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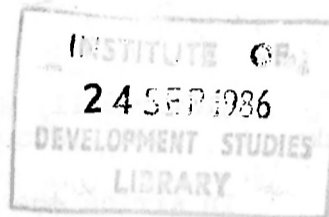
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RESERVE

SEASONAL ASPECTS OF EDUCATION IN
EASTERN AND SOUTHERN AFRICA

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SOUTHERN AFRICA

ABSTRACT

Historically education in Europe, through its timing, was linked to rural labour needs.

In Africa the child and youth contribution to the sedentary and pastoral modes of production are significant. Because education in LDCs has become an important drain of rural labour a prima facie case is made for consciously linking educational timing to rural labour demand which is not the case at present. It is shown that a significant increase in rural household production could be achieved at no capital or foreign exchange cost. In addition such a link would reduce the "opportunity cost" of education to the poor.

Seasonal aspects of educational timing and curricula are discussed and areas for further research are indicated.

(Paper presented at the Regional Workshop on Seasonality in the Provisioning, Nutrition and Health of Rural Families - Ford Foundation and African Medical and Research Foundation: Nairobi April 1982).

SEASONAL ASPECTS OF EDUCATION IN EASTERN AND SOUTHERN AFRICA.I. INTRODUCTION

Much has been expected of the contribution which education would make in the development of the Less Developed Countries (LDCs). Formal education was, next to capital, accorded a central role in the development process. Invariably the systems of education inherited/ chosen by the LDCs carried the mark 'Made-in-Europe' for they are all based on the year-class/curriculum system. This is a system which became dominant in Europe more for its administrative ease and cost effectiveness than for its educational merits.

Yet historically, although formal education was meant primarily for the rich, was internally rigid and disciplined it did try to adapt to the socio-economic reality of the times and the needs of the poorer sections of the Community. This adaption was most noticeable in the timing of the school terms and academic year. The system of education took specific cognizance of agrarian need by ensuring that pupils were at home (the farm) at times of peak labour need-especially harvesting. Indeed, now as then, school holidays in the West were known by their seasonal or agricultural names; Spring Holiday, Summer Holiday, Potatoe Harvest Holiday, etc. The current timings of education in the West are a legacy of this adaption to agrarian needs.

Through its conscious timing, education in the West supported the demands of rural production. This was in a situation where a much smaller percentage of the population worked directly in agriculture than is the case in Africa.

What is the situation in Africa today; does education recognize the seasons; is education, in its timing, supportive of the backbone of the African economy - its agriculture? If not what have been the consequences?

This paper offers, in the context of eastern and southern Africa, an exploration of the seasonal aspects of education. An area neglected in the vast literature on education for development.

II. EDUCATION, FAMILY AND PRODUCTION

1. Education and development.

Formal education is unique in its universality. The same basic system of education seems to be able to transcend - on a world scale - the boundaries of ethnicity, nationality, ideology and political and economic systems. The common feature of the system is the linking of a defined curricula to a fixed age group of human beings. The curricula (composed of subjects and topics) are enshrined in text books, the age - groups into Classes or Forms. Despite its educational disadvantages this system still forms the dominant mode in formal education throughout the world.

Since the late 1800s there has been criticism of this system centred-on its detrimental influences on the development needs of the individual.¹ It is only of late, due to the explicit use of education as a tool for development, that other points of criticism are being raised. Yet irrespective of their plummage and degree of radicalism all education critics agree that some form of basic education is a human right.²

As far as development is concerned Education has been designated a cornerstone of the comprehensive Human Resources approach to development which emerged in the early seventies. The World Bank sees an interrelated significance of education for achieving a comprehensive development approach. Firstly, as a basic need in its own right; secondly, as a way of meeting other needs; and thirdly, as an activity that sustains and accelerates overall development.³ In addition, as opposed to other development sectors, education is supposed to be a pervasive element that must be integrated - horizontally and vertically - into all development efforts.⁴ High expectations indeed!

1. For example, early educational critics and innovators were Dewey (1859-1952), Key (1855-1932), Montessori (1870-1953).

2. Frere through his book Pedagogy of the Oppressed (New York: Herder and Herder, 1970) and Illich through his Deschooling Society (London; Penguin, 1973) are probably the best known of the current critics of education in society and development. Yet both still see education, albeit in a different form, as a human right.

3. This is clearly spelt out in the Education: Sector Policy Paper (Washington: World Bank, 1980) p. 13.

4. Ibid. p. 14.

The World Bank still considers that for LDCs the economic return on an investment in education exceeds those of alternative kinds of investment. As a macrostatement this may be true but country-specific studies have concluded the opposite, postulating a negative overall return on educational investment.⁵

It is beyond the scope and intention of this paper to consider in detail the current critique on education in the development process. Suffice it to say that education's contribution to the increase in social and economic inequality, the serious shortcomings in the relevance of curricula, changes in attitudes of the youth and the problems of the educated unemployed appear frequently as pointers of what is wrong with education for and in development.

For our purpose the aspect of importance is the influence which education has had on rural households—specifically in relation to their production and productivity. Our starting point is education as absorber of children (6-11 yrs) and youth (12-17 yrs).

2. Education - an absorber of child family labour.

The rapid expansion of education in all LDCs after independence, especially at primary level, bears witness to the interpretation by governments and families that education is an important contributor to national development and individual advancement.

Education is in general valued by rich and poor alike although it has been shown that its costs for the latter are higher, while its benefits are less.⁶ Education in LDCs has often been shown to be inherently inequalitarian.⁷ This notwithstanding the expansion of education has reached into the rural areas and to the subsistence - based peasantry who make up the majority of the LDCs population. Table 1 shows the proportional expansion

5. A local example is Thais, H. and Carnoy, M., Cost Benefit Analysis in Education: A Case Study of Kenya. (Washington: World Bank Staff Occasional Paper No. 14, 1972).

6. Again an example from Kenya is a paper in T. Killick (ed), Papers on the Kenyan Economy (Nairobi: Heineman, 1981, p. 273 by M.P. Todaro entitled "The Cult of Education: Myth and Reality".

7. Ibid. p. 273.

Table 1: EDUCATION AND AGRICULTURAL PRODUCTION INDICATORS

	Av. Annual Growth rate of Vol of production 1969-71 - 77-79	Urban- izati- on %age 1980	Number enrolled in primary as % of age group						No. enrolled in secondary % of age group	
			TOTAL		MALE		FEMALE			
			1960	1980	1960	1980	1960	1980	1960	1980
<u>Low income Semi-arid</u>										
Somalia	.6	30	9	44*	13	57*	5	32	1	4*
<u>Low income Other</u>										
Ethiopia	.4	15	7	38*	11	-	3	-	-	9*
Malawi	3.1	10	-	59*	-	73	-	51	1	4*
Mozambique	-0.6	9	48	-	60	-	36	-	2	-
Tanzania	1.9	12	25	70*	33	80*	18	61*	2	4*
Uganda	1.7	12	49	50*	65	58*	32	41*	3	5*
Lesotho	2.4	5	83	101*	63	82*	102	122*	3	17*
<u>Middle income Oil-importers</u>										
Kenya	2.9	14	44	99	64	105	30	94	2	18
Zimbabwe	2.6	23	96	97*	107	105*	86	90*	6	9*
Zambia	3.0	38	42	98*	51	106*	34	89*	2	16*
Swaziland	3.7	-	58	92	-	-	-	-	5	32*
Botswana	1.1	-	42	98	-	-	-	-	1	20*

* Figures marked thus are for years other than specified.

Source: Tables in Accelerated Development for sub-Saharan Africa:
An agenda for Action. Washington, The World Bank, 1981.

of education at primary and secondary level since 1960. As, an average, some 85% of the population of the LDCs of interest to us live in rural areas it is apparent that they are the source of the majority of children at school - especially in the middle-income oil importing countries. An additional point of significance is the more rapid expansion of education for girls.

The costs of education to rural subsistence-based peasants are two-fold. There is the direct cost in terms of labour loss for farming (the "opportunity cost") and the indirect cost in terms of cash for schools fees, uniform, building funds or whatever. The latter must be obtained in some way, often by sale of produce, so, reducing the production available for own consumption. Yet the increasing degree of involvement of the children of the subsistence peasantry in education would indicate that in their perception the possible benefits of education are worth the cost.⁸ It can be argued that in the emerging socio-economic population and environmental context the peasants response to educate at whatever perceived cost/benefit is consistent with the principle of risk spreading.⁹ Whatever the case, education has made such inroads into rural society and its households that it perhaps already forms a fixed part of the social reproductive aspirations of the subsistence peasant. As a digression one can speculate whether education rather than the market place can be the (indirect) route through which the peasantry can be captured?¹⁰

8. Not only is education, in itself, perceived to be worth the cost by rural populations but it is used by them to solve other rural problems. D.B. Paterson in "Education, Employment and Income: Incipient Stratification in Land-Scarc Bunyore" (Nairobi: Institute for Development Studies, Working Paper No: 371, p. 10) noted that one response to the Land Scarcity problem was for the father's traditional responsibility to provide land to his children to become one off providing education.

9. For example Education has been accepted, in certain situations, by Pastoral peoples as a way of spreading risk after a catastrophe. This is the situation reported by E.J. Brown, Irrigation in arid Zones; Kenya. A Socio-anthropological Survey of the Irrigation Schemes of the Turkwel River. (Rome: F.A.O. 1980, p. 42.)

10. A digression related to the arguments put forward by G. Hyden in Beyond Ujamaa in Tanzania (London: Heineman, 1980, p. 31).

However, before looking at the contribution which children and young people make (and thus can be lost) to rural production it is necessary to consider the ways in which their labour can be absorbed by education. The potential of education as an absorber or "drain" of labour has been noted by various rural development researchers. For example Cleave (1970) states that:

"... the importance of education as a potential labour drain is remarkable."¹¹

By "absorption" I mean the extraction of labour which could otherwise be allocated to production (directly or indirectly) within the household.

Education has shown to have two distinct ways of absorbing child and youth labour potential. The first is through physically removing the child to a place of study - the school. This is for at least half, if not all of the available working day. When working for school at home (homework etc) it may still be possible to contribute indirectly (say) through child care to support household production. The second method of absorption which can be ascribed to education is by its inculcation of value systems, attitudes and opinions which alienate children and youth from farming. In as far as the system and content of education causes a reduction of input of available labour to household production then labour can be said to have been absorbed or extracted by education. The often quoted manifestation of this are the educated unemployed (from primary and secondary) who are alienated from and show disdain towards agricultural work. This disdain is often engendered by education as is the expectation of wage employment when there realistically can be none for the majority of school leavers.¹² Ironically, in some cases parents don't want their children to return to the land either for they themselves accord a non-agricultural status to education. "Education is for a job - and farming isn't a job, it's a way of life!"¹³

11. A thorough and extensive review of labour demands in African Agriculture is by J.H. Cleave, "Labour in the Development of African Agriculture: The Evidence from FARM SURVEYS" (Stanford University Ph.D. Thesis, Ann Arbor, Michigan, 1970 p. 219). He is one of the few authors who differentiates between both adult/child and male/female labour contributions to agriculture.

12. World Bank 1980 op cit pp. 43-43.

13. Personal communication from a Development Co-ordinator during a Training course - Limuru Kenya 1982. He was quoting a Ugandan Farmer!

There is little doubt that education can and does, absorb a substantial number of children and youths and will increasingly do so even though perhaps at a lower rate.¹⁴

The question is: what impact does such an absorption have in the dominant mode of the African agricultural system where:

"... labour rather than land is the critical development variable"?¹⁵

An answer to this question can only be ascertained when the factor of production attributable to the 6 - 17 year olds is known. The following section is concerned with this factor.

3. Child and youth contributions to Rural Household Labour.

In the research and discussion on the allocation of Labour in African Agricultural systems the question of the role of children in the intra-household division of activities and rewards is only of late receiving quantitative attention in a systematic way.¹⁶ Of the previous vast amount of anthropological data on the work of children it can be said that:

"The data on children is seldom quantified and is often purely descriptive".¹⁷

14. World Bank, 1980 op.cit p. 18.

15. G. Hyden, 1980 op.cit. p. 10.

16. This view is forwarded by various authors concerned with research into rural households. Two recent examples are: J. Jiggins, "Draft Working Paper for Regional Workshop in Provisioning Nutrition and Health of Rural Families" (Nairobi: Ford Foundation, 1982 p. 9) and D. Kayongo - Male and P. Walji, "Childrens work in Kenya" (Unpublished Manuscript, University of Nairobi, 1980 pp. 1-10)

17. D. Kayongo-Male, "Determinants of Amount and quality of children's Family Labour in Kenyan Rural Areas" (University of Nairobi, Department of Sociology, seminar paper No. 42, 1981 p. 1).

Research on household divisions of labour have shown a shift away from an emphasis on a single explanatory variable, for example: sex, through children's work as pure socialization process to an acceptance of the critical role children's labour plays in the welfare of the family.¹⁸

This latter perspective will be the framework in which I will consider children and youth labour.

Significant to any discussion of the contribution of child and youth labour within the household economy is the basic mode of production to which the labour activities are directed.¹⁹ For this reason a distinction will be made between sedentary and Pastoral modes of production and their associated systems of labour division.

3.1: Sedentary systems

Whilst the human activities needed to maintain agricultural systems are essentially the same (clearing, planting, weeding, harvesting) human responses to varying eco-systems and their individual histories have given rise to distinctive patterns of time and labour division and application to both production and human and social reproduction.²⁰ This naturally influences the traditional place and role of children. Unfortunately the lack of quantitative data on children's contribution to production in "pre-education" times means that the present data cannot be viewed divorced from the direct and indirect influence which education has had on the child and youth labour role. However it is possible to gain some impression of the order of magnitude of the child and youth contribution both relative to their parents and in terms of absolute hours.

18. Ibid p. 1.

19. Some Marxist anthropologists such as Godelier, see Perspectives in Marxist Anthropology (Cambridge: University Press, 1977) have argued that the mode of production is the fundamental determinant for the development of social structures. Similarly Goody in Production and Reproduction: A Comparative Study of the Domestic Domain. (Cambridge: University Press, 1976) argues for the causative nature of the mode of production in the development of social structures and practices.

20. C. Gregory Knight in Ecology and change (: Academic Press, 1974, pp. 259-261) uses the term "Ethogeography" to describe the critical linkage between man himself, his behaviour and the environment from which he draws sustenance.

We will start by looking at a spectrum of activities which make up a working-day for a subsistence agricultural family and a commercial tea farmer in Uganda.

SUMMARY OF ANNUAL TIME SPENT BY FIVE CLASSES OF FAMILY FARM WORKERS IN KAHANGI, TORO, UGANDA (1964/65) AND BY FARMERS GROWING TEA IN KYARUSOZI, TORO, (1965/66)

Activity	Average hours pe person per annum spent by:					
	15 Farmers	22 Wives	20 Other Women	11 Boys ^a	11 Girls ^a	9 Tea Farmers
Clearing bush	66	4	1	4	4	59
Cultivating	98	355	274	7	176	95
On Bananas	325	216	132	17	113	80
Brewing	44	31	25	11	24	55
On Arable crops	213	455	269	26	193	128
On Livestock	290 ^b	47	128	820	279	15
On Tea	-	-	-	-	-	675
Supervising	-	-	-	-	-	39
Other farm work	63	14	10	13	9	90 ^c
Total Farm Hours/day	1,098 3.6	1,122 3.7	840 2.7	900 2.9	798 2.6	1,246 4.1

Activity	Average hours per person per annum spent by:					
	15 Farmers	22 Wives	20 Other Women	11 Boys	11 Girls	9 Tea Farmers
Staying off farm	120	146	637	103	60	242
Social visits	251	28	65	11	23	268
Help neighbours	24	9	5	3	3	57
Casual employment	64	71	203 ^e	832 ^f	875 ^g	-
Trading/market	182 ^h	25	12	5	8	79
Sic/Med. Centre	166 ⁱ	102	59	52	18	104
Work on building	82	1	2	7	1	54
Household	68	730	434	82	342	160
Other non-farm	120	28	39	117	61	123
Total non-farm Hours/day ^d	1,078 3.5	1,140 3.7	1,458 4.8	1,212 4.0	1,390 4.5	1,087 3.5
Recorded Day ^a	7.1	7.4	7.5	6.9	7.1	7.6

- ^a Aged 10-15 years.
- ^b Two farmers with cattle make up over half working time spent on cattle by the fifteen.
- ^c Mostly delivering green leaf to tea factory.
- ^d Assuming 307 days per annum are "available" for work--- i.e. Sundays plus six other recognized holidays are not counted as working days.
- ^e Includes one woman with full-time employment as a typist and one 16-year-old attending school.
- ^f At school
- ^g Includes half of girls at school.
- ^h High, due to the activities of one farmer; without his contribution reduces to about 90 hours per annum.
- ⁱ Six farmers over sixty years of age account for 60 per cent of total sickness time; average for rest was 110 hours per annum assuming a whole day is lost on each occasion, this represents nine days a year.

Source: Cleave 1970, pp 83, 84.

As can be seen the youth contribution to farming is substantial - for boys 80% of the adult contribution and for girls 70%. A clear division is made of livestock activities for boys and arable and crop cultivation for girls. More interestingly farm work is combined with school which is the major consumer of time for children's non-farm activities. The end-result is a length of working-day similar to that of the parents. The girls shortfall in hours on the farm is compensated for by their household activities and both women and girls work more total hours than men! It is possible that the girls household activities allow the women more time for on-farm activities. As an average over the year the on-farm activities occupy 50% of the time for adult subsistence farmers, 42% for boys and 36% for girls. For the tea farmer on farm activities average 54% over the year.

The youth contribution is still very significant inspite of education.

Table 3 shows the time spent on agriculture by a household group comprised of 2.4 men, 3.0 women and 3.7 children in the Chitowa Native purchase area, Mrewa District in southern Zimbabwe.

Table 3: HOURS WORKED ON FARM: FAMILY MEMBERS AND LABOURERS, CHITOWA, ZIMBABWE 1963 - 64.

	Days worked per person per year	Hours per working day	Hours per person per year	Hours per family per year
Men	146	6.2	900	2,157
Women	156	6.6	1,020	3,060
Children (5-7 yrs)	42	5.8	242	889
Labourers	226	6.7	1,500	586

Source: Cleave 1970 pp 81.

These figures show that for these younger children many less days per year are worked directly on farming than for the parents. Yet an actual working day is approx. 90% of that of a parent. The proportional contribution of children, due to their higher numbers, is 41% of that of men and 30% of that of women. The total input of child labour is significantly lower than for the Ugandan data. It was not the intention of the author to look specifically at children's labour contributions and no comments were made on this. A factor which could be of influence is the significantly higher primary school enrolment level on Zimbabwe at this time (96%). As, when children do work, it is for a long number of hours (5.8 average; twice that for Uganda) on a few days - would this be during school holiday periods? A concurrent factor of influence could be the unimodal rain pattern of Zimbabwe as opposed to the bimodal pattern of Uganda where a more distributed input of labour throughout the year is called for (see table 7).

Taking the total labour input for farming (including hired labour) child labour contribution averaged 13.3%.

Table 4 indicates the distribution of labour between different sexes and age classes for family labour in the northern Region of Uganda.

Table 4. TIME SPENT ON FARM WORK: FAMILY LABOUR BY CLASS AND SEX:
NORTHERN REGION, UGANDA (1963 - 1965)

Family Workers by Class & Age ^a	Days Worked		Hours per Year		Hours per Working day
	Av.	Range	Av.	Range	
Farmers: (15)					
16-45	196	107-328	806	201-1,376	4.1
(5) over 45	248	197-313	1,146	732-1,637	4.6
Wives: (16)					
16-45	165	63-262	639	179 - 962	3.9
(4) over 45	194	123-230	1,031	796-1,189	5.3
Other men ^b : (6)					
16-45	208	154-245	788	511-1,416	3.8
Other women ^b : (4)					
16-45	152	91-222	423	296-1,000	2.8
(2) over 45	153	111-194	606	458-753	4.0
Children: (33)					
under 16	30	up to 79	122	up to 412	4.1

^a Figures in parentheses indicate the number of persons in each class and age group.

^b Includes only those who were available for farm work throughout the year.

Source: Cleave 1970 pp. 88.

This data shows a similar concentration of labour: longer on-farm hours on less days. It is difficult to envisage what activity other than education could render such a large labour potential unavailable for so many days.* A concentration of labour input during school holidays would tend to give a shift to fewer working days and more hours per day. The actual level of contribution of direct child labour **input** to farming is significantly lower than that in table 2 and a little lower than table 3. It is 15% of the input of males of 16-45, 10.6% of that of males of over 45, 19% of women between 16-45 and 11.8% of those of 45. Even though at a lower level child labour is still made to contribute to production.

*The relative large size of the sample giving such a small range would tend to support this.

Table 5 gives data from a recent survey showing the most important activities undertaken by children in rural agricultural families in Kenya. Three sites were chosen in different agricultural areas. The survey was timed to co-incide with a period of high labour demand and when children were on holiday from school.

Table 5: MOST IMPORTANT ACTIVITY BY ACTUAL TIME SPENT AS % OF TOTAL

	Farming	Herding	Child care	Fetching fuel	Fetch- ing water	Other e.g. trading	Total	Total hours per child per week
Embu	61	14	11	3	2	9	100	52.7
South Nyanza	48	25	9	1	3	14	100	50.8
Tana River	71	5	16	-	3	5	100	42.1

Source: Kayongo-Male 1980 pp 204 & 205.

When child care is discounted each child worked an average of 40 hours per week.²¹

The survey of 450 households involved 1632 children over 5 years of age (i.e. an average of 3.6 per household). The children's average direct contribution to productive labour (herding & farming) is 75% or 30 hours per child per week. Assuming a two parent family (in the study only 31 families had fathers who were missing) the maximum productive hours per week for parents would be 80. This assumes that the wife is productive full time. Given that the total child direct labour input is 108 hours (3.6x30) then the % age child contribution is 135% of the parents or 57% of the total -- a not insignificant contribution.

As the authors also note:

"during peak season children may be expected to sacrifice going to school in order to complete farm work"²²

indicating that child labour is perceived to be a major contributor to agricultural production in this period.

21. Kayongo-Male, and P. Walji, 1980 opcit p. 204.

22. Kayongo-Male and P. Walji, 1980 opcit p. 191.

The study goes further to determine the overall division of children's contribution to the households under study.

Table 6 shows this data.

Table 6: SUPPLY OF CHILDRENS OVERALL CONTRIBUTION (% AGE)

Contribution	SITE		
	Embu	S. Nyanza	Tana River
Labour in household on farm	74%	85%	86%
Money sent home	3%	1%	2%
Money and labour	3%	1%	2%
No contribution	19%	14%	10%
TOTAL	99*	100	100

*Rounding.

Source: Kayongo-Male 1980 pp. 207.

No explanation is available for the "no-contribution" figures. Useful research would be to see if this is a manifestation of the second way in which education absorbs child labour.

3.1.1: Conclusions and observations.

It is reasonable to conclude that child and youth labour was and is not peripheral but indeed makes a significant contribution towards peasant household production. This has not just to do with the number of hours a child works but also with the fact that they form the "majority" in the household. Demographic trends in Africa will reinforce this situation for the foreseeable future.²³

A change which arises when this labour demand conflicts with education has been noted in West Africa, it causes changes in selection of crops. Maize, cassava and rice are being chosen at the expense of millet, sorghum and yams with plantation as intermediates.²⁴

23. See Table 34 in World Bank, Accelerated Development in Sub-Saharan Africa: An Agenda For Action (Washington D.C.: 1981 p. 177).

24. Cleave, 1970 opcit p. 212.

Labour absorption by education thus can have a qualitative as well as a quantitative influence on household production with a consequence for nutritional value as well as level.

Given the fact that labour is the critical development variable in peasant production in sub-saharan Africa it is of vital importance that the absorption effects of education are minimized. Education is the biggest single absorber of the expanding rural labour potential.

Education as a right is here to stay, but the strong seasonal nature of agricultural labour demand in Africa does allow its absorption effects to be reduced so enhancing rural production levels for no additional capital cost - a question of timing!

3.2. Pastoral Systems.

As Little notes, there are few studies about the labour requirements of herding and the domestic organisation for this.²⁵ The conference on the Future of Pastoral Peoples held in Nairobi in August 1980 didnot, despite the wide variety of papers, present any quantitative data on labour demands and variations for pastoral modes of production. Indeed, one paper indicated the need for data on the differentiation of labour by sex and age.²⁶

However it is possible to make some observations on pastoral labour demands and the role of children in fulfilling them.

25. See P.D. Little, "Pastoralism and Strategies: Socio-Economic Change in the Pastoral Sector of Baringo District Kenya" (University of Nairobi, Institute of Development Studies, Working Paper No. 368, 1980, p.2).

26. The Proceedings of the conference are published by the International Development Research Centre (I.D.R.C.) in The Future of Pastoral Peoples. (Ottawa: 1981 p. 253). The paper referred to is by Broch-Due, Gorfied and Lanton entitled "Women and Pastoral Development. Some Research Priorities for the Social Sciences", p. 253.

The pastoral modes of production differentiates itself from sedentary mode in the nature of its labour demand in that:

- a. a much heavier commitment of labour is needed on a 365 - day per year basis.
- b. the important characteristic of the labour demanded is less one of physical power or dexterity (quality), but more, one of physical presence.

In this latter respect, earlier than with sedentary children, pastoral children are virtual adult equivalents for the purpose of herding. This is born out by the observation that:

".... children are an important part of the labour force. At about 8 years, they start to perform useful work mainly in supervising herds..... As children grow they attend they look after camels."²⁷

Using our previous terminology one would say that the "opportunity cost" of education to a Pastoralist is higher than for a peasant farmer because of the earlier virtual adult equivalence and thus proportionately higher labour loss. The well known reluctance of Pastoralists to educate their children can be explained with the above rationale - as has been noted by various authors.²⁸

The quality of herding is primarily a function of herd mix and size. The actual size and mix chosen at any particular time depends on both the environmental situation and the quality/quantity of labour available. Quality (age of herder) is important for example when there is likely to be a loss due to theft, predators etc. In pastoral systems there is a constant possibility to improve the quality of herding. In this respect one can argue that there is a constant "shortage" of labour in pastoral systems as herding quality can always be improved. An example of the implications of labour limitation is given by pastoralists in Baringo district Kenya, who stated that the reason for disastrous losses during drought is that there are insufficient herd boys to take cattle to the far-off hills.²⁹

27. Ibid p. 307, paper by Kogali, "Sedentarization of the Nomads: Sudan".

28. Ibid. p. 158 paper by P. Rigby "Theoretical Implications of Pastoral Development Strategies in East Africa."

29. Little, opcit. p. 6.

The current degradation of the pastoral environment demands responses from pastoralists in order to maintain their security and thus reproduction.

All strategies - increased mobility, herd diversification, herd dispersion, keeping as many female animals as possible - are more labour intensive.³⁰

Pastoral herd owners usually rely on labour from their closest relatives and inlaws where bonds of reciprocal solidarity ensure a degree of control and minimization of risk of misappropriation of products or animal theft. The inter and intra-family labour demand is therefore bound to increase.

3.2.1. Conclusions and observations.

In the light of all of the foregoing one can conclude that the contribution of child labour is significant for the pastoral mode of production. In addition the pastoral demand on child labour and thus its "opportunity cost" is going to increase.

It can only be expected that, of necessity, pastoralists will continue or increase their resistance to the absorption of labour by education. This makes questionable the effectiveness of building even more boarding schools in Kenya as is now planned.³¹

Somali pastoralists pay nomadic teachers whose tasks is to travel with the group and instruct children in the teachings of the Koran. With suitable incentives (finance made available by not building and maintaining schools) could nomadic teachers for the 3R's not perhaps be a more cost effective approach?

30. IDRC op.cit. pp: 204-206 G. Dahl, "Production in Pastoral Societies".

31. Various sources question the effectiveness of the Boarding School approach. In 1979 the Interchurch Committee for Development in Maasailand unanimously recommended that no more boarding schools be built in Maasailand. I was a member of the committee. More recently J. Nkinyangi in "Education for Nomadic Pastoralists: development planning by trial and error" IDRC 1981 pp. 193, questioned the rationale of the World Bank plan to build 12 boarding schools in Kenya's Pastoral areas while the disappointing performance of the present boarding schools had not been evaluated.

4. Seasonality aspects of Labour.

A major characteristic of the pattern of rural labour demand in most African countries is its large seasonal variation. While averages indicate that the total on-farm labour is 1,000 hours per year,³² this is distributed around a peak associated with the rainfall. At these times shortages of labour exist; those who can afford it hire extra labour but for the majority of peasant producers the labour limitation determines the output level.

The actual variation in labour demand caused by seasons is less extreme in pastoral production - it is a 365 day a year job - but it is not negligible. For this reason I will again discuss the two modes separately.

4.1. Sedentary Systems.

The variation in labour demand, its extremes and its timings depend on the combination of rainfall pattern and crop(s) being grown.

Cleave concludes that peak labour demand is most often in the middle of the rain period.

"... greatest substantial input of time is not generally at the initial planting time, but later in the season when harvesting of early food crops, sowing of late crops and above all-weeding are co-incident tasks!"³³

The data in table 7, shows labour demand variations between and within countries in eastern and southern Africa. For each location where family labour only is being employed this is shown. "All" signifies family and hired labour.

32. I. Cleave, "Labour in the Development of African Agriculture: The Evidence from FARM SURVEYS. Stanford University Ph.D. Thesis, Ann Arbor, Michigan 1970 pp. 105-107.

33. Ibid p. 195.

Table 7: MONTHLY DISTRIBUTION OF LABOUR INPUT ON AGRICULTURAL OPERATIONS - SURVEY AREAS PERCENTAGE OF PEAK MONTHS.

Area	Month ^b												Range ^c	Yrs ^d
	J	F	M	A	M	J	J	A	S	O	N	D		
(a) Northern hemisphere														
<u>Uganda</u>														
Fort Portal (All)	82	69	75	100	90	80	76	66	76	76	61	62	39	76
Fort Portal (Family)	100	67	68	80	71	62	47	74	83	68	56	42	58	63
Kyarusozi (1) (All)	88	76	80	100	91	88	74	80	92	94	100	91	26	80
Kijura (All)	86	70	82	80	96	91	100	94	79	74	80	70	30	83
Kijura (Family)	83	64	76	70	85	92	100	77	87	85	81	80	36	82
Kahangi (Family)	85	80	81	78	81	81	100	90	85	86	97	81	22	85
Mubuku (All)	78	100	45	45	32	18	57	56	38	30	20	19	82	45
Koro (All)	89	44	31	49	84	78	100	92	75	59	53	70	56	69
Aboke (All)	91	36	51	54	75	75	100	89	77	61	63	86	64	71
Lango (1 Farm) (All)	70	36	39	53	76	84	100	85	81	70	72	75	64	70
(b) Southern hemisphere (All labour)														
<u>Tanzania</u>	J	A	S	O	N	D	J	F	M	A	M	J	Range ^c	Yrs ^d
Lwenge	48	42	2	21	96	93	100	30	27	51	68	61	98	53
Kwimba	84	21	-	31	38	100	86	50	23	22	77	68	100	50
Ukerewe	100	33	48	56	69	100	42	68	68	31	94	94	69	67
Shinyanga	66	18	-	6	15	50	94	100	48	22	52	90	100	47
<u>Kenya</u>														
Masii	21	34	67	33	47	58	47	42	68	100	29	22	79	48
<u>Zimbabwe</u>														
Chitowa	31	24	22	23	64	89	100	70	61	75	89	46	78	58
Chiweshe	-	-	1	20	81	76	100	56	20	81	75	1	100	42
Darwin (crop labour)	57	10	45	6	22	61	100	83	59	85	84	76	94	57
Darwin (Total Work)	77	33	46	68	86	95	100	82	83	86	100	93	67	71

Source : Cleave 1970 pp. 188, 189

Notes : See next page

- a. The range of crops grown, the crops on which work is recorded, and the non-crop activities included varies.
 - b. The growing period, as defined by the first and last month with a mean precipitation of over three inches is marked by /...../. Mid-season dry months are ignored.
 - c. The range, from the peak month which is always defined as 100, provides an index of changes in farm activity over the year. Thus the smaller the number, the less the apparent contrast in monthly labour inputs. A figure of 100 indicates at least one month with no recorded farm work. This is, however, affected by the operations recorded in the various areas.
 - d. Shows the percentage of available labour which is used over the year on the assumption that employment in the peak month represents use of all available labour and that availability is uniform over the year.
- : other notes given by Cleave are too extensive to include here and go beyond the purpose of this paper.

Table 7 illustrates the differences in variation in labour demand both between and within countries throughout the year. It is clear that the larger the range of variation the lower the percentage of actual labour useage throughout the year. Uganda with its bimodal rain pattern and 9 month growing period achieves a higher percentage of labour useage (Av. 73%) than Zimbabwe with its unimodal rain pattern and 5 month growing period (Av. 56%).

Tanzania with a 7 month growing period achieves an average Yearly labour useage of only 56% associated with the large range in variation in labour demand.

Table 8 shows how labour demand patterns can be effected by introduction of improved crop varieties.

The result is an increase of the range of labour demand throughout the year increasing the requirement for labour availability at a specific period. Though the needed labour input per acre is reduced with the new variety farmer's risk is increased and a stronger demand is made for labour release at this time.

To gain an idea of the orders of magnitude of the labour contribution which can be made by a better planning of educational timing one can consider a worst and best situation. In the worst case situation we assume that school holidays (3 months per year) co-incide with the months of minimum labour demand, the children not doing agricultural work during the term. Using the hybrid data to show the extremes gives a possible contribution of 2.7% to the needed yearly labour (holiday in October, November and December) for maize production.

In the best case situation (holidays in April, May and June) the contribution could be 61.9%. The difference is a labour increase factor of 23! Doing the same for the other maize varieties gives 18.1% and 34.3% respectively - a labour increase factor of 1.9. Shorter school holidays increase both of these factors. Even in the second case a potential increase of labour of 90% is still remarkable. To be a factor of 10 too high (due to labour in term time, spread of holidays in the year, crop mixes, man equivalents of child labour etc. still gives an increased labour availability in the range of 9-22%.

Table 8: LABOUR USE IN MAIZE PRODUCTION IN KENYA
 (in mandays per month, as % of peak month
 and as % of year total labour).

	Hybrid Variety			All Other Varieties		
	Mandays	% of Peak month	% of Year total	Mandays	% of Peak month	% of Year total
Jan.	2.0	13	3.4	7.6	78	10.9
Feb.	2.6	17	4.4	4.3	44	6.2
Mar.	3.7	25	6.3	4.9	50	6.0
Apr.	15.0	100	25.7	9.8	100	14.1
May	12.0	80	20.6	6.7	68	9.6
June	9.2	61	15.6	7.4	76	10.6
July	6.7	45	11.5	5.0	51	7.2
Aug.	4.1	27	7.0	4.0	41	5.7
Sept.	1.4	9	2.4	4.5	46	6.5
Oct.	0.9	6	1.5	5.3	54	7.6
Nov.	0.0	0	0	4.3	44	6.2
Dec.	0.7	5	1.2	5.7	58	8.2
Yr Total	58.3		99.6*	69.5		99.8*
Av. for Yr	4.9	32		5.8	59	
Range		100			59	

*Rounding

Source: Adapted from Gwyer 1972 in Killick 1981, p. 15.

A similar calculation for the Shinyanga area of Tanzania gives a factor of 14 (1252% increase) while for the Ukerewe region it is 2.7 (177% increase). It is clear that the possible benefits vary widely between areas but in no case is the possible benefit insignificant and all this is purely through different school timings. The attendant problem of student's attitude will be discussed later.

4.2 Pastoral mode

The paucity of quantitative data spoken of earlier precludes a similar treatment and calculation for the pastoral mode. Researchers have commented on seasonality in pastoral production by noting that peak labour demand is at the end of the dry season when herds have to travel further and further afield to find grazing.³⁴ A more salient feature however is the pastoralist's responses to population pressures from peripheral areas and ecological degradation.

In addition to the responses noted in 3.2 some practices are being adopted which are more seasonally dependent. Little notes a form of "pastoral involution" which relies on added labour to cut down branches high-up in trees and to collect grass.³⁵ In addition cultivation is being started in some pastoral regions.

The overall trend is towards an increase in the season demand on labour - including that of children. How can education respond to this?

4.3 Conclusions and observations

All of the foregoing has shown that child and youth labour is an important factor in peasant and pastoral production systems and that the distinct seasonal nature of production in sub-saharan Africa makes critical the availability of labour input. It is for those countries and areas where the variation in seasonal labour demands are greatest that the correct timing of labour availability is the most vital and critical agricultural development variable. Education absorbs a substantial number of people and agricultural labour potential of the LDCs. This will continue to be so - for formal education in development is here to stay. However it is precisely because the contribution of child and youth labour to production in African agriculturally-based societies is so significant that education must address itself to the problems and possibilities which large seasonal variations present.

³⁴ IDRC 1981 op cit p. 153, paper by Migot-Adholla and Little, "Evolution of a Policy towards the development of pastoral areas in Kenya"

³⁵ Little, 1980 op cit p. 5

The present percapita food production and calorie intake levels of all but one of the countries of interest to this study are lower than in 1970.³⁶ Reconsidering the timing of education in the region is not an option but a necessity.

Education which intends to be for development of the countries in the region can and must recognize and attempt to incorporate the demands of the seasons. The return can be very large, the cost will be very small.

5. Seasonal Considerations in education

5.1 Educational Timing

In how far does the system of education in sub-Saharan Africa, by accident or design, relate to agricultural labour production needs?

Table 9 gives a global survey of peak agricultural labour months and school holidays for selected countries of east and southern Africa.

In all cases the academic year for primary and secondary is that of the calendar year. Holidays are planned around christian religious dates. The long August holiday seen in all countries, apart from Tanzania, is a remnant of the desire of the many original expatriate teachers to go to Europe at that time. Agriculturally this is a very poor period for a school holiday.

The holidays are national and donot allow for local needs in terms of labour demand. One way local people deal with this is to keep their children at home (agricultural absenteeism). This is obviously done by poor families who cannot afford to hire labour -- thus reducing the chance of the child doing well at school and thus reducing the value of the investment they are making in education. Allowing adaption of education to local labour need would make education somewhat more egalitarian - decreasing its cost to the poor. There are

³⁶ World Bank, Accelerated Development in Sub-Saharan Africa: An Agenda for Action. (Washington D.C. : 1981). See tables 37 & 38 on pp. 180, 181.

Table 9: AGRICULTURAL LABOUR DEMAND AND EDUCATIONAL HOLIDAYS - SELECTED COUNTRIES

Country	Agriculture Peak Labour Month ⁺	Education Holidays	
		Primary:	
Tanzania	Dec. & Jan.	Nov. $\frac{1}{2}$ Jan.	(10w)
		Secondary:	
		December	(5w)
		March	(2w)
		July	(2w)
Kenya	Jan. & April	April	(4w)
		August	(5w)
		December	(4w)
Uganda	July	Dec.-begin Jan.	(3w)
		April	(3w)
		Aug.-begin Sept.	(5w)
Zimbabwe	January	Dec.-mid Jan.	(5w)
		Mid April-May	(4w)
		Mid Aug.-Sept.	(4w)
Lesotho*	March/April	June/July	(6w)
		December	(5w)
Zambia	February & March	April	(2w)
		August	(4w)
		December	(5w)

* Lesotho has a shepherd system allowing pupils to come to school on alternate days.

⁺ As we saw in table 7, the intra-country variation in rainfall and thus labour demand can be significant. This column thus gives only a macro indication for comparison purposes.

cases known where a "local" solution to this labour conflict was made so that the local schools adapted to the production need.³⁷

Tanzania and Lesotho have in some respects linked education to agricultural production. In Tanzania children are expected to have returned to school in order to harvest from the school farm while being at home to help in farm preparation during December. Tanzania does not have a long August holiday. The lower number of holiday weeks does reduce any labour contribution to household farms. This is compensated for by the requirement that each school has its own farm area.

Lesotho adapts education to the significant economic contribution of Livestock by allowing pupils to come to school on alternate days - the so-called Shepherd system.

Education causes peak financial demands on families through the payment of school fees. Normally at the beginning of each term students in secondary and in some primary school must pay the requisite fee before being allowed to enter school. This cash demand may be at a time when finance is needed for agriculture or the families resources are at their most strained. It is thus not only the cash demand made by education but the timing of the demand which may be as critical to the rural production cycle.

In Kenya for example second term fees have to be paid at the beginning of May - in the middle of the peak labour period before income from crops is available and at a time when family resources are hardest pressed.

This overview would suggest that there is need in most countries in the region to examine the benefits of a change in educational timing. The present coincidence of rural labour needs and holidays is more of accident than design.

³⁷ This happened at the Mwea Irrigation Scheme in Kenya with the sanction of the local District Officer. The economic demand on the workers was such that the child labour input was an absolute necessity. Personal communication from Mr. O.N. Gakuru of the Department of Sociology, University of Nairobi.

5.2 Educational Content

When talking of the content of education and its relation to seasonality the discussion will centre around the overt and covert curricula.

The overt curricula is the official one; the one that appears in prospecti, books, timetables etc. It is beyond the scope of this paper to go into detailed curricula development. However Todaro gives a brief but succinct overview of components related to rural occupational groups and their learning needs - derived from the educational typology groups of Coombs.³⁸

Any curricula that declares itself to be rurally relevant will be seasonally linked. If it isn't then it isn't what it pretends to be! Often for example Appropriate Technology courses fail to take seasonality into account as do formal education courses in their topic planning. Dealing with sun-dried bricks or roofing sheets can only be done in the dry season, when there is sun. This means that education and intra-subject logic are no longer in themselves sufficient for selection of topics and the order of their presentation. The external rural environment presents its own criteria and inherent cyclic nature of processes. This was brought home to me by my own involvement in the development of a rurally relevant vocational training curriculum in Tanzania.³⁹

It is more than just changing the order of topics so that the sun or rain is outside when it's needed. It has to do with the way seasonality in Africa permeates through man in his interaction with the environment. This is still reality for rural African society and needs to be positively utilized rather than rejected as backward..

To everything there is need a season as each person's life bears witness.

³⁸ T. Killich (ed.) 1981 op cit pp. 275-278; M.P. Todaro "The Cult of Education: Myth and Reality".

³⁹ A. Fowler, "Vocational Training for Rural Development. Report of the Development of a Rurally Relevant Vocational Training Curriculum at Leguruki Vocational Training School, Tanzania". Unpublished report, 1981.

The covert curricula is what in actual fact attracts people from the land, it is the covert curricula that often causes the educated -- unemployed not to return. The overt curricula is taught, the covert curricula permeates and inculcates.

The covert curricula is expressed by the **system** of education, its values, myths and mores. These are themselves a translation of the socio-economic environment and aspirations of the dominant social groups.

However/^{it} is the covert curricula which has most effect on pupil's aspirations and attitudes. The knowledge that one will be unemployed is overruled by the hope that one won't be -- so not back to the land! Even agricultural students don't want to dig -- they want to learn agriculture for an agricultural office job. A genuine respect and regard for rural relevance, including seasonality, must manifest itself in the structure, system and values of education. The overt and covert curricula must be the same.

Too often the rhetoric of education for development and national curriculum development change only the overt curriculum. The actual adoption of the timing of education to seasonal need would be a way of changing the System -- the covert. This concrete and symbolic step would be a way of helping revalue and rehabilitate rural life into the value systems of African education -- a rural life which is still the backbone of Africa. Would there be the political will to take such a step?

6. Research Implications.

1. Towards the costs of non-seasonality in education

A prima facie case has been made for the expectation that benefits will accrue from a change in timing of education so giving it an operational seasonal link. However to decide if this should be done needs more quantitative data than is at present available. Thus critical research areas would be:-

- (a) To obtain a quantitative indication of the actual loss of labour to education and what this has meant in terms of agricultural production. Thus what benefits could result from a release of child labour at critical times.

- (b) To determine if and by how much the opportunity cost of education for the poor could be reduced by a seasonal linking of educational timing.
- (c) To determine if and by how much a seasonal linking of school fee payments could contribute to enhancing agricultural production and reducing educational opportunity cost to the poor.

2. Towards educational policy.

The rationale for a seasonal linking of education seems obvious and strong - yet why hasn't it been done? To turn data into policy require research to determine:

- (a) What are the organisational and administrative constraints to a change in educational timing and fee payments?
- (b) How could a practical policy of seasonal linking of education be implemented nationally?

The ultimate aim must be to provide both the quantitative data and practical proposals on which a policy for a seasonal linking of education could be formulated and executed.

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