, perhaps, a slow trickle-down of indirect benefits to women.[69]

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[66] Skjonsberg notes that women often travel and transport in groups to expedite transport work rather than for merely socializing: "Because water-carrying is a tough job women help each other "not for love, but because they want other women to help them in turn"...."Two persons are needed to lift a headload from the ground. When a group of women carry maize, trotting in a line, encouraging each other to endure and shortening distances by shouts and even laughter, even a load of 50 kilograms seems bearable." (Skjonsberg, (1989), 62,75).

[67] For a graphic description of women's "juggling" of work activities see Obbo, C. 'East African Women, Work, and the Articulation of Dominance', in Tinker, I. (ed.) Persistent Inequalities, New York, Oxford University Press, (1990).

[68] Goe, M. 'Overcoming Constraints to Animal Traction through Collaborative Research Network' in Starkey, P.H. and Faye, A. (eds.), Animal Traction for Agricultural Development, Technical Centre for Agricultural and Rural Cooperation, Wageningen, The Netherlands, (1990), 30.

[69] For documentation of this familiar pattern with regard to general agricultural development interventions see Jiggins, J. Gender-Related Impacts and the Work of the International Agricultural Research Centers, CGIAR Study Paper No. 17, (1980).

Without a careful study of women transport suppliers' decision-making and logistics, there is little possibility of formulating policies that meet women's needs let alone implementing them in such a way that they benefit women. A first step in reforming the policy formulation process would be the insertion of women's logistical transport needs and objectives into the methodology of ART studies. This requires situating women transporters in the context of household transport capacity as a whole, which begs a wider perspective on the productive functions of the household.

Unidimensional Focus on Household Agricultural Production

The goal of maximizing agricultural output, particularly commercial agricultural output has, according to many international agencies, gained heightened importance under conditions of African debt and structural adjustment programs. It, however, is not necessarily the tactical or even strategic objective of African producers themselves, be they female or male. The most recent and far reaching ART studies have been carried out within the context of international agencies' preoccupation with increasing African agricultural productivity, especially cashcrops. The household transport model has been constructed around the concept of the household as, first and foremost, an *agricultural production unit.* Dropping this limiting assumption adds complexity and insight into the analysis of household transport.

Once the multi-functioning of the household is acknowledged, there are a number of areas of enquiry that open up. Perhaps most pertinent to ART studies is the question of the household's *transport output.* ART development policy has so far tended to implicitly assume that external inputs, either in the form of spatial planning interventions to enhance accessibility or the introduction of IMT, are key to local level transport improvements. What is overlooked is the household's *internal management* of transport and what improvements can be effected through *internal adjustment* to the organization of household transport activities. It has already been argued that there is a disjuncture between the allocation of transport responsibilities between adult male and female members of the household and their transport capabilities. It is worth comparing the transport mobility of men and women in more detail to assess the rationality of the present division of transport activities between the sexes and the potential for future organizational reform.

Excluding the *strong neck theory* of women's comparative advantage as transporters, existing evidence suggests that women's mobility is disadvantaged relative to men's with respect

to: 1) access to mobility aids, 2) spatial and temporal impediments to mobility, and 3) the social attitudes of the community. Women's inferior purchasing power gives them less ability to acquire IMT through the market. The ART household interviews asked about ownership of IMT by the household, but there is no data on *who* within the household owns and/or controls the usage of these means of transport. If men own bicycles, for example, are their wives allowed to use them? Why or why not? These are essential questions that must be answered before any programme for IMT dissemination is initiated.

In the Eastern Uganda study of IMT usage, women collectively interviewed in women's groups revealed that their husbands did not wish to 'loan' their bicycles to them for fear of damage to the bicycle. Nor were men reported to be eager to lighten their wives' workload by performing some of their carrying tasks. Bicycle usage was largely off-limits for women. Nonetheless, the women hoped that through their sons' acquisition of bicycles they could benefit indirectly In the society's sexual and age pyramid, women, as mothers, could send their sons on cycling errands which had the potential of easing their load carrying tasks.[70]

Second, women's housekeeping and childrearing responsibilities constantly impinge on their mobility. This operates to reduce the distance range and increase the frequency of their trips both within and outside the village. In the village, women's childcare and cooking activities often necessitate their return home during the day from agricultural field work. Heidemann and Barth's[71] research findings show women were making more frequent trips between field and home sites than men, resulting in cumulatively more travel time. Men are more likely to travel outside of the village. Skjonsberg attributes this to the fact that men have less household responsibilities and more time and flexibility.[72] Men's surplus time can be deployed not only on travel *per se* but also on waiting for unreliable buses and off-chance lifts from passing lorries and cars. Much more research, harkening back to classic time and motion studies, has to be done on daily female mobility patterns, to show where the bottlenecks are. How can women's travel and load transport activities be streamlined? How can women's transport activities be rationalized in view of the continuous multi-tasking that constitutes the average rural woman's workday?

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[70] Malmberg-Calvo, (1992), 40,50-1.
[71] Heidemann, C. and U. Barth, Rural Transport in Developing Countries: A Synopsis of Findings and a Framework for Development, Germany, Institut fur Regionalwissenschaft der Universitat Karlsruhe, (1985), 219-230.
[72] Skjonsberg, (1989), 229.

But the most important stumbling block to improvements in rural household transport is attitudinal. The gender allocation of responsibility for transport activities within the household is drastically out of balance with transport capability by sex. Ideological principles rather than pragmatism underlies the allocation. Load carrying is considered *women's work*, an essential duty of a wife under any circumstances. This is a persistent feature of the rural division of labour which has survived the transition from pre-colonial times to the present. In the words of an observer of Bemba society (in what is now Zambia) during the 1930s:

> Wood for the fire has to be collected daily, or every two days, and this is woman's work. A man fetches wood for his chief, or for a European when required to. For his wife he will only cut down a suitable tree stem on the way back from gardening, and leave it for her to pick up on her return. She usually carries a bundle of dried wood six to eight feet long on her head...Water must also be fetched from the stream morning and evening...No man ever draws for himself under village conditions, and the fetching of water is reckoned one of the essential duties of a wife.[73]

As long as the attitude that women are men's porters prevails, women are unlikely to benefit directly from any rural transport development programs. Until the question of how men's and women's transport activities can be redistributed more equally is faced, external transport interventions are destined to enhance men's mobility at the expense of women's welfare. IMT improvements in particular will be enjoyed by men without attendant changes in the sexual allocation of functional tasks and associated transport responsibilities within the household. It is, in fact, possible that men's enhanced mobility could provide them with the means of further *distancing* themselves, in this case physically, from the household production and maintenance work that their wives shoulder.[74]

Ignoring the Passengers in Rural Transport

One evident omission in the ART literature is that passenger traffic is rarely mentioned. Despite the ubiquitous presence of babies tied to their mothers' backs while mothers travel to and

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[73] Richards, (1969(1939)), 102-3.

[74] See Cook, C. 'Review of Research on Personal Mobility in Rural Areas of the Developing World', Paper for the 25th Anniversay Meeting of the Transportation Research Forum, Washington, D.C. (November 1983), 10 citing a correlation between road accessability and male exodus from farming documented in Hine, J.L. and J.D.N.Riverson, 'The Impact of Feeder Road Investment on Accessibility and Agricultural Development in Ghana', Highway Investment in Developing Countries, London, Thomas Telford Ltd. (1983)

from fields, while they work in the fields and while they transport large loads on their heads, this trademark of rural Africa has yet to be included in the ART studies.

With some of the highest fertility rates in the world recorded in parts of rural SSA,[75] and with almost sole reliance on breastfeeding as opposed to bottle feeding, at any one time a large percentage of the rural female population at any one time has an unweaned child who must be immediately proximate to her.[76] This means a woman must take the child with her during the course of her working day. In an Ethiopian rural time allocation study, 55% of the West Gojjam women interviewed were recorded spending an average of 3.8 hours per day carrying a child. Taking the sampled womenas awhole an average of 2.4 hours of child-carrying was the norm. Child carrying came second only to food preparation as the most time-consuming activity womrn performed.[77] It should be noted that child-carrying was co-temporarious with other work activities. Furthermore, there may be a child in the womb, to add to the weight a woman is carrying.

Managing the trade-off between child carrying capacity and mobilty is a very old dilemma for women on the African continent. Anthropologists have documented that women in hunting and gathering societies, who had to safeguard their mobility for gathering work, tried to space their children four years apart. It was assumed that by the age of four a child would not have to be carried since s/he was capable of walking considerable distances at a reasonable pace and in any case s/he would have grown too large for the mother to carry.[78]

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[75] In low and middle income countries of Sub-Saharan Africa the total fertility rate (1990) was 6.5 compared with 2.7 for East Asia and the Pacific, 4.2 for S. Asia, 5.7 for the Middle East and North Africa and 3.3 for Latin America and the Caribbean.

[76] But proximity of young children is not just a matter of feeding. Psychologists have watched mother/child interaction in Western society and noted that the child's bond to his/her mother and lack of a sense of self-locomotion makes it natural for children to demand transport from their mothers. According to Leach: "We regard walking as a means of moving along, and getting from one place to another But toddlers do not. Not only do they naturally tend to go and come to a seated mother, they are quite incapable of following, or moving along with, a *moving* mother. The infants observed...tended to ask for transport as soon as the mother signalled her intention of moving on. If a puchchair was offered, they climbed willingly into it. If there was not pushchair, they at once held up their arms to be carried. When mothers tried to make the toddlers walk along with them there was invariably trouble. Holding the mother's hand, and with her walking extremely slowly, the infant might manage for a few yards. But after that either the mother would lose her patience and drag the child by the arm, or he would move deliberately and directly in front of her, and stand holding up his arms, demanding to be carried" (Leach, P., Babyhood, London, Penguin Books, (1991), 491-494 citing work by Anderson, J.W., 'Attachment Behaviour Out of Doors', in Burton Jones, N. (ed.), Ethological Studies of Human Behaviour, Cambridge University Press, 1971).

[77] Zewdie Abegas and B. Junge, Women's Workload and the Time Use in Four Peasant Associations in Ethiopia, UNICEF, Addis Ababa, (July 1990), 17-8.

[78] Lee's 1960s case study of the !Kung of Southern Africa recorded women gatherers walking approximiately 2400 km per year. Carrying a child for four years required a work input of 72.3 ton/kms (Lee, R.B. The !Kung San, Men, Women and Work in a Foraging Society, Cambridge, Cambridge University Press, (1969), 310-329). See also

But it is not simply a matter of balancing child carrying capacity with mobility, rural women are carrying children *in addition* to other loads. The nature of women's multi-tasking at any one moment in her workday dictates that she has to carry an assortment of tools, raw materials, and other goods while transporting her child. Skjonsberg's record of life in a Zambian village vividly illustrates this:

> Most people keep their hoes tucked away somewhere in the field. When a man goes to work he is usually empty handed while a woman carries half her kitchen. One day we saw Tisauke on her way to work carrying mealiemeal and a few maize cobs, a pot, and on her back her last born son. Simon is four years and walks but not fast enough for Tisauke on her way to cultivation. Other women bring more depending on how many people they have to cater for in the field.[79]

Most women deploy an ordinary cotton waistcloth[80], otherwise used for clothing, to strap their baby to their backs. When the baby is very young, s/he gets positioned next to the mother's breast. The baby's position and safety is secured merely by a knot in the cloth. There is obviously a knack to tying the cloth, but babies' fidgeting once they gain some muscle coordination means that women often have to stop to resecure the knot. When women are carrying heavy loads or vigorously wielding a hoe during cultivation, such adjustments can be a nuisance and difficult to manoeuvre.

When a woman is carrying a child in addition to a load, it is the child who receives priority. The weight and size of the items to carried has to be adjusted to accomodate the child. In ART studies, load measurements have been based on the 'main purpose of journey'. Thus, the presence of the child is incidental and its weight goes unrecorded, a direct inversion of the priority that the woman transporter places on the component parts of her total load.

In recent years, passenger transport studies have given prominence to the issue of safety. The absence of observation and measurement of rural women's bodily transport of children in SSA has not provided the informational foundation for the safety issue to be raised with respect to children. And only rarely has the health and safety of the transporter herself been mentioned in the ART literature. Overloading can cause long-term back, neck and knee problems for women. In a

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Vuorela, U. The Women's Question and the Modes of Human Reproduction, Monographs of the Finnish Society for Development Studies No. 1, (1987).37-40.

[79] Skjonsberg, (1989), 51.

[80] Known as a *khanga* in East Africa.

more immediate sense, women's bodily transport of children over rutted and slippery paths, especially in steep terrain, can lead to serious falls causing injury to themselves and the children they are carrying.

Women's bodily transport has direct implications for IMT. The usual ironic twists prevail with respect to the distribution of baby transport technology between the North and South. Parents in industrialised countries, where fertility rates are relatively low, are availed a wide array of devices and means of transport which facilitate the joint mobility of their babies and themselves. Baby pushchairs, back harnesses, baby seats for bicycles and baby seats on shopping trolleys are taken for granted. The authors know of no examples of designs of IMT destined for rural Africa that have incorporated features for baby transport.

Baby seat accomodation on IMT disseminated in rural Africa could be extremely beneficial, making the IMT more *appropriate* for women. It is likely that an IMT vehicle with a built-in baby seat would be perceived very differently from one without. Men might question its value as a status symbol and feel less inclined to acquire it whereas women might be better able to claim access, if not ownership.

9. ART and Load Carrying Postures

In summary, the recent appearance of ART literature represents an important breakthrough in transport studies. The findings of village surveys have revealed the dominance of human porterage and the centrality of women as load carriers in African rural transport. This paper argues that various economic, demographic, political and social factors have combined to maintain and intensify women's load carrying responsibilities and work effort during this century. As household transport requirements have grown, cultural norms in rural SSA have continued to remain in a traditional mold which dictates that women's responsibilities are: 1) to do the travel and load carrying connected with household basic need provisioning; and 2) to headload or backload any goods in the absence of transport device-assisted options. These two underlying precepts of the sexual division of labour not only stand in the way of a more rational intra-household distribution of work effort, but also thwart the equitable distribution of benefits between male and female household members in external agency transport improvement interventions aimed at replacing arduous human porterage. The danger embedded in these interventions is that rural

women's physical and economic position could deteriorate further relative to men. Men would gain enhanced mobility with few household transport responsibilities while women would have little or no access to the innovation and remain responsible for the bulk of household transport work. The interventions would fundamentally fail because female human porterage would not be displaced by the transport improvements. International agencies, in general, have been reluctant to challenge the *'cultural preferences of the community'*,[81] even though these preferences give rise to gross inequities between the sexes and, it could be argued, impose a workload that could jeopardize women's physical health.[82]

The partial analysis of African rural transport to date, i.e. the almost exclusive focus on *'household demand'*, rather than in-depth research from the perspective of the women transport suppliers, has resulted in international agency interventions being pursued largely on the basis of a very restricted informational base. There is a need for a more comprehensive research approach which: 1) discards assumptions about the unity of household demand and household welfare; 2) widens the analysis to a consideration of women transport suppliers' decision-making and logistics; 3) abandons a narrow agricultural production maximization goal and 4) recognizes the multi-tasking and childcare dimensions of the women's transport strategies.

Can development agencies justifiably avoid the issue of cultural norms regarding the sexual allocation of transport work within the household? The argument for avoiding confrontation runs as follows: development efforts must be culturally acceptable to the community. The sexual division of labour in transport accords women the bulk of responsibility which should not be subjected to external agency interference. The counter arguments for agency intervention are listed as follows in order of their degree of conviction to women's interests:

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[81] This phrase appears in inverted commas because so-called '*community*' preferences are usually biased towards men. For a discussion of this problem see Rogers, B. The Domestication of Women: Discrimination in Developing Societies, London, Tavistock Publications, (1980).

[82] With respect to gender inequalities, Amartya Sen has forcefully argued that 'problems of conflict within the family tend to get hidden by adapted perceptions both of 'mutuality' of interests (going well beyond the actual elements of congruence that do, of course, importantly exist) and of 'legitimacy' of inequalities of treatment. As a result no policy analysis in this area can be complete without taking up the question of political education and understanding....This is an area in which social illusions nestle closely to reality, and terrible inequities are cloaked firmly in perceived legitimacy. The importance of information and analysis in breaking the grip of traditional arrangements is hard to exaggerate' (Sen, (1985), 44).

Productivity Argument:

To fail to address the cultural dimensions of African rural household transport alongside technical transport project inputs undermines the transport and agricultural improvement objectives of the project . Women transport suppliers' access to the improvements will be marginalised while their transport responsibilities will remain the same. As a result little or no release of women's time can be anticipated thereby precluding any possibility that part of their transport work effort can be rechanneled productively.

Rural Welfare Argument:

Without a redefinition of women's transport responsibilities and with disadvantaged access to project improvements, women's workload could actually increase with a wide array of economic and physical disbenefits to themselves as well as to the physical welfare of their children. Just as water supply programs provide education in better usage of water supplies and avoidance of contaminated water, a rural transport project should provide education in the health and safety dangers of physically overloading women with household transport tasks.

Feminist and Human Rights Argument:

Boldly stated, at present, the 'cultural preferences of the community' condemn women to being beasts of burden in the service of men. The feminist issue of 'who controls women's bodies' is pertinent here, not in the usual context of the debate on reproduction, but rather in terms of production.

Thus, improvements to ease African rural women's load carrying can be rationalized on efficiency, welfare or moral grounds vis-a-vis the rural households or women themselves. This paper is not advocating any one posture over another. *What is at issue is the development of transport programs which are of value to African rural women transporters.* This depends on the design of programs for women transporters with measures to: 1) ensure their health and safety as

well as the safety of their passenger children and 2) to optimize their labour time and effort from the perspective of the women themselves.

Historians often refer to the significance of *'transport revolutions'* in changing the economic course of nation-states.[83] Given the pervasiveness of human porterage in African rural economies, it is possible that successful rural transport programs in Africa could not only improve women's welfare, but additionally, lessen household production constraints, improve the local economy and have reverberations for the country as a whole. Ultimately this could have continental signficance.[84] But before any of this is possible, attitudes towards women as *natural load carriers* have to be challenged.

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[83] See Rostow, W.W. The Stages of Economic Growth, Cambridge University Press, (1960), and for a detailed discussion of this outlook see Freeman, M. 'Introduction' in D. Aldcroft and M. Freeman (eds.), Transport in the Industrial Revolution, Manchester University Press, (1983).

[84] In 1922, Lord Lugard asserted that the development of Africa could be summed up in one word, 'transport', (Lugard, Sir F.D. The Dual Mandate in British Tropical Africa, Edinburgh (1922) cited in Hoyle, B.S. (ed.), Transport and Development, London, Macmillan, (1973), 11).

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