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Harnessing Research
for
Production, Dissemination and Utilization

Proceedings of the Workshop on Co-ordination
of Production, Dissemination and Utilization
of Social Science Research Findings, Held at
the Institute of Adult Studies, Kikuyu.
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Workshop Co-ordinator: Dr. P.M. Mbithi.

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TABLE OF CONTENTS

List of Participating Organizations		iii
List of Participants and their Organizations		vi
Background to the Workshop		x
<u>SESSION 1</u>	Chairman: Professor Ghai	
B.A. Ogot	Opening Address	1
J. Ascroft, N. Roling G. Ruigu	Social Science Production Dissemination and Implementation in Kenya: An Exploratory Study	5
N. Roling & J. Ascroft	Production, Dissemination and Utilization of Research Findings: Concepts, Models and Other Background Information	25
	DISCUSSION	47
<u>SESSION 2</u>	Chairman: M. Gachuhi	
J.J. Kisa	The Process of Communicating Research Findings Within The Kenya Government	52
	DISCUSSION	57
P.G. Sitati	Research Co-Ordination	60
	DISCUSSION	64
<u>SESSION 3</u>	Chairman: A. Molnos	
D.P. Ghai	Some Thoughts on Priorities Dissemination and Utilization of Applied Research	66
	DISCUSSION	76
T. Schlie	Research on Social Science Research Some Thoughts and Ideas From the Programme of Research on the Management of Research and Development	79
R. Hughes	A proposal for the Establish- ment of Indigenous Capacity to Carry Out Educational Research to support Jurricu- lum Development and Examinations in the Kenyan Educational System.	112

L.J. Kukubo	Help the National Archives to Speed Up Research	122
B. Kiplagat	National Christian Council of Kenya Research Projects	128
M. Gachuhi	Research Findings, Their Dissemination and the Kenyan Policy - Decision Makers	131
	DISCUSSION	137
	DISCUSSION	139
<u>SESSION 4</u>	Chairman: G. Ngenyi	
L. Bhandari & W. Wapakala	Agricultural Research in Kenya	144
	DISCUSSION	155
G.C.M. Mutiso	Towards a National Research Council	159
	DISCUSSION	164
<u>SESSION 5</u>	Chairman: D. Macharia	
	DISCUSSION	168
P.M. Mbithi	Suggested Recommendations and Major Conclusions and Findings Reached by the Workshop	171
N. Nganga	Closing Address	178

LISTING OF PARTICIPATING ORGANISATIONS AND THEIR REPRESENTATIVES

African Medical Research Foundation:	R.N. Tulungwa	A. Glanville
Agricultural Development Corporation:	G. Muchiri	
Agricultural Finance Corporation:	F.G. Maina	
All Africa Conference of Churches:	Y. Olumide	
Animal Husbandry Training Centre:	A.M. Munyasiya	
Associated Business Consultants:	M. Keble-White	
Board of Adult Studies:	P. Mburu	
Catholic Secretariat:	J. Getonga	Fr. J.J. Gitahi
Central Bank of Kenya:	H.W. Macharia	F.P. Murugu
Coffee Research Station:	C.J. Obwara	
Cooperative College:	G. Lundstam	
Daily Nation:	J. Ndungu H. Chui	D. Kariuki
DANIDA/University of Nairobi	I. Inukai	
Danish Embassy	H.E. Hetting	P. Bidstrup
East African Community	K.E. Ekwaro C.N. Kware	H. Gitata S.E.L. Mukhwana
East African Publisher's House:	B. Ogutu	
Egerton College	W. Nguyo	P. Shalo
F.A.O.	S.A. McWilliam	
Family Planning Association:	F.M. Mudoga	Dr. Kigundu
Ford Foundation:	I.L. Omoro	
Friedrich-Ebert-Stiftung:	E. Mueller A. Matthes	H.G. Schindler
Kenya Catholic Secretariat:	P. Kiarie	
Kenya Film Corporation Ltd.,	N. Muigai	
Kenya Industrial Estates:	K.A. Ngenyi	R. Aluchio
Kenya Institute of Administration:	E. Sztencel J. Kimura	D.M. Njire
Kenya Institute of Education:	F. Kigwi R. Hughes	J. Wachiira
Kenya News Agency (Information):	B. Kombo	M. Chege
Kenya National Archives:	L.J. Kukubo	
Kenya Tea Development Authority:	G. Gitungo	J. Mandi
Kenya Red Cross Society:	J. Vickers	
Kenya Voluntary Development Association:	Z. Vivian	

Longman's Kenya:	E. Kitonga	
Management Training and Advisory Centre:	H. Njoroge P.N.G. Ouma	E.F. Pretter
Medical Research Centre:	J.N. Van Luyk	
Ministry of Agriculture:	I.D. Carrunthers R.S.M. Nelson W.W. Wapakala	O.K. Ngayu A.M. Chege C.N. Mwangi
Ministry of Education:	J.E. Okana	
Ministry of Finance and Planning:	C.S. Mbindyo L. Bhandari	N. Kaul
Ministry of Health:	D. Mbai S. Koesoebjono	A. Kidiku
Ministry of Lands and Settlement:	J. Eastwell	L.J. Poyck
Ministry of Natural Resources:	F.K. Arap-Sang T.K. Njagi	J.A. Odera
Ministry of Tourism and Wild-Life:	T.S. Chana	
Nairobi City Council:	F.J. Gichaga R.W. Marshall	P.S. Gunjral
National Freedom from Hunger Committee of Kenya:	Mbog D. Klump	Muigai
National Museum of Kenya:	I. Aggundey	
Office of the President:	M. Githegi C.N. Bolton	P.G. Sitati
Oxford University Press:	E.M. Nyandaya	H. Mkuya
Pyrethrum Marketing Board:	K. Ndalut	
Rockefeller Foundation:	J.S. Coleman	
SIDA:	T. Mahner	J. Sanne
University of Nairobi: Child Development Research Unit:	R.E. Daniels R.S.M. Lukalo	R.D. Logan
Department of Agricultural Economics:	E. Baum	H.U. Thimm
Department of Economics:	J. Heyer P.N. Mwok-Handa	
Department of Government:	G.C.M. Mutiso	
Faculty of Law:	E.M. Ndiritu	
Faculty of Commerce:	P.S.M. Macharia	
Housing Research Development Unit:	G. Eygelaar N.O. Jorgensen	

University of Nairobi (Cont.,)
Institute of Adult Studies:

R.W. Catlett
D. Macharia
T. Murphy

K.P. Trydt
J.N. Okach
R. Mwilu

Institute of African Studies:

A.H. Jacobs

Institute for Development Studies:

E. Chege
G. Hay
J.D.N. Olewe
P.N. Hopcraft
J.M. Gachuhi

G. Ruigu
D.P. Ghai
J. Ascroft
N. Roling
J.A. Okele

World Bank:

R.T. Fares

Kenya Institute of Education:

F. Kigwi
R. Hughes

J. Wachiira

PARTICIPANTS AND THEIR ORGANIZATIONS

Aarhus F.	University of Nairobi
Aggundey I.	National Museum of Kenya
Aluchio R.	Kenya Industrial Estates
Arap-Sang F.K.	Ministry of Natural Resources
Ascroft J.	University of Nairobi
Bailey M.A.	University of Nairobi
Barnes C.	University of Nairobi
Baum E.	University of Nairobi
Belshaw D.G.R.	University of Nairobi
Bidstrup P.	Danish Embassy
Carrunthers I.D.	Ministry of Agriculture
Catlett W.	University of Nairobi
Chana T.S.	Ministry of Tourism and Wildlife
Chege A.M.	Ministry of Agriculture
Chege E.	University of Nairobi
Chege M.	Kenya News Agency
Chui H.	Daily Nation
Coleman J.S.	Rockefeller Foundation
Daniels R.E.	University of Nairobi
Eastwell J.	Ministry of Lands and Settlement
Ekwaro K.E.	East African Community
Eygelaar G.	University of Nairobi
Fares R.T.	World Bank
Gachuhi J.M.	University of Nairobi
Getonga J.	Catholic Secretariat
Ghai D.P.	University of Nairobi
Gichaga F.J.	Nairobi City Council
Gitahi Fr. J.J.	Catholic Secretariat
Gitata H.	East African Community
Githegi M.	Office of the President
Gitungo	Kenya Tea Development Authority
Glanville A.	African Medical Research Foundation
Godfrey E.M.	University of Nairobi
Gunjral P.S.	Nairobi City Council
Gweyer G.	University of Nairobi
Hay G.	University of Nairobi
Hetting H.E.	Danish Embassy
Heyer J.	University of Nairobi
Hopkins P.G.H.	University of Nairobi
Hopcraft P.N.	University of Nairobi
Hughes R.	University of Nairobi
Inukai I.	DANIDA/University of Nairobi

Jacobs A.H.	University of Nairobi
Kamau L.	University of Nairobi
Kariuki D.	Daily Nation
Karwe C.N.	East African Community
Kaul N.	Ministry of Finance and Economic Planning
Keble-White M.	Associated Business Consultants
Kiarie P.	Kenya Catholic Secretariat
Kiduku A.	Ministry of Health
Kigonda	Family Planning
Kigwi F.	Kenya Industrial Estates
Kitonga E.	Longman's Kenya
Kimaru J.	Kenya Institute of Administration
Koesoebjono S.	Ministry of Health
Kombo B.	Kenya National Archives
Kukubo L.J.	Kenya National Archives
Logan R.D.	University of Nairobi
Lundstam G.	Co-operative College
Lukaro R.S.M.	University of Nairobi
Macharia D.	University of Nairobi
Macharia H.W.	Central Bank of Kenya
Macharia P.S.M.	University of Nairobi
Macwilliam S.A.	F.A.O.
Mahner T.	SIDA
Maina F.G.	Agricultural Finance Corporation
Mandi J.	Kenya Tea Development Association
Mani J.	University of Nairobi
Marshall R.	Nairobi City Council
Martin	UNESCO
Matthes A.	Friedrich-Ebert-Stiftung
Mbindyo C.S.	Ministry of Finance and Planning
Mbithi P.M.	University of Nairobi
Mburu P.	University of Nairobi
Mkuya H.	Oxford University Press
Muchiri G.	Agricultural Development Corporation
Mudoga F.M.	Family Planning
Mueller E.M.	Friedrich-Ebert-Stiftung
Muigai N.	Kenya Film Corporation Ltd.,
Munyasia A.M.	Animal Husbandry Training Centre
Mukhwana S.E.L.	East African Community
Mbai D.	Ministry of Health
Muriithi I.E.	University of Nairobi

Murphy T.	University of Nairobi
Murugu F.P.	Central Bank of Kenya
Mutiso G.C.M.	University of Nairobi
Mwangi C.N.	Ministry of Agriculture
Mwok-Handa P.N.	University of Nairobi
Mwilu R.	University of Nairobi
Ndalut P.K.	Pyrethrum Marketing Board
Ndiritu E.M.	University of Nairobi
Ndungu J.	Daily Nation
Nellis J.	University of Nairobi
Nelson R.S.M.	Ministry of Agriculture
Ngayou O.K.	Ministry of Agriculture
Ngeny A.K.	Kenya Industrial Estate
Nguyo W.	Egerton College Njoro
Njagi T.K.	Ministry of Agriculture
Njiire D.M.	Kenya Institute of Administration
Njoroge J.	Management Training Centre
Nyandaya E.M.	Oxford University Press
Odera	Ministry of Natural Resources
Ogotu B.	E. African Publishers House
Okach J.N.	University of Nairobi
Okelo J.A.	University of Nairobi
Olewe J.D.N.	University of Nairobi
Olumide Y.	All Africa Conference of Churches
Ombwara C.J.	Coffee Research Station
Omoro I.L.	Ford Foundation
Otieno G.E.	Voice of Kenya
Ouma P.M.G.	Management Training and Advisory Centre
Poyck L.J.	Town Planning Department
Pretter E.F.	Management Training and Advisory Centre
Ramae R.	UNESCO
Roling N.	University of Nairobi
Ruigu G.	University of Nairobi
Sanne J.	SIDA
Shalo P.	Egerton College Njoro
Shah P.J.	N.D.D.
Schindler H.G.	Friedrich-Ebert-Stiftung
Sitati	Office of the President
Sztencel E.	Kenya Institute of Administration
Thimm H.U.	University of Nairobi

Tuluhungwa R.N.

Van Luyk J.N.

Vickers J.

Vinnai

Wachiira J.

Wapakala W.W.

Zackon V.

Ministry of Health

Ministry of Health

Kenya Red Cross Society

University of Nairobi

Kenya Industrial Estates

Ministry of Agriculture

Kenya Voluntary Development
Association

BACKGROUND TO THE WORKSHOP

by
P.M. Mbithi

As pointed out at several recent conferences and by various Government officials and individuals concerned with development programmes, research in Kenya is characterized by a lack of communication and co-ordination between various bodies. This results in:-

- (a) research duplication and overlap by different research organizations working in the same field,
- (b) very poor dissemination of research findings at a level and frequency which would be useful to those who could use the results e.g. policy makers and practitioners in the field, and
- (c) lack of public awareness of various findings and programmes.

The Workshop on the Production, Dissemination and Utilization of Social Science Research Findings was called to address itself to the above and to come up with recommendations on how these problem areas might be eliminated or alleviated.

The responses which have come from numerous sectors of our community indicate the wide spread concern with the purpose for which the Workshop was called. We are grateful to the Friedrich-Ebert-Stiftung for its support which has enabled us to convene this Workshop.

OPENING ADDRESS

Professor B. A. Ogot, Deputy Vice-Chancellor
University of Nairobi

Ladies and Gentlemen:

I am informed that this Workshop is going to discuss the problems of co-ordination of research; that is the problems of producing relevant and useful research findings; disseminating these at a level and frequency so that they reach the maximum number of consumers; and, the problem of co-operation between researcher and practitioner in utilizing and implementing research recommendations. This has come at a critical time for as recent conferences and contacts among researchers and planners have shown there has been a degree of mutual misunderstanding. Statements about researchers' ineffectiveness - that they are not producing the kind of research needed for planning action programmes for economic developments - take many forms. The classical view of the impractical academic researcher, hidden in a university ivory tower, is still held strongly by some people and probably with some justification. But it would be a serious state of affairs if indeed our researchers pursued irrelevant problems, produced their findings only in academic journals, and refused to collaborate with planners, in the mistaken interests of pursuing some abstract and irrelevant knowledge.

However, we in the University have heard our researchers make a different kind of plea. It is held widely that the planners and policy makers are not telling researchers exactly what it is they want researched. Researchers ask, What are the relevant problems? What are the national priorities?

The need for a strong and sustained dialogue between researchers and practitioners is critical. I am told that this Workshop includes representatives from the Government, East African Community, international agencies, publishers, private and voluntary organizations, and the University. It appears to me that this Workshop, therefore, offers a unique opportunity for a constructive dialogue

among researchers and those who disseminate and/or use research findings.

I am aware that involved in this problem of communication between researchers and decision maker, is the question of "How much?" Is the flow of information reaching the civil servants, for instance, not too copious and too technical to be of immediate use? Shouldn't the University amass and keep an up-to-date store of information, but send to Government only the most significant findings?

On the other hand this kind of dialogue will only be meaningful if we have civil servants who are development conscious and who realise that any progress must depend on knowledge and not simply on enthusiasm. There is a tendency in certain circles in Kenya today to disregard professional and expert opinion. Any country which does not exploit its brain-power cannot hope to develop. I would, therefore, plead for a greater willingness on the part of decision makers to seek answers about the many difficult problems they are being called upon to tackle.

As you are all probably aware, the establishment of a dialogue is only one of the many ways by which we can increase the efficiency of the use of research resources available to our nation. Allow me to suggest some areas which I feel should be touched on in your deliberations:

- (a) What is the existing and probable future mechanism for identifying and articulating our research needs, bottlenecks, and research priorities? Is there a need for a co-ordinating and administrative body such as a National Research Council?
- (b) What are the best techniques for co-ordinating and integrating our varied research efforts? What are the best ways of efficiently utilizing our research resources, such as available manpower and expertise? How can we accelerate the localization of research resources and at what cost?

- (c) What is the role of social science research in planning policy formulation, teaching, and adult education?
- (d) What are the best structures and process for disseminating research so as to reach our population and aid in alleviating ignorance and poverty? Are there other alternatives to the use of scientific journals, complicated jargon, writing long academic reports, etc?

These and many other problems which you will raise are crucial to a healthy development of a research tradition in Kenya. Their solution involves a co-operative effort by all of us here and I hope your recommendations after the deliberations will not be taken just as statements on paper but will be put through the relevant implementation process.

I would particularly like to stress one aspect of the fourth area we have identified, i.e. the role of the theorist in developing public opinion. We have already stressed the need to have a meaningful dialogue between the researchers and the decision makers. But there is an even more fundamental question of educating the public on basic questions of development. Up to now, it has been left to fund-raising organizations such as the Freedom from Hunger Campaign Committee, and the civil servants and politicians. Excellent and remarkable though their work is, it is not ideal that the major educational effort is in their hands, as much of it necessarily relates to appeals to deal with efforts rather than causes of under-development. Moreover, popular appeals like "We must plan our families" or "Go back to the land" create popular misconceptions which can be a barrier to an understanding of wider development issues. Theorists should, therefore, recognise that they have a crucial role to play in formulating public opinion favourable to development. It is an enormous task because it requires an enormous sense of reality. But it is an essential task, for we need a sharper, better-defined public opinion to provide the will and the leadership for change.

In conclusion, let me mention a touchy issue which we are all aware of. This is the problem of research documentation and data retrieval. In general terms, Kenya hosts a staggering array of research programmes and researchers. Likewise, Kenya continues to lose a lot of her raw data either because after research is done it is never analysed or pulled out of the cupboards in which it is deposited or, and this is more serious, researchers take it out of the country. This loss if it were ever estimated in monetary terms would be staggering to a developing economy. I hope in this Workshop, or another of a similar kind, an attempt will be made to cost this loss. The loss is even more critical when these raw materials which are later sold to Kenyan educational institutions at a great loss in foreign exchange.

I, therefore, urge the participants in this Workshop to use a mature approach in deliberating on the nature and utility of social science research in Kenya. I urge you to begin by agreeing on what the problems really are before you attempt prescriptions.

Ladies and Gentlemen, I once again welcome you to this Workshop and wish you luck in your deliberations.

SOCIAL SCIENCE PRODUCTION, DISSEMINATION AND
IMPLEMENTATION IN KENYA: AN EXPLORATORY STUDY

Joseph Ascroft, Niels Roling, George Ruigu
Institute for Development Studies
University of Nairobi

BACKGROUND TO THE STUDY

The present study is essentially an exploratory fishing expedition in the as yet uncharted waters of social science research in Kenya. It was motivated by an underlying perception of overlap, wastage of resources, and lack of concord between researchers and practitioners in an area of inquiry afflicted with over-production of knowledge and poor dissemination and under-utilization of the knowledge produced. The present study seeks to produce an inventory of personal interview research conducted in the social sciences in Kenya, with particular emphasis upon research conducted since January 1970. It is a beginning effort, a pilot study, distinguished as much by the interesting questions it asked as by the interesting questions it inadvertently omitted. It was, furthermore, carried out at inordinate speed in order to meet the deadline of the Workshop. Completion time from planning through questionnaire design, data gathering, and processing to report preparation was barely one month.

The study was commissioned by the organizers of the present Workshop and funded by the Friedrich-Ebert-Stiftung. The research mainly consisted of senior and junior research workers drawn from the Institute for Development Studies assisted by a team of University student interviewers. It benefited also from advice and information relevant to the study provided by colleagues and scholars both in and out of the University.

Sample Selection

The sample was selected in two stages. The first stage consisted of a purposive selection of the main social science research data gathering institutions, organizations, and agencies known to the present researchers. The second stage consisted of all those other institutions, organizations, and agencies known to stage one respondents to be actively engaged in social science data gathering research involving

personal interviews. This method of sample selection was forced upon us because we knew of no existing sampling frame from which to draw a representative cross-selection of respondents. As a result we have no clear way of assessing the representative nature of our sample, it being likely that our method of sample selection may well have failed to include significant proportions of social science researchers. There are, for instance, a large number of individual researchers, mainly foreigners, roaming the country at present. Unless they were directly affiliated with the institutions we interviewed, they were largely ignored. Furthermore, because of time constraints, our survey was restricted almost exclusively to respondents living within the Nairobi area.

We initially aimed at completing about 50 interviews, 20 in stage one and 30 in stage two. Mortality came in three major forms. In the first place we found great difficulty in compiling a list of 40, let alone 50, institutions, organizations, and agencies engaged in empirical social science research. Secondly, a number of institutions nominated by others as being actively engaged in social science research denied the allegation. Finally, a few researchers engaged in personal interviewing refused to be personally interviewed. Indeed, many of our sessions were marked by responded reluctance to sit long enough (average interview time was one hour) to answer deeply enough or state their opinions well enough to allow us to code their answers in categories other than "don't know" or "can't think of any problems."

The present study is exploratory rather than confirmatory, it having been done without benefit of specific hypotheses to be tested. Indeed, it can best be regarded as a pilot pretest which aims not at testing hypotheses, but at developing testable hypotheses which later could be studied more thoroughly and systematically. It is hoped that one outcome of the present Workshop may well be the development of an expanded and sharpened research instrument, the results of which would feed into the follow-up workshop envisaged to be held in the middle of this year.

Before we proceed with presentation of the tabulated results, the reader is cautioned that the bases for calculating percentages in the tables are usually small.

The smaller the base the lower the stability of the percentages, and, therefore, the greater the range of error around each percentage.

THE RESULTS

We interviewed 29 institutions engaged directly or indirectly in social science research conducted in Kenya based on personal interviews with people as the primary source of information. Our decision to limit the area of inquiry to research based on personal interviews was dictated mainly by time constraints. To have included research based on secondary data sources or on content analysis would have required much more time than we were allowed.

Type of Research Institution

The 29 institutions surveyed may be classified as follows:

<u>Table 1: Type of Institution</u>	<u>No.</u>	<u>%</u>
University and its Institutes	10	34
Government/Other Parastatals	8	28
UN Agencies/Bilateral Donors/Foundations	6	21
Commerce and Industry	3	10
Voluntary Organizations	2	7
	<u>29</u>	<u>100</u>

Nature of Research Involvement

Of the 29 institutions, most claimed to have carried out or to be still continuing to carry out personal interview research, while about half of them claimed to have asked some other institutions or individual researchers to carry out research on their behalf (see Table 2).

<u>Table 2 Research Involvement</u>	<u>No.</u>	<u>%</u>
Carried out research before 1970	18	62
Carried out research after 1970	23	79
Asked others to carry out research before 1970	5	17
Asked to carry out research after 1970	<u>13</u>	<u>45</u>
Total =	59	203
Base =	29	

It is clear from the figures in Table 2 that many institutions were engaged in more than one type of activity at the same time, some having carried out their own research as well as asking others to do so on their behalf, while others have carried out or asked others to carry out research both before and after 1970. In addition, about a third of the 29 institutions claimed to have either disseminated or implemented some other institutions' social science research findings.

In the following pages we propose first to talk about research actually carried out by the institutions themselves after January, 1970. Following that, we shall briefly talk about research carried out before January, 1970, and about the other types of involvement in social science research.

RESEARCH CARRIED OUT AFTER JANUARY, 1970.

This section treats only those personal interview data gathering research projects undertaken from January, 1970 to the present time. During this period, a total of 62 individual research projects have been carried out, or are still being carried out, by 23 out of the 29 institutions surveyed. For purposes of analysis we shall treat these individual projects rather than the 29 institutions as the units of analyses so that our percentaging base now becomes 62. Furthermore, we have cross-tabulated the results by projects (35) carried out by the University and by projects (27) carried out by all other types of institutions added together (see Table 3). We have taken out the data in this way because of an underlying belief that the most pressing need for dialogue is between University based and non-University based researchers.

<u>Table 3. Who Carried Out Research</u>		<u>No.</u>	<u>%</u>
A.	University and its Institutes	35	57
B.	Bilateral Donors/U.N. Agencies/Foundations	10	16
	Government and its Parastatal Bodies	7	11
	Commerce and Industry	7	11
	Voluntary Organizations	3	5
	Sub-total	27	43
A.	University + B. Others	62	100

In the present section, we shall deal first with two matters concerning the actual execution of the 62 research projects. Secondly, we shall deal with matters concerning

the dissemination of findings arising from these research projects, and, thirdly, with matters concerning the implementation of these findings.

Matters Concerning The Research Execution

What were the main types of problems researched during the past two years in Kenya? We have attempted to classify the problems studied in the 62 research projects carried out since January, 1970 into the general categories listed in Table 4.

Table 4:

<u>Types of Problems Studied</u>	<u>University</u>	<u>Other</u>	<u>Total</u>
Agricultural/Rural Development	29%	26%	27%
Economics/Industrialization	9	37	21
Family Planning and Welfare	6	26	15
Socio-Psychological/Political	20	4	13
Educational/Adult Vocational	11	7	10
Urban/Housing	11	4	8
Employment/Migration	1	0	6
Public Health	3	7	5
Opinion/Listenership	3	7	5
Total =	100%	107%	104%
Base =	35	27	62

Research concerned with general rural development, particularly with respect to the diffusion or extension of agricultural technology, dominates the list of recent problems studied or still being studied. Sociological research, frequently with psychological or political overtones, occupy University researchers more so than non-University researchers, who appear to have been concerned more on problems of family welfare, especially family planning, and economic problems, especially urban industrialization and rural entrepreneurship.

Who asked for the research to be carried out?

Table 5:

<u>Research Requesting Institution</u>	<u>University</u>	<u>Other</u>	<u>Total</u>
Government and Parastatal Bodies	42%	37%	40%
University and University Institutes	46	4	26
Bilateral Donors/UN Agencies/Foundations	6	37	20
Voluntary Organizations	6	11	8
Commerce & Industry	0	11	5
Total =	100%	100%	100%
Base =	35	27	62

Most of the research carried out in the past two years was requested by Government or its parastatal bodies. About half of these requests were fulfilled by the University while the balance were fulfilled by non-University institutions. Much of the balance of research carried out by the University was requested within the University while many of the non-Government requests fulfilled by non-University bodies were requested by the U.N. agencies, foundations and especially bilateral donors.

Who funded the research carried out in the past two years?

Table 6:

<u>Research Funding Institutions</u>	<u>University</u>	<u>Other</u>	<u>Total</u>
Bilateral Donors/UN Agencies/Foundations	20%	60%	37%
Government and its Parastatal Bodies	40	22	32
University and University Institutions	34	0	19
Voluntary Organizations	6	7	7
Commerce and Industry	0	11	5
	<u>Total = 100%</u>	<u>100%</u>	<u>100%</u>
	<u>Base = 35</u>	<u>27</u>	<u>62</u>

Research carried out by the University tends to be funded either by itself or by Government whereas non-University-based research is largely funded by the U.N. agencies, foundations and especially by bilateral donors.

Where was the research actually carried out?

Table 7:

<u>Research Location</u>	<u>University</u>	<u>Other</u>	<u>Total</u>
Country-wide/Selected Urban/Rural Areas	26%	33%	29%
Nairobi and its Immediate Environs	20	26	23
Central Province	26	11	19
Western Province	6	22	13
Eastern Province	11	0	7
Nyanza Province	18	4	6
Rift Valley Province	3	4	3
	<u>Total = 100%</u>	<u>100%</u>	<u>100%</u>
	<u>Base = 35</u>	<u>27</u>	<u>62</u>

Nearly a third of the research projects were claimed to have been carried out on a country-wide basis. We have reservations about this claim and believe that many claimants conducted their research in purposively selected rural or urban areas scattered around the country rather than in all parts of Kenya. Central and Western Provinces have been researched more than the others, while our sample failed to reveal any research carried out in the past two years in the Coast Province or in the North Eastern Province, except where these have been included under "country-wide" research.

The University appears to pay more attention to Central Province, especially Nyeri District, and to Eastern Province, particularly Machakos. Non-University researchers have been more active in Western Province, especially Kakamega District. Nairobi features fairly prominently perhaps because of its convenience and proximity to the researchers' home bases.

What was the nature of research carried out? Here we used the following UNESCO definitions* which categorizes research activities into three classes:

1. Fundamental Research (oriented or non-oriented);

any activity directed towards the increase of scientific knowledge or the discovery of new fields of investigation, without any specific practical objective.

2. Applied Research:

any activity directed towards the increase of scientific knowledge, with a specific practical aim in view.

3. Experimental Development:

systematic use of the results of fundamental and applied research and of empirical knowledge directed towards the introduction of new materials, products, devices, processes and methods or the development of prototypes and pilot plants.

Table 8: Nature of Research

	University	Other	Total
Fundamental	3%	15%	8%
Applied	71	63	68
Experimental Development	26	22	24
Total =	100%	100%	100%
Base =	35	27	62

Nearly all of our respondents do not perceive the research being conducted in their organizations as being of the fundamental "ivory towered" variety. Interestingly, this perception is lower in University than in non-University institutions. Indeed, a quarter of the University than in research projects are deemed to be experimental in nature, the pay off being controlled implementation rather than mainly dissemination of knowledge gained through research.

Which branches of the social sciences are involved in data gathering personal interview research? Many of the research projects straddled more than one research branch, some of the projects being multi-disciplinary efforts, as can be observed by the fact that totals in Table 8 add up to more than 100%.

*

Manual for Surveying National Scientific and Technological Potential, UNESCO Science Policy Studies and Documents No. 15, Paris, 1970, p.188.

<u>Table 9: Social Science Branches</u>	<u>University</u>	<u>Other</u>	<u>Total</u>
Economics	46%	56%	50%
Sociology	52.	37.	45.
Agricultural Economics	20	26	23
Public Health	11	30	19
Political Science	14	15	15
Anthropology	17	4	15
Psychology	14	0	8
Education	11	4	2
Don't know	0	4	2
	Total =	185%	176% 179%
	Base =	35.	27. 62.

Many of the projects studied were claimed to be socio-economic in nature, hence the prominence of economics and sociology. In addition, sociology was frequently coupled with agricultural economics.

What was the sampling method used? For purposes of asking the question, definitions were prepared and shown to the respondents. These definitions were as follows:-

1. CENSUS: All members of a given population are interviewed.
2. RANDOM SAMPLING: Members of a given population are selected for interview in such a way that population has an equal non-zero chance of being selected.
3. QUOTA SAMPLING: Members of a given population are selected for interview by predetermining quotas for specific categories in the population according to known population parameters. Members falling in each category are selected until the quota is filled.
4. PURPOSIVE SAMPLING: People to be interviewed are selected either haphazardly or to conform to some predetermined researcher bias. The sample is not representative of any population.

<u>Table 10: Sampling Method Used</u>	<u>University</u>	<u>Other</u>	<u>Total</u>
Random	57%	22%	42%
Purposive	17.	59.	35.
Quota	29	15	23
Census	17	7	13
Don't know	0	4	2
	Total =	120%	107% 115%
	Base =	35.	27. 62.

Many researchers combined two or more sampling methods, hence the greater than 100% totals. The most reliably representative sampling methods are random and census sampling. These appear to have been used more by University researchers.

The least reliably representative form of sampling is purposive sampling. These appear to be largely used by non-University based researchers.

What was the field method used in carrying out research? Here again, we prepared the following definitions which were shown to respondents:

1. PARTICIPANT OBSERVATION: The researcher observes his subjects while participating in their activities or daily lives.
2. UNSTRUCTURED PERSON-TO-PERSON INTERVIEW: Researcher asks questions on predetermined issues, frequently allowing respondent answers to determine the next question. Also known as in depth interviews.
3. MAILED QUESTIONNAIRE: Questionnaires are sent by mail to respondents for them to complete and return.
4. STRUCTURED PERSON-TO-PERSON INTERVIEW SCHEDULE: Interviewer visits respondents who are each asked the same questions, the answers to which are recorded on a questionnaire.

<u>Table 11: Field Method Used</u>	<u>University</u>	<u>Other</u>	<u>Total</u>	
Structured Interview Schedules	71	33	53	
Participant Observation	49	26	39	
Unstructured Interviews	46	26	32	
Mailed Questionnaire	11	26	15	
Don't Know	0	4	2	
	<u>Total =</u>	<u>177</u>	<u>115</u>	<u>141</u>
	<u>Base =</u>	<u>35</u>	<u>27</u>	<u>62</u>

University researchers are particularly given to employing more than one field method within the same research framework. Typically, a full-scale structured interview schedule is preceded, especially during the problem definition stage, by limited participant observation and unstructured interviews. Non-University based researchers are more likely to settle for one field method and conduct all their research in that mode.

What were the methods of data processing used? In this regard, two lists, one dealing with counting and sorting techniques and the other with computation techniques, were prepared and shown to respondents.

<u>Table 12: Data Processing Methods</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
A. Counting and Sorting			
Pencil and Paper	51%	79%	63%
Counter-sorter	43	11	29
Computer	60	19	42
Don't Know	0	4	2
	<hr/>	<hr/>	<hr/>
Totals =	154	113	136
B. Computation			
Pencil	47%	74%	60%
Desk Calculator	37	15	27
Desk Computer	26	7	16
Computer Centre	57	19	40
Don't Know	0	4	2
	<hr/>	<hr/>	<hr/>
Totals =	167	119	145
Base =	35	27	62

There appears still to be a heavy reliance upon tedious manual methods of data processing inspite of the increasing availability of more rapid mechanized techniques. This reliance is particularly manifest among non-University-based researchers. The tendencies among University based researchers is to use pencil and paper methods mainly for processing participant observation and unstructured interview material, and to use counter-sorters and computers for processing structured interview schedules and mailed questionnaires.

What were the main types of respondents studied?

<u>Table 13: Type of Respondents</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
Farmers	27	26	27
Citizens/Adults in General	26	26	26
Entrepreneurs	11	37	22
Government Officers	9	26	16
Women	9	11	10
Householders	14	0	8
Non-Adults in General	9	7	7
Product Consumers	0	11	5
Other	3	0	2
	<hr/>	<hr/>	<hr/>
Totals	105	144	123
Base	35	27	62

Given that farmers may also be regarded as entrepreneurs, then, the potential for entrepreneurship appears to have been the main subject of interest in the units of analysis selected for research.

What were the main problems encountered in the process of executing the research?

Table 14:

<u>Main Problems of Execution</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
Respondent Reluctant to Give Information	31	59	44
Lack of Skilled Staff/Lack of Know-how	26	22	24
Deadlines/Underestimation of Time Needs	34	0	19
Lack of Co-operation from the Authorities	14	0	8
Lack of Sampling Frame/Finding Addresses	11	11	8
Problems of Transportation	6	0	3
None Yet/Can't Think of Any	21	26	23
	<u>Total =</u>	<u>143</u>	<u>118</u>
	<u>Base =</u>	<u>35</u>	<u>27</u>
			<u>62</u>

Nearly a quarter of the respondent had either not encountered any difficulties yet or could not think of any salient problems which may have afflicted their research. In mitigation, most of our respondents were answering on behalf of the primary researchers, many of whom were no longer in the country. Thus, our respondents were not in the best position to offer determinate answers. On the whole, the time-honoured research problems of respondent reluctance and lack of adequate sampling frames affected many projects. University researchers seem to be particularly afflicted by a failure to meet deadlines, by a lack of co-operation from the authorities, and by transportation problems.

Generally, the research expertise necessary for drawing reliable samples, and for utilizing electro-mechanical and electronic data processing equipment appears to rest more within University-based researchers than in non-University based researchers.

Matters Concerning Dissemination of Findings

Were the results disseminated and, if so, to whom?

Table 15:

<u>Disseminated: To Whom</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
Not Disseminated/Research Incomplete	23%	44%	32%
Partly Disseminated	11	4	8
Disseminated to Government	46	41	44
Disseminated to Non-Academic Professionals/Practitioners	60	19	42
Disseminated to Academic Community/Univ.	60	15	40
Disseminated Outside Kenya	11	7	8
Internally Disseminated/Confidential	9	4	7
Disseminated to the General Public	0	15	7
	<u>Total</u>	<u>220</u>	<u>149</u>
	<u>Base</u>	<u>35</u>	<u>27</u>
			<u>62</u>

About a third of the research conducted during the past two years has not yet been disseminated. In this regard, non-University-based researchers are less inclined to disseminate their results, perhaps because they lack the University's

built-in dissemination systems of public seminars, conferences and journals. These systems, on the other hand, tend to apply only within the University, thereby perhaps giving University researchers a false sense of widespread dissemination. This part is further illustrated in the table which follows.

In what form were the results disseminated?

Table 16:

<u>Form of Dissemination</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
Not Disseminated	23%	44%	32%
Report/Paper/Document	69	33	53
Public Lecture/Seminar/Conference	43	4	26
Newspaper/Radio	6	15	10
Book/Journal	17	7	13
Don't Know	0	7	3
Total =	158	110	137
Base =	35	27	62

The most common form of disseminating research findings is by way of a written report frequently backed up by a public seminar or conference. This mode of information diffusion, however, is peculiar more to University researchers than to others.

What were the main problems of dissemination and how could the process be improved?

Table 17:

<u>Dissemination Problems and Improvement</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
<u>A. Problems Encountered</u>			
Not Disseminated	23%	44%	32%
Lack of Outside Interest /Feedback	26	7	18
Poor/Ineffective Distribution	29	4	16
Lack of Staff/Office Facilities/Time	35	0	19
No Problems Yet/Can't Think of Any	29	45	36
Total =	142	100	121
<u>B. Suggested Improvements</u>			
Not Disseminated	23	44	32
More Publicity/Built-in Feedback	31	15	24
More Dialogue with Authorities	29	11	22
More Readable/Simplified Summaries	6	7	8
Can't Think of Any Improvement	29	45	37
Total =	120	122	123
	35	27	62

Problems of dissemination appear to affect University-based researchers considerably more than other researchers who have either not disseminated their research, or claim to have encountered virtually no dissemination problems. In so far as University researchers are concerned, the lack of effective

administrative machinery for churning out the research findings to all relevant people and gathering feedback from them seems to be a major source of frustration. Thus most University researchers suggest improvements such as more effective publicity and dialogue as a means of ameliorating this frustration.

Matters Concerning Implementation of Findings

Have any of the findings from research conducted in the past two years been implemented? This question proved difficult to answer mainly because the period of two years was insufficient to allow for effective, observable implementation to take place. Indeed, many research projects have as yet to reach the implementation stage. Thus, as can be observed from Table 18, over half the projects carried out, or still being carried out, have not had any of their findings implemented.

Table 18:

<u>Implementation of Findings</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
Not Implemented	54%	59%	57%
In Process of Planning Implementation	17	4	11
Partly Implemented	23	0	13
Implemented	20	26	23
Don't Know	6	11	8
	Total = 120	100	112
	Base = 35	27	62

While much of the University research has not as yet been implemented, more University-based than non-University-based researchers claim to be actively engaged in planning implementation procedures. Furthermore, about one-fifth of them claim at least partial implementation of their findings. Much of the implementation which is claimed to have taken place has been in connection with Government programmes.

How successful was the implementation of the findings if any?

Table 19:

<u>Success of the Implementation</u>	<u>University</u>	<u>Other</u>	<u>Total</u>
Not Implemented	54%	59%	57%
No Indication Yet	20	19	19
Partly Successful	17	4	11
Successful	3	7	5
Don't Know	6	11	8
	Total = 100	100	100
	Base = 35	27	62

It is understandable that in these early stages of implementation, not enough time has transpired to allow evaluation

of the success of the implementation. Where these evaluations have been possible, at least partial success has been claimed, especially by University-based researchers.

What were the main problems of implementation and how can the process be improved?

Table 20:

<u>Problems and Improvement Suggestions</u>	<u>University</u>	<u>Other</u>	<u>Totals</u>
A. Problems Encountered			
Not Implemented	54%	59%	57%
Lack of Co-operation/Dialogue	23	4	14
Operational Problems/Lack of Skilled Staff/Finance	14	11	13
Data Misunderstood/Misapplied	14	4	10
Can't Think of Any	9	30	18
	114	108	112
B. Improvement Suggestions			
Not Implemented	54	59	57
More Follow up/Dialogue/Co-operation	54	7	34
Authority Tardiness in Taking Action/Releasing Funds	20	4	13
More Qualified Personnel	3	7	5
Can't Think of Any	15	30	19
Total =	146	107	128
Base =	35	27	62

In the perception of University-based researchers, lack of active co-operation from, or dialogue with the authorities responsible for implementation is the most salient problem. In addition, some of them feel that their data are being misapplied, probably as a function of the lack of effective dialogue. Non-University-based researchers generally perceive themselves to have few implementation problems, probably because they have as yet to implement, even partly, their findings and also because they are more likely to be in closer contact with the implementing authorities.

The overwhelming suggestion of University researchers for improvement of the process of implementation centres around the knotty problem of increased dialogue and co-operation with the authorities. In this regard, a specific issue which is also highlighted by some University researchers is the problem of tardiness in accepting and funding suggested implementations on the part of the authorities, especially Government.

RESEARCH CARRIED OUT BEFORE JANUARY, 1970

In order to gain some idea of the nature of research conducted before January, 1970, we asked respondents to tell us what personal interview research had been conducted by their

institutions, restricting them to the three most important and most recent studies completed before 1970.

Of the 29 institutions surveyed, 18 or 62% of them reported a total of 37 social science research projects carried out prior to 1970, bearing in mind, of course, the limit of three projects per institution. The data in this section will be presented using the 37 projects carried out before 1970 as units of analysis. In addition, by way of comparison, we shall also present data on projects carried out after January, 1970.

Who carried out the research before 1970?

Table 21:
Who Carried Out Research

	<u>Before</u>	<u>After</u>
University and all its Institutes	49%	57%
Government and its Parastatals	22	11
Commerce and Industry	19	11
Bilateral Donors/UN Agencies/Foundations	5	16
Voluntary Agencies	5	5
	<hr/>	<hr/>
Total =	100%	100%
Base =	37	62

Since 1970, University and foreign donor agencies and foundations appear to have taken a slightly larger share of research projects, seemingly at the expense of Government, commerce and industry.

What were the main types of problems studied before 1970 in Kenya?

Table 22:
Problems Studied Before 1970

	<u>Before</u>	<u>After</u>
Family Planning/Welfare	22%	15%
Economics/Industrialization	19	21
Socio-psychological/Political	16	13
Employment/Migration	13	6
Educational/Adult Vocational	13	10
Public Health	13	5
Agricultural/Rural Development	11	27
Opinion/Listenership	8	5
Urban/Housing	8	8
	<hr/>	<hr/>
Total =	123%	104%
Base =	37	62

The most note-worthy shift in emphasis as regards research problems studied is in the area of rural development, especially with regard to agricultural development. The shift appears to coincide with the emergence of the 1970-74 Development Plan with its emphasis on rural development. It also coincides with the beginning of active research on the Special Rural Development Programme.

Who requested the research to be carried out?

Table 23:

<u>Research Requesting Institution</u>	<u>Before</u>	<u>After</u>
Government and its Parastatal Bodies	46%	41%
University and its Institutes	30.	26.
Bilateral Donors/UN Agencies/Foundations	11	20
Commerce and Industry	8	5
Voluntary Agencies	5	8
Total =	100%	100%
Base =	37.	62.

No significant trends in the bodies requesting research to be carried out before and after 1970 are discernable from the results.

Who funded the research carried out before 1970?

Table 24:

<u>Research Funding Institutions</u>	<u>Before</u>	<u>After</u>
Government and its Parastatal Bodies	39%	32%
Bilateral Donors/UN Agencies/Foundations	34.	37.
University and its Institutes	11	19
Commerce and Industry	8	5
Voluntary Agencies	8	7
Total =	100%	100%
Base =	37.	62.

It appears no significant changes have occurred with regard to the primary research funding organizations since 1970.

Where was the research before 1970 undertaken?

Table 25:

<u>Research Location</u>	<u>Before</u>	<u>After</u>
Country-wide/Selected Urban/Rural Areas	48%	29%
Nairobi and its Immediate Environs	30.	23.
Central Province	8	19
Eastern Province	5	7
Nyanza Province	3	8
Rift Valley Province	3	5
Coastal Province	3	0
Western Province	0	10
Total =	100%	100%
Base =	37.	62.

There has been some decline in studies conducted on a country-wide bases as in Nairobi and slight increases in more specific rural areas, particularly in Central and Western Provinces.

Thus, the principal changes in research emphases since 1970 have been towards greater University and foreign donor involvement in carrying out research; this research is increasingly oriented toward rural development through advancement of agriculture and entrepreneurship. Because of recall, no specific questions were asked of respondents carrying out research before 1970 on matters of methodology

and design, dissemination and implementation.

OTHER FINDINGS

Some organizations commissioned other organizations or individuals to carry out research on their behalf. Of the 29 institutions surveyed, five of them asked others to carry out a total of 13 projects before 1970, and 13 of them asked others to carry out a total of 22 projects after 1970. In addition, some organizations were engaged in disseminating or implementing research findings on behalf of the primary researchers. Of the 29 institutions surveyed, 9 were engaged in disseminating a total of 23 research projects carried out by others, while a further 9 were engaged in implementing a total of 13 projects carried out by others. However, due to pressure of time, we have been unable to analyse these data in time for the conference. Indeed, the figures given above are still provisional as the data are presently still in a somewhat messy, unorganized state.

We do, however, have further data to report. We asked each of our respondents the following questions:

1. Not counting this institution, name 3 persons or institutions whom you know to be involved in personal interview social science data gathering research in Kenya, and
2. Name 3 persons or institutions whom you know to be involved in disseminating social science research findings, and
3. Name 3 persons or institutions whom you know to be involved in implementing social science research findings.

The nominations received by each type of institution are tabulated in Table 26.

Table 26:

<u>Nominations Received</u>	<u>Producers</u>	<u>Disseminators</u>	<u>Implementers</u>
University Institutes	79%	59%	10%
University Departments	52	10	0
Government/Parastatals	62	62	90
Foreign Donors	21	28	7
Voluntary Agencies	3	14	10
Commerce and Industry	3	14	0
Don't Know	21	38	55
	<u>Base =29</u>	<u>29</u>	<u>29</u>

University institutes, especially the Institute for Development Studies, the Government Ministries, and University departments are perceived by others as being the main producers of research. The institutes, especially I.D.S., and Government Ministries

are regarded as the main disseminators whereas Government, especially the Ministry of Finance and Planning is perceived as being the main body engaged in implementing social science research.

We also asked all respondents to assess the state of research co-ordination in regard to research production, dissemination and utilization. Those respondents who earlier denied having any active involvement in carrying out or in asking others to carry out social science research, nevertheless had opinions to offer in this regard. Thus, the data presented below includes these additional respondents, hence the base of 36.

What were the opinions about the co-ordination of social science research with respect to research production, dissemination, and implementation?

Table 27:

<u>Co-ordination Opinions</u>	<u>Producers</u>	<u>Dissemination</u>	<u>Implementation</u>
No co-ordination at all	8%	28%	25%
Some, but poor	56	31	31
Good in specific areas only	6	17	6
Don't Know	31	25	29
	Total = 101%	101%	101%
	Base = 36	36	36

There appears to be an underlying belief among many researchers that some co-ordination of research production, dissemination and utilization is being exercised. But these researchers feel whatever co-ordination there is it is either working well only in specific areas of inquiry or not working very well at all. Many researchers, however, had no idea whether or not research is being co-ordinated.

We next asked respondents to tell us in what general ways research co-ordination with respect to research production, dissemination, and implementation could be improved.

Table 28:

<u>Improvement Suggestions</u>	<u>Producers</u>	<u>Dissemination</u>	<u>Implementation</u>
Create a Central Organizing Council	42%	35%	14%
Regular Newsletters/Digest Registry	16	22	8
Increase Government/Researcher Dialogue	11	8	42
Can't Think of Any	31	34	36
	Total = 100%	100%	100%
	Base = 36	36	36

For production and dissemination of social science findings, many researchers see the need for a central co-ordinating body. Implementation of results, though, seems to be perceived as falling outside such a body, depending rather on increased dialogue and co-operation between the primary researcher and the user.

Finally, we asked respondents about their views on the need for a National Research Council in Kenya.

Table 29:
Views on National Research Council

1. <u>Very much in favour</u> (Suggested functions include: setting priorities, topics, problems, screening, preventing duplication, disseminating, allocating resources, evaluating, quality control, central registry)	59%
2. <u>Conditionally in favour</u> (Suggested functions include: Advisory, preside over meetings, uphold of freedom of researcher, in general no executive powers)	19%
3. <u>Opposed</u> (politics, bureaucracy interfere with research)	11
4. <u>Don't Know</u>	<u>11</u>
	Total = 100%
	Base = 36-

Most researchers appear to be in favour of a National Co-ordinating Council though some are cautious about the degree of control over research and researchers which should be vested in such a council.

SUMMARY OF MAIN FINDINGS

In summary, personal interview research conducted in the past two years in Kenya based on our survey of 29 institutions, organizations, and agencies engaged directly or indirectly in research production, dissemination, and implementation, is characterized as follows:

1. The bulk of research has been carried out by University-based researchers requested mainly and in equal proportions by Government and the University itself.
2. Problems associated with rural development, especially agriculture and entrepreneurship, with social welfare, especially family planning, and with economic industrialization have been the main topics of research.

3. Foreign donors and Government in nearly equal proportions are the principal funders of social science research projects.
4. Nairobi, Central Province, and Country-wide selected urban and rural areas have been the main areas of research activity.
5. Most researchers claim to be conducting research which is either applied or experimental development in nature; that is research which has practical payoff.
6. Technical expertise in research execution in such areas as sampling, data gathering, and data processing is more evident among University-based researchers.
7. University-based researchers have been more active in disseminating and, to a lesser degree, implementing their research findings, though the rate of dissemination and implementation has been low, and the University's dissemination practices are still geared mainly to within University dissemination.
8. The main problems of dissemination and implementation centre largely around the lack of effective dialogue and co-operation between primary researchers and user agencies, especially Government. This lack is particularly felt by University-based researchers.
9. There appears to be some shift in emphasis to rural development through advancement in agriculture and entrepreneurship in the past two years as compared with research conducted before 1970.
10. The University, together with Government, are perceived by researchers in general as being most involved in the production and dissemination of social science research findings while Government, through its Ministries, is perceived as being most concerned with implementing the findings of social science research.
11. It appears most researchers feel there is a need for a National Research Council to co-ordinate the production, dissemination, and implementation of social science research.

PRODUCTION, DISSEMINATION, AND UTILIZATION OF
RESEARCH FINDINGS: CONCEPTS, MODELS AND OTHER
BACKGROUND INFORMATION

Niels Roling and Joseph Ascroft
Institute for Development Studies
University of Nairobi

INTRODUCTION

Three forces seem at work to increase the salience of the role of scientific knowledge in society. One is a knowledge explosion resulting from a vastly increased scientific output, which has already outstripped the retrieval capacity of the average potential user so that many problems go begging for solutions although knowledge is available to solve them. A second force is the rapidly increasing number of problems that accompanies rapid social and technical change; these are problems which demand scientific knowledge for their solution. The third force is the growing expectation, on the part of the Government, development agencies, industry, and the general public, that scientific knowledge should be useful.

As a result of these three forces, there is a growing demand for planning, co-ordinating, and guiding the production, dissemination, and utilization (PDU) of scientific knowledge for useful purposes. Such a demand led to convening this Workshop, which can be seen as part of a world-wide search for methods of streamlining and promoting the PDU process for useful purposes.

A problem in the planning, co-ordination, and guidance of PDU is that, as yet, little information exists on which to base such activities. The need for such information has led to the emergence of a new discipline "the science of knowledge utilization." So far, this discipline has been very disjointed, featuring such research topics as the diffusion of new crop varieties among farmers, the factors contributing to the output of industrial research workers, etc.

A first effort to synthesize these more than 4,000 studies and to develop a useful theory of the PDU of scientific knowledge appears in the work of Havelock and his colleagues at the University of Michigan, 1970. Their book provides much of the substance for this paper, particularly the concepts and

models which seem essential for understanding PDU phenomena.

OVERVIEW

Two concepts provide the basis for understanding PDU of scientific knowledge:

- (1) The knowledge transfer process and
- (2) The knowledge flow system

1. The process can best be understood as in interaction between a potential user of knowledge and a producer of knowledge. This interaction can be analysed into six categories or problem areas explained by the following formula: who says what to whom in which channel to what effect (See fig. 1)

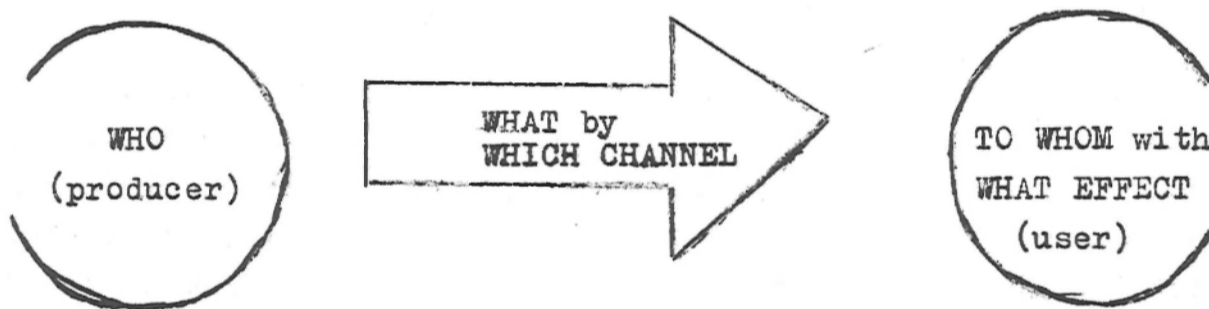


Fig. 1: Major Elements in the Knowledge Transfer Process

For example, agricultural scientists (who) produce Katumani maize (what) which is transferred by extension workers (channel) to farmers (to whom) who subsequently produce more food for the nation (effect). However, this formula does not provide a sufficient basis for understanding PDU because it reduces a complex set of interactions among a large number of people and organizations to two, the producer and the user. To deal with the actual complexity, we have to introduce the knowledge flow system.

2. The system can best be understood to a set of interdependent components. The major components which can be identified in the knowledge flow system are: fundamental research, applied research and experimental development,

practice and the consumer.¹

Figure 2 represents these entities. The arrows suggest not only two-way communication but also interdependence and linkage, or else, points at which barriers can occur.

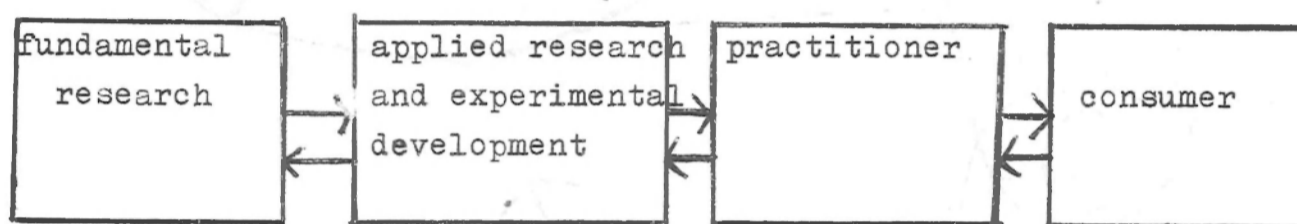


Figure 2: Knowledge Flow System

¹

Fundamental research, applied research and experimental development are the three types used and defined by UNESCO for classifying research endeavours.

Fundamental research: any activity directed towards the increase of scientific knowledge or the discovery of new fields of investigation, without any specific practical objective.

Applied research: any activity directed towards the increase in scientific knowledge with a specific practical aim in view.

Experimental Development: systematic use of the results of fundamental and applied research and of empirical knowledge directed towards the introduction of new material products, devices, processes and methods or the improvement of existing ones, including the development of prototypes and pilot plants.

3. Synthesis system and process are two different ways to describe the same phenomena. Therefore, we can synthesize the two concepts. Figure 3 represents an effort to do this.

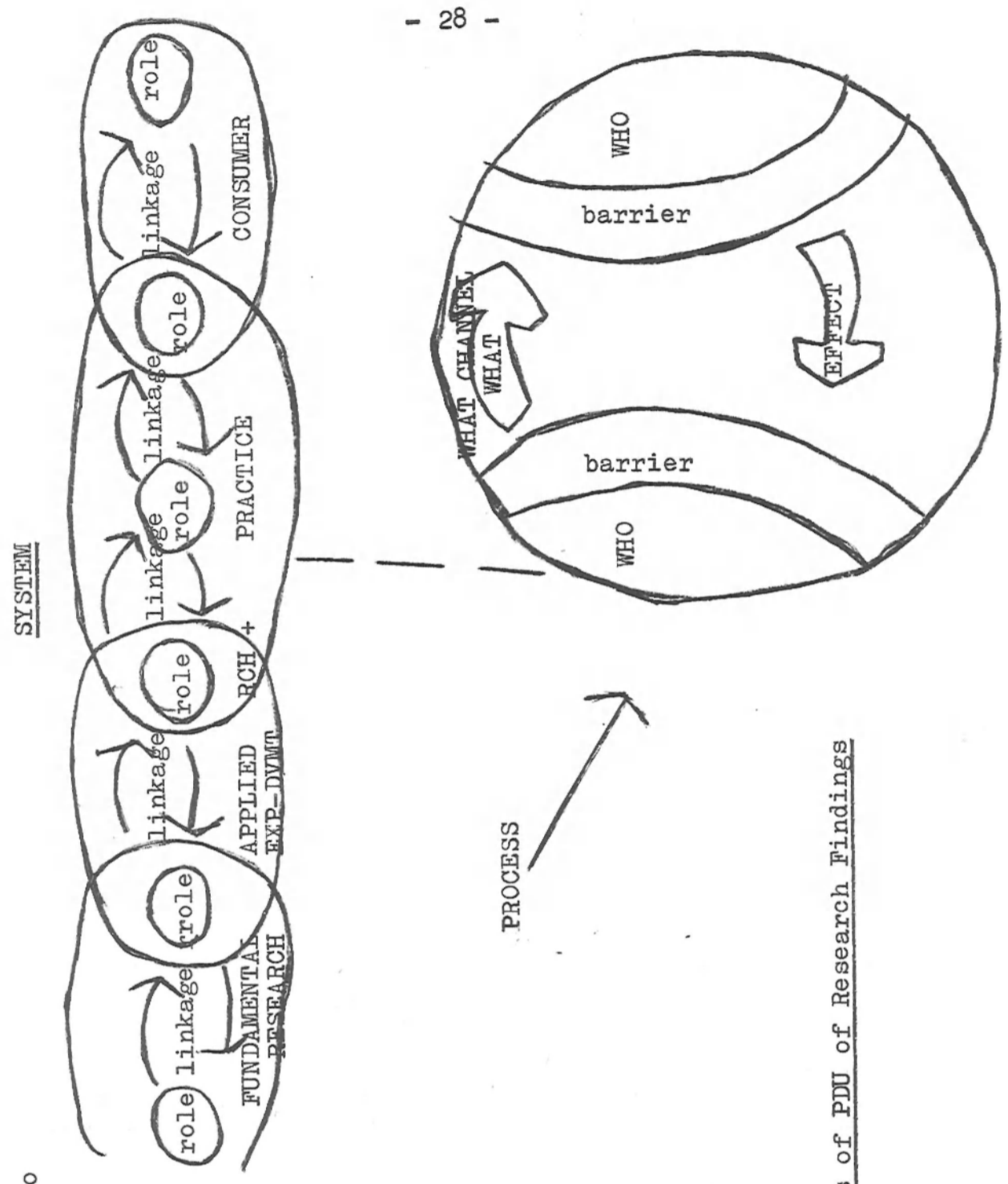


Figure 3: System and Process of PDU of Research Findings

With this general overview, we can now look at a number of topics in more detail, such as (a) the individual, inter-personal interactions, social systems, macro-system (who) and to whom), (b) the knowledge being transmitted (what), (c) the method of transmission (channel), and (d) the consequence of transmission (effect). Our brief discussion of these topics will be based on available research.

The largest number of studies (for example 44% of the studies done in Kenya in the past two years) has been done on the question "To whom?" An example is the work done in the Department of Government, University of Nairobi, on the characteristics of those farmers who benefit directly from extension. About 16% of the Kenyan studies are concerned with "Who?" Illustrations of this are studies at IDS carried out on the characteristics of extension workers and the pilot study (for this Workshop) on social science research workers. "How?" questions are dealt with by about 6% of the Kenyan studies. An example is the mixed media experiment which is about to start in Machakos under the auspices of the Board of Adult Education. It looks at media, their differential effect, and strategies for using them.

About 29% of the Kenyan studies deal with "What?", that is the characteristics of the message, especially in so far as they affect D and U phenomena. For instance, research on the type of low income housing that is most suitable for Kenya conditions is being conducted by the Housing Research and Development Unit.

Effect is a basic ingredient of the considerations on each topic. Effect is alternatively called Feedback; formally obtained through evaluation. An illustration is the current IDS work on evaluating the impact of extension on farmers' behaviour.

BASIC CONCEPTS

People, organizations and nations can be called systems. A system can be distinguished from its environment by a more or less permeable boundary. The environment contains the factors which impinge upon the system. The system itself consists of interdependent components which impinge upon each other.

There is a tremendous variance between systems in terms of the interdependence of their components and the permeability of their boundaries. Some systems are static in that their components have fixed relationships to each other (the pages or a book), and other systems are dynamic in that the components act upon each other (people in a workshop). Most systems are both static (we speak of structure) and dynamic (we speak of process). The dynamic aspect of systems can be called force, tension, or what have you, but for purposes of PDU, we will look at messages within the dynamic system, both in terms of input (action) and output (reaction). If there is a regular pattern of action and reaction, the system is in dynamic equilibrium which the introduction of new messages may upset.

Some systems are called closed because they have boundaries which are relatively impermeable to messages to and from the environment. Their boundaries are barriers which stop messages. Ivory tower researcher could be mentioned as an example. Other systems are called open, in that their boundaries allow in- and outputs of messages. Open systems depend for their continued existence upon such in- and outputs of information (e.g. the press). Most systems are partially open, that is have boundaries which are permeable in the sense that messages are filtered, screened, decoded, encoded, translated, processed, transferred, or adapted.

Figure 4 depicts a dynamic, open system. It receives messages from outside, processes them in the dynamic interaction of its components a, b, and c and produces a reaction to the input message. Feedback is thus a type of input message into a system which is direct and casually related to its own output.

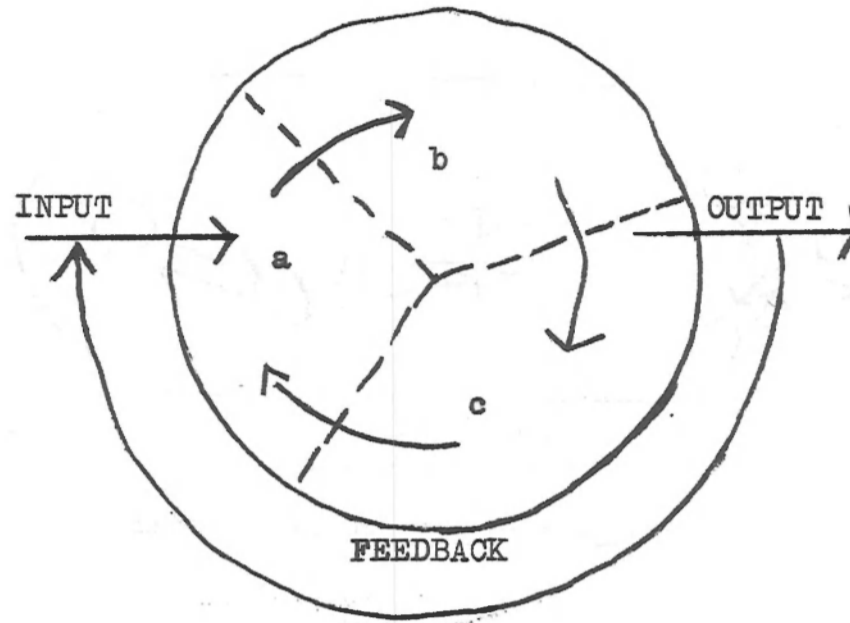


Figure 4: A Dynamic, Open System

Figure 5 shows two relatively open systems (persons or organizations), that is the input of one system is the output of the other.

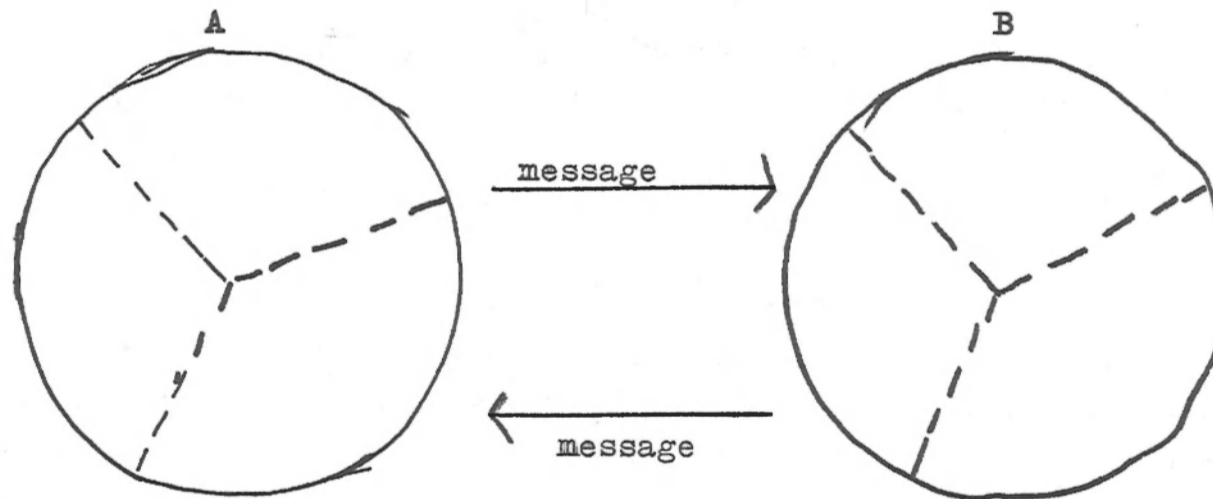


Figure 5: Two Interacting Systems

The social system consists of different people placed in a structure, but acting upon each other (Fig. 6). Finally we can look at a macro-system (such as the nation), consisting of different organizations and other social systems (fig. 7).

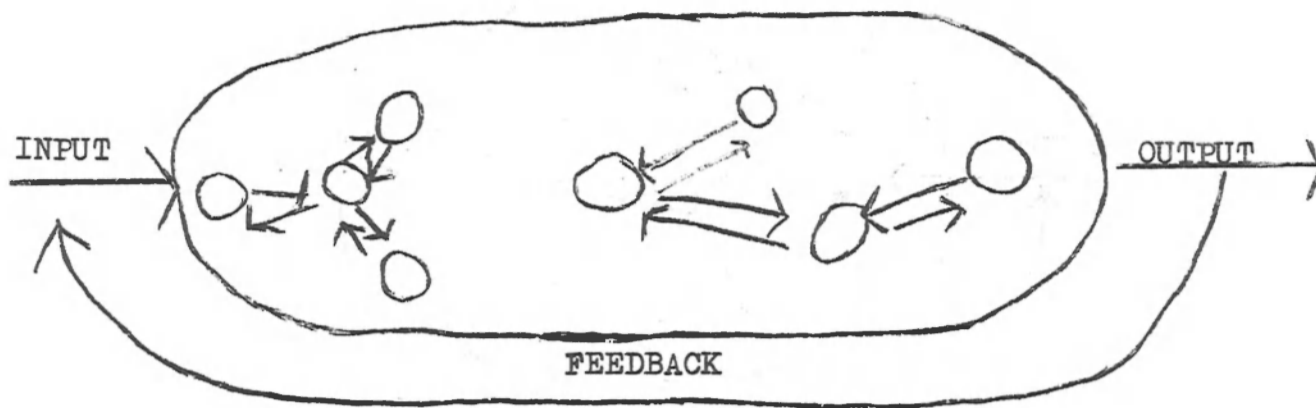


Figure 6: The Social System

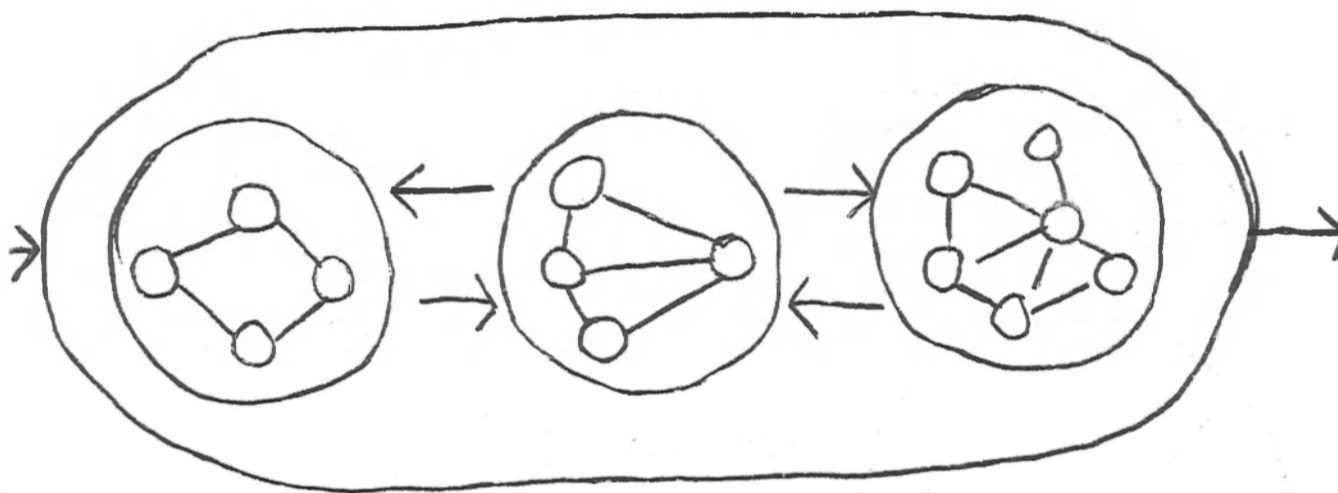


Figure 7: The Macro-system

The place at which a barrier between a system and its environment, or between different systems, is permeable can be called a channel. A channel may be an intervening system, such as the mass media, or the extension agent, who links the agricultural research to the farmer.

Linkage refers to the extent to which two systems are connected by messages, so as to form a greater system. A channel is useless unless messages are sent through it. Linkage refers to the extent to which this happens, and also to the extent to which there is a regularized pattern of interaction. A knowledge flow system that operates effectively consists of different persons and social systems (researchers, practitioners and users) linked to each other, forming chains or networks.

Linkage is an important concept in that successful co-ordination of PDU process will largely depend upon the extent to which effective linkage between sub-systems can be achieved.

THE INDIVIDUAL

Any consideration of the PDU of scientific knowledge must finally face the question: PDU for what? A satisfactory answer to this question can only be found in the needs of the individual, i.e. his motivations, wants, feelings, problems and what have you. Needs are dynamic forces which create instability in the individual and make him act, or behave in the search for, and consumption of, solutions to his problems. Needs are aroused when an experienced situation or state does not correspond to a desired situation or state. They are satisfied when the experience corresponds to the desire.

Experience and desire are made to correspond through behaviour, that is search, and consumption. Thus, arousal of a need leads to search, and consumption leads to satisfaction. Needs and behaviour are, therefore, interdependent subsystems linked by message (See Fig.8).

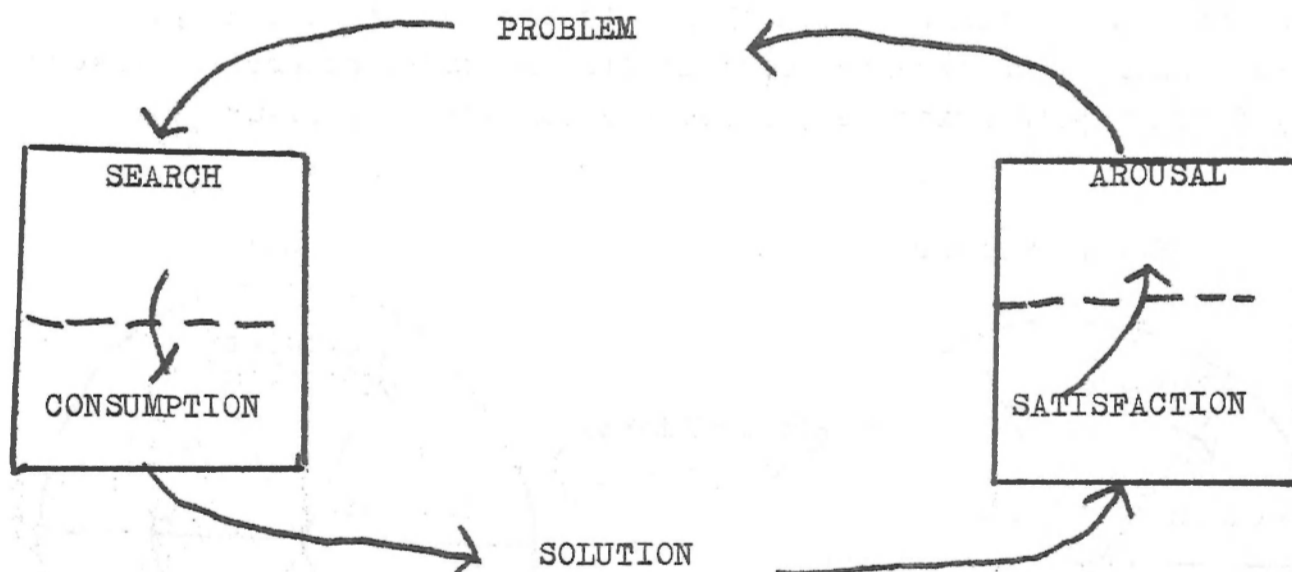


Figure 8: The Problem Solving System

The problem solving allows us to point to some basic difficulties in establishing effective PDU process. The first difficulty is articulating the problem. People and organisations have no difficulty identifying a feeling of dissatisfaction or pain, but to translate that feeling into a problem which can direct the person or organisation in its search behaviours is very difficult, as anyone knows who has ever consulted for government or counseled individuals.

Another difficulty is to generate meaningful search behaviours from stated problems. Many rural people, for instance, seek to alleviate their poverty by migrating to cities or acquiring some education, both of which search behaviours may not lead to the desired effect. A final difficulty in knowledge utilization is to step from search to consumption. Many problem solving processes abort right here, either because of difficulties in choosing between alternatives or because lack of resources does not allow applying the solution.

In fact, one of the fundamental problems of knowledge utilization in general is that, if left alone, natural diffusion process invariably lead to a situation in which those who are doing fine already seek, find, and benefit most from new knowledge, while those who really need it, don't seek, don't find, and don't benefit. A recent IDS study on the distribution of extension benefits among Tetu farmers has again demonstrated this principle. It seems that a successful experience leads to self-confidence which leads to aggressive search behaviour, which leads to success.

THE INTERPERSONAL LEVEL

In Figure 8, we have shown the individual system, seeking for problem solutions within itself. Often, however, the individual system will search in its environment for help, especially from experts, consultants, doctors, extension workers, and other practitioners or resource persons (See Figure 9).

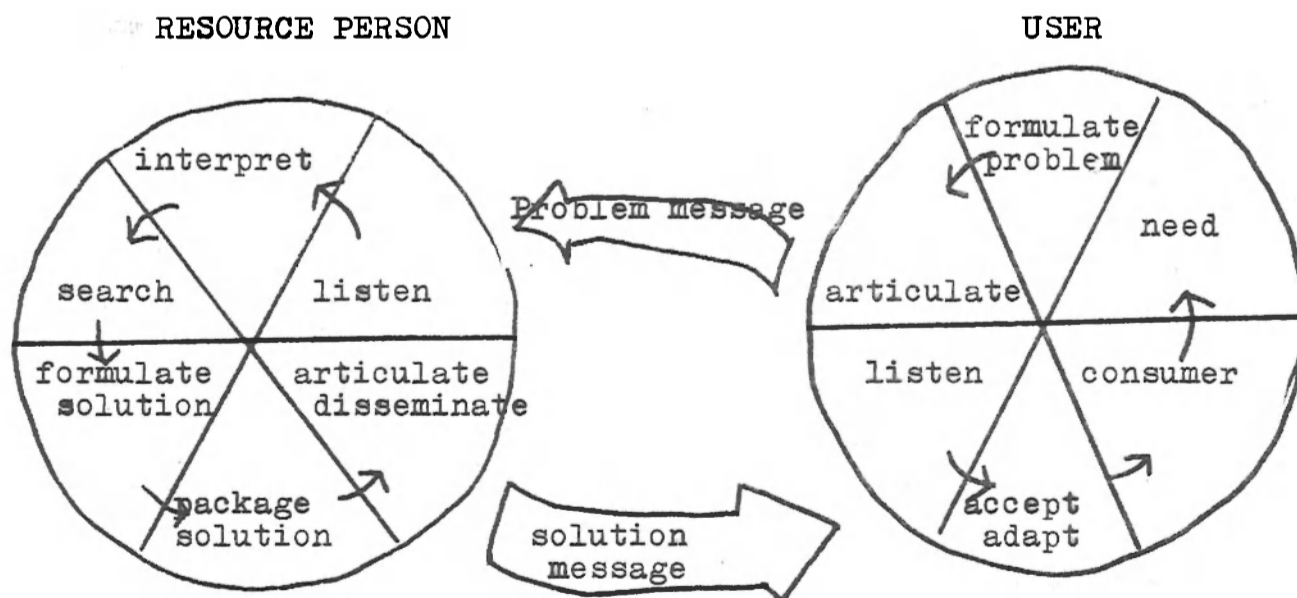


Figure 9: Two Person Knowledge Utilization System

Apart from difficulties such as problem articulation mentioned above, many specific barriers work against the type of collaboration depicted on Figure 9. One such barrier is formed by status problems in that users feel they endanger their status if they ask for help, while potential resource persons feel they lose their prerogatives if they give solutions they have found themselves. Famous in this respect are government officials who do not want to give people information.

Another barrier is language, especially the use of jargon. Researchers usually disseminate their findings in a manner which makes it impossible for others to understand their reports. This is the reason why many research institutes have special "disseminators." A third barrier is being out of phase, which occurs when a resource person gives a solution before the user has articulated his problem (typical case: the salesman), or when the user asks for solutions before the resource person is ready to give them (typical case: the relationship between policy maker and researcher).

THE SOCIAL SYSTEM LEVEL

Most problems are too complex to be solved by one resource person. Thus, the doctor relies on universities, medical journals, colleagues, specialists in hospitals, etc. One could, then, visualize the problem-solving system as a complex social system, the idealized version of which is given in Figure 10.

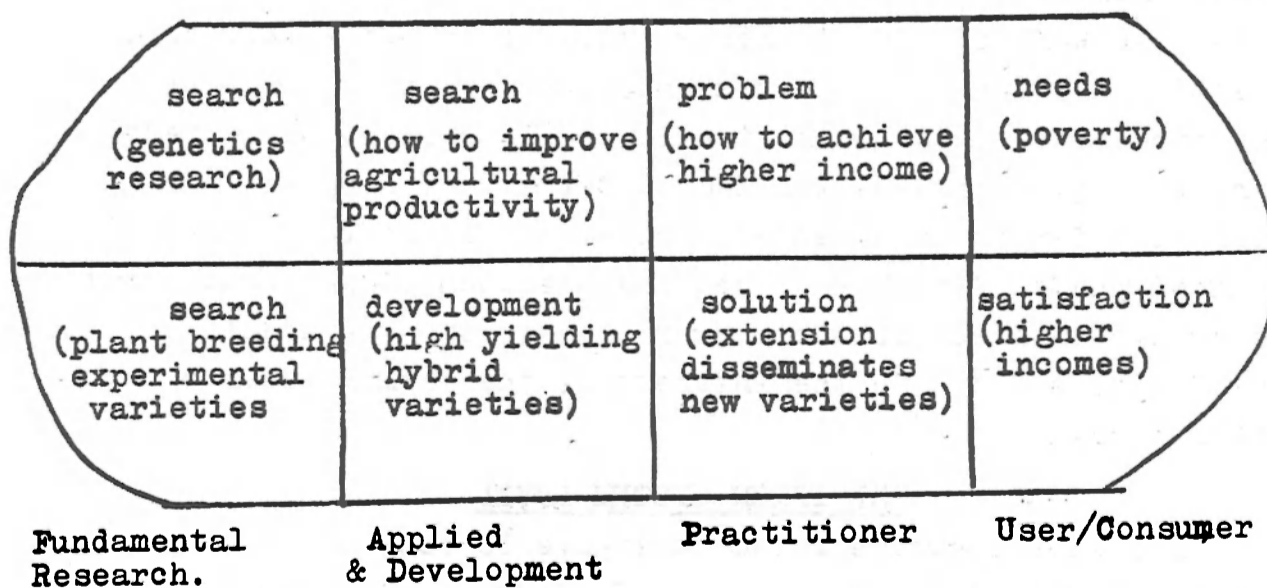


Figure 10: A Self-sufficient Problem Solving Social System

Figure 10 shows the idealized case. In the real world, many factors work against the smooth operation of such a social system. Take, for example, a Ministry of Agriculture and its farmer clients. Typical problems of such a social system can be found in its communication system. How does one ensure that relevant feedback and problem formulations from the bottom of the organization reach decision makers at the top? How does one reach the many clients with new knowledge? How does one co-ordinate the hundreds of extension workers to achieve a specific goal, or train them so that they can disseminate useful knowledge?

Each of the subsystems in Figure 10 can be viewed as social systems in its own right. For example, one could speak of the user system and look at its special problems, in this case, the usual lack of organization among users and their inability to speak with one voice to formulate problems and to counteract concerted efforts to manipulate them, thus allowing systems to promote their own and not the user's interest.

One could also view each of the pairs of subsystems in Figure 10 as a social system. For example, one could look at the extension worker and the farmer, the former's output being services, advice, and supplies and the latter's output being requests, higher production, and feedback to extension workers on the effect of their work. A problem, however, with arbitrarily determining segments of a larger system such as a social system is that one no longer accounts adequately for relationships with other social systems, for instance, the extension worker. The farmer's output is not the extension agent's only input. A very significant input is, in fact, the directives from administration which request the extension worker to give farmers services, advice, and supplies for which the farmer never asked. Thus, the extension worker is "out of phase" with his client and promotes changes which may be in the interest of the larger organization (system's interests) but not in the interest of the farmer (user's interests).

THE INTER-SYSTEM LEVEL

The subsystems depicted in Figure 10 can, as said, be viewed as systems on their own. In fact, in the real world such functions as fundamental research, applied research, and experimental development research are usually performed by

specialised institutions, such as universities, industrial design centers, etc.

One of the primary barriers that hinder inter-system linkage is the "we feeling" that tends to occur within systems. The most dramatic example is, perhaps, nationalism, but similar concepts apply to other systems as well: us Africans versus you Mzungus, us Kikuyus versus you Kambas, us researchers versus you government officials, and us government officials concerned with real problems versus you ivory tower researchers wasting our time. Researchers have shown that informal contacts are a prime method of removing such barriers. In the United States, the golf course has become one of the important facilitators of such informal contacts. Other types of linkage can occur through specialized magazines, consultants, public relations officers, salesmen, opinion leaders, etc.

One would like to think of society with its many systems and inter-system relationships as a benevolent macro-system in which messages flow smoothly from person to person and organization to organization, so that the needy get what they require. As we have seen, society and the autonomous PDU processes occurring in it are not as smooth and benevolent as all that, so that government needs to change the autonomous process through planning and guidance.

THE MESSAGE (WHAT)

Scientific interest in messages is recent. Good conceptual frameworks to deal with messages have not been developed. The message can consist of words, information, knowledge, services, or products. In PDU we look especially at new scientific knowledge arising from the research.

One way to look at messages is to consider the type of output of the different subsystems in the knowledge flow system. Thus, fundamental research produces theories, laws, and classifications which underlay phenomena. It also provides empirical data and methods by which data are collected and analyzed. Applied research also produces theories, data, and methods, but such output is classified to correspond to areas of human need. Experimental development activities lead to the production of prototypes, working models, and inventions which the practitioner can adopt. The practitioner provides knowledge, services, and products which have been developed, packaged, and tested. He does not provide new knowledge. The

consumer, finally, produces messages of satisfaction or dissatisfaction, suggesting problems and providing feedback to practitioners and researchers.

Another way to look at messages is to determine the relationship between knowledge content and ease of diffusion or adoption. Thus some knowledge has greater relative advantage to potential users than other knowledge. Some new ideas are much more visible and discussable than others.

CHANNELS

The type of channel determines how the message reaches a receiver. Sometimes a device is interposed between sender and receiver. One then speaks of a medium. Mass media allows only one way communication and are especially able to create awareness and generate interest in new knowledge. Interpersonal channels are essentially two way and are able to affect behaviour change in that one can link problem and solution to each other in two way interaction. These and other differences between channels require that planned knowledge dissemination includes carefully worked out strategies of media use.²

MODELS OF PDU OF KNOWLEDGE

So far, we have dealt with concepts underlying PDU phenomena. We now want to briefly discuss some models of PDU, because each of them provides a basic outlook on PDU processes, some of which participants may share without being aware of the others.

1. Research, Dissemination and Development Model

The major components of this model are variations on the theme of the knowledge flow system, which we have already discussed (See Figure 11)

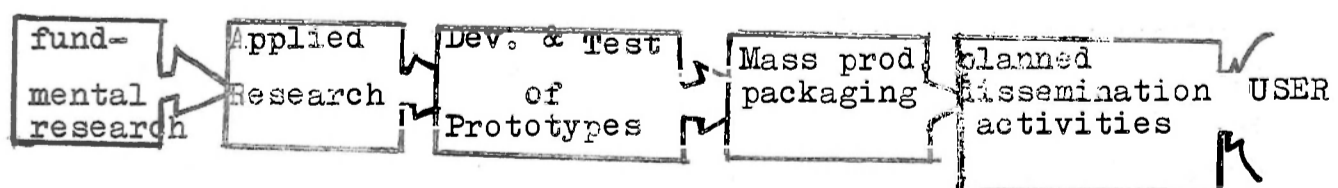


Figure 11: The R.D. and D Model

² For a more detailed discussion on channels and media, see N. Roling and J. Ascroft (1971) "Media Use in Development" paper for the Workshop on Multi-Media Use in Development, organized by the Board of Adult Education in Nyeri.

The model has some features which make it a very powerful one: (a) a rational sequence of the whole PDU process; (b) planning on a massive scale, i.e. the research, development production, and disseminating activities have to be coordinated and planned over a number of years in a sequence which makes sense; (c) a division of labour in a separation of roles and functions; (d) a specific target, the passive consumer who will accept the innovation if delivered properly; and (e) scientific evaluation at every stage to ensure the occurrence of the rational sequence. Finally (f) the model implies a very high development investment.

The model is a powerful and useful paradigm for much social change. Industry, agriculture, and defence use this model. Note, however, the relatively small role the consumer and his needs play in the model. In fact, it is very much a blue print for promoting "system interests." As we shall see, other models of the PDU of scientific knowledge do not suffer from this shortcoming, although they have their own.

2. The Social Interaction Model

Proponents of the S-I model assume the existence of a diffusible innovation as a pre-condition for their analysis of how a new idea diffuses throughout a social system. They, therefore, neglect important aspects of the RDD model. However, diffusion researchers have generated a tremendous (over 1000) number of empirical studies in different settings and on different innovations, thus producing a large number of generally applicable generalizations.

The model stresses the role of interpersonal relations in diffusion processes. Its adherents have discovered the complex networks of interpersonal influence that mediate the impact of mass media. Implied is the great emphasis the model places on (a) the position of a user in a social network as a determinant of his adopting and disseminating behaviour (opinion leader, innovator, laggard, etc.) and (b) the norms and values prevalent in a social system and their influence on adoption and diffusion.

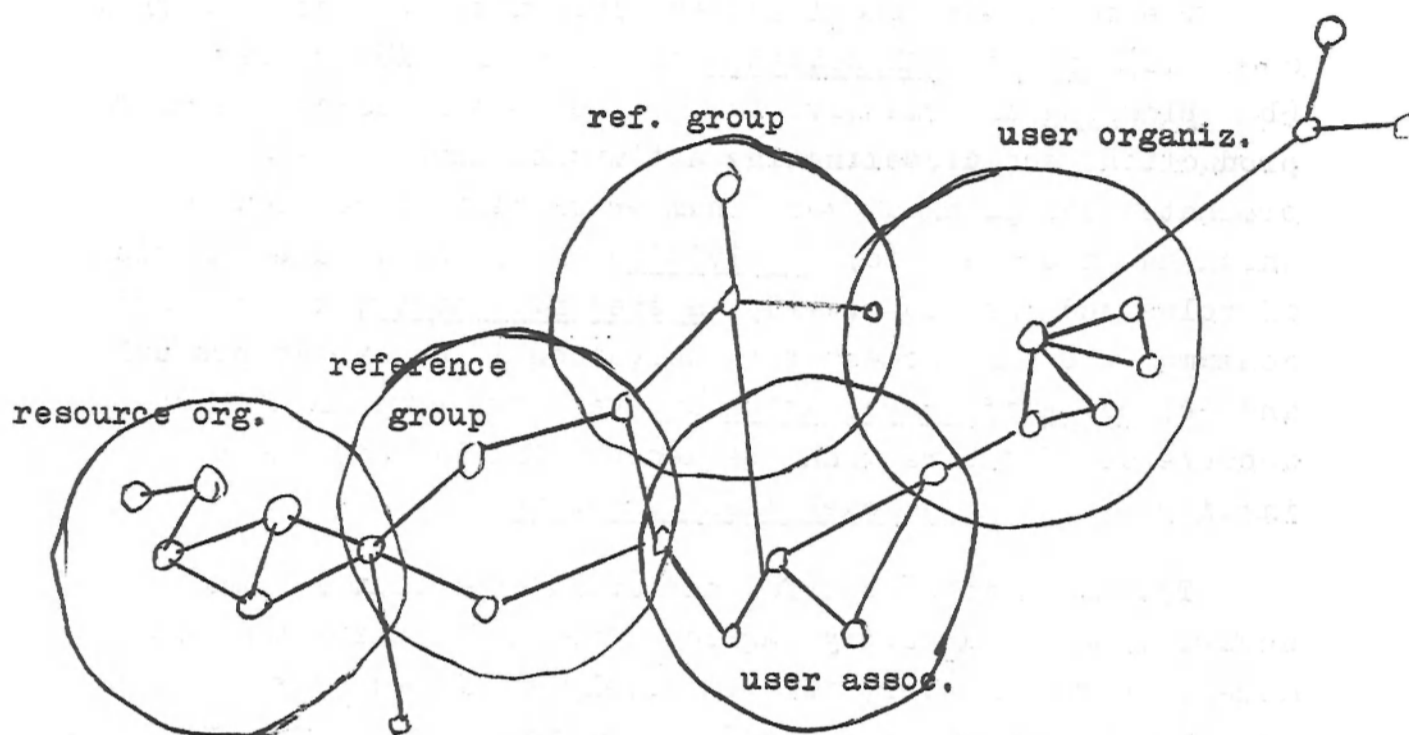


Figure 12: The Social Interaction Model

In the S-I model, the size of the adopting unit is essentially irrelevant. Whether the adopting units are individual farmers, villages, schools, or even nations does not seem to affect the applicability of the generalizations produced by adherents of the model.

Another real contribution of the model has been the formulation of the individual stages of the adoption process (awareness, interest, evaluation, trial, and adoption) and the differential role the various media play at each of these stages.

Disadvantages of the model are the neglect of research and development, of the transformation of the innovation as it diffuses, of diffusion within an organization, and of the psychological processes going on inside the user/adopter.

3. The Problem-Solving Model

The P-S model starts with the individual and his needs and looks at him as a problem-solving system. The model thus stresses the promotion of "user interests." The individual solves his problem through diagnosis, search for solutions, retrieval of possible relevant solutions, choice of specific solutions, trial and evaluation. Outside consultants or

change agents may act as problem-solving process helpers at different stages (See Fig. 13).

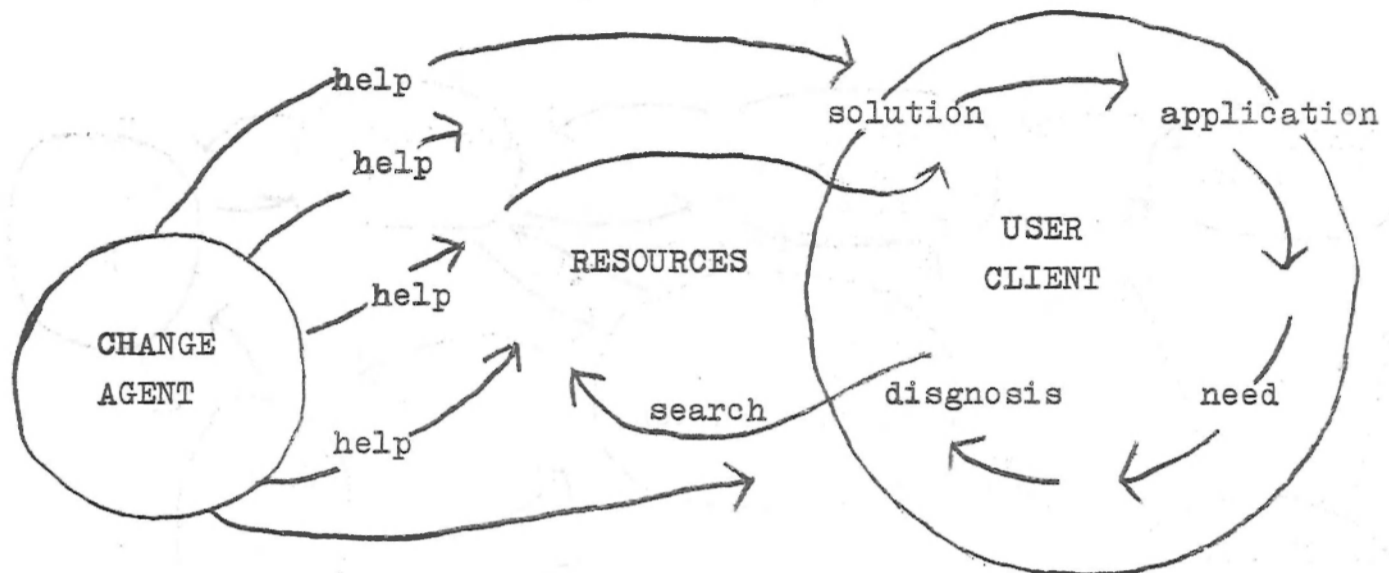


Figure 13: The Problem Solving Model

The model has a strong tradition on consultancy, counselling, psychiatric practice, and the human relations tradition of planned change. It has produced little empirical work but has certain advantages, such as accepting the needs of the individual as a fait accompli, that is a given without which innovations are meaningless. Another advantage is that it stresses the diagnosis as a method of linking innovation and human need. In its emphasis on user-interest solutions it stresses the non-directive role of the outside helper, who, instead of being a salesman, helps his client to find his own solutions. However, the model minimizes the role of the outside agent and the benefits that may accrue to the user from the massive inputs in research and development that only large organizations can afford, or the benefits that may be gained from specialized retrieval and dissemination services.

4. A Synthesis

The linkage concept allows combining some of the viewpoints discussed. A model based on linkage also starts with the user as a problem solver, but sees the user as meaningfully related to resource persons, who are, in turn, linked to research and development. Figure 14 gives an idealized view of such a PDU system based on linkage and shows the role

of government in promoting effective linkage,

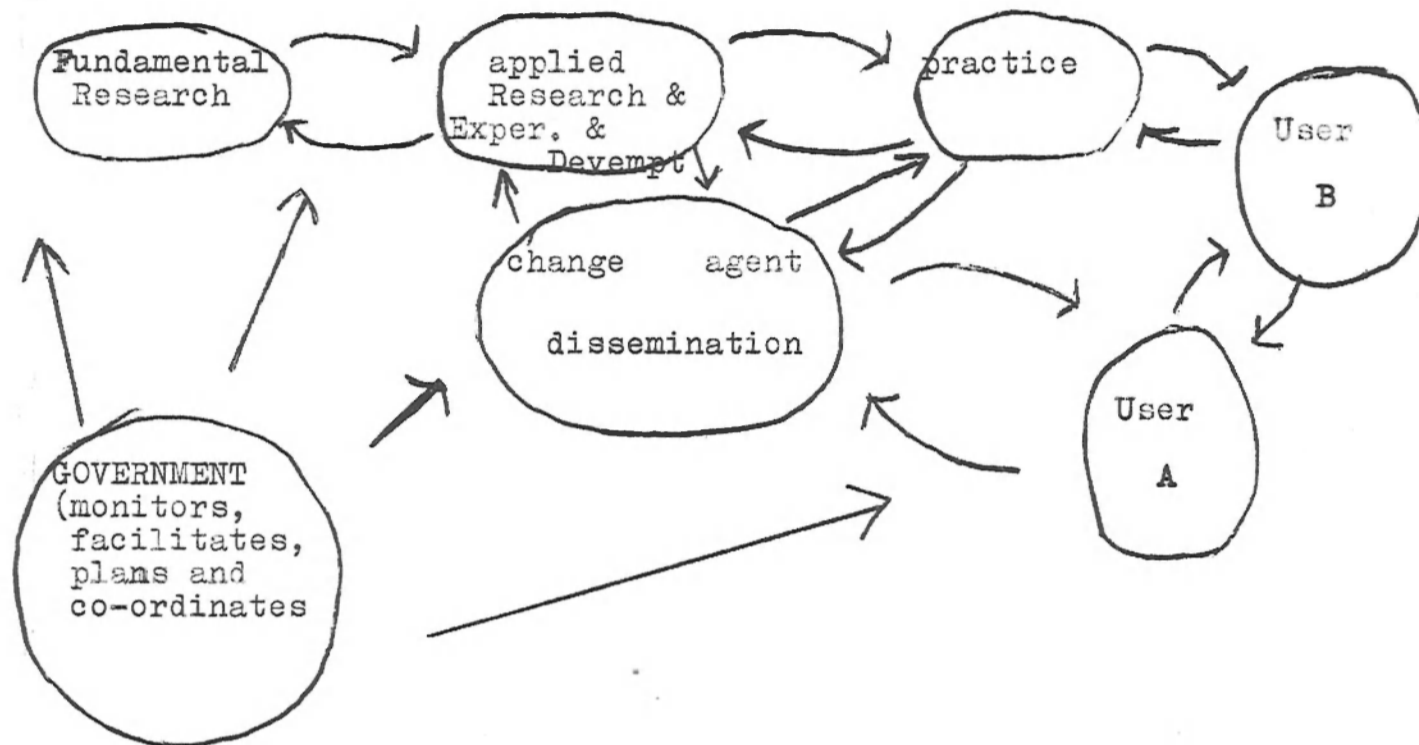


Figure 14: The Linkage Model

The role of government is best seen at this macro-level. It must monitor the macro-system, facilitate linkage where barriers exist, add where gaps appear, discourage the growth of nonadaptive subsystems, plan for future needs or national goals, and co-ordinate subsystems so that they perform successfully as a knowledge flow system.

SOME IMPLICATIONS IN THE KENYAN SITUATION

A number of special conditions prevail in a country like Kenya which have particular relevance for the PDU process in it.

(1) A particular need for accelerated knowledge utilization Socio-economic development is a prime policy objective in Kenya. The very basis of socio-economic development is the increased utilization of scientific knowledge, be it in health, agriculture, family planning, education, industry, transport, etc. Where some developed countries are beginning to wonder whether continued economic growth with its concomitant pollution, drudgery, and slavery to a system are worth the benefits of an even more automatic car, washing machine, etc., too much economic growth is probably the last

worry for Kenya. The search for growth and development implies that one of the most pressing needs in Kenya today is a rapid acceleration of the rate at which new knowledge is produced (or adapted), packaged, disseminated, and utilized. The PDU system has a much more important function in a country like Kenya than in many developed countries.

2. Unfavourable conditions for efficient PDU

PDU systems in developing countries are often particularly ill-equipped to live up to the function they have to perform in development. The ultimate consumers, the wananchi, often lack the literacy, technical background, and resources to receive, process, and utilize new knowledge efficiently. The state of media or channels makes communication difficult. Telephones, radio, TV, magazines, and newspapers often only reach few people, so that the main burden of dissemination falls on extension agents in the Ministry of Agriculture, Ministry of Health, etc. However, such practitioners are often scarce, not well trained, and insufficiently supported by their organizations. Research and development are often understaffed, foreign staffed, under financed, or qualitatively unable to generate the creative capacity to invent or adapt knowledge and technology for rapid development. In fact, their output probably does not equal the amount of research and development that the automobile industry invests in the production of one new model motorcar.

Yet there is a tremendous need for prototypes, be it cheap urban housing, education curricula, training programmes, development strategies, rural industrial centers, contraceptives, new crop varieties, agricultural co-operatives, credit schemes, tourist attractions, university exam structures or what have you. A special problem in research is that most of its finances and manpower are foreign, so that the government is more often faced with the problem of "how do we use the knowledge we get?" than with "how do we get the knowledge we need?"

Special barriers in the knowledge flow system are created by ethnic and language differences, persistent resistance against change, especially among pastoralists, and the fact that the users are often unable to articulate their problems or give adequate feedback to practitioner and researcher which could improve their performance. A final problem is the extreme speed at which semi-autonomous diffusion processes in Kenyan society

presently create inequality by accumulating wealth in the hands of a few.

3. Time and opportunity for improvement

A number of factors reduce the urgency in making PDU processes live up to their potential role. The most important of these is that many users have not, as yet, been mobilized to make demands on the PDU system. This fact allows us time to mend our fences. Increased demand by users or consumers is probably a prime motivator for improving the PDU system.

Apart from time, there is also opportunity for improvement. The PDU system in a country like Kenya is probably much easier to control and guide than in many developed countries. A prime reason for this is the important role of Government in the PDU process. Far from being a spectator on the sidelines of society, as Figure 14 would suggest, Government plays an important part itself, especially as far as PDU is concerned. It produces much of the research, virtually all the practitioners and implementers, while most research is carried out for it or for agencies helping it to achieve development. In such circumstances, Government can have a tremendous impact on PDU, perhaps too great an impact in that it may stifle alternative approaches and contravening forces which would provide innovation in the PDU system itself.

Given such potential impact, what can Government do to improve the PDU system in Kenya?

4. Suggestions

Although the purpose of the Workshop is to formulate recommendations, a few suggestions will be made here, to stimulate thought and discussion.

(a) Knowledge retrieval system

All developing nations share a similar problem. How do we stimulate growth and development? In all of them hundreds of "pilot schemes" (prototypes!) are tried. However, most of the knowledge gained in such schemes never reaches other countries. There seems to be a great need for an international retrieval and dissemination system. A similar system on a smaller scale could, however, apply within East Africa or Kenya.

(b) Improving problem articulating capacity of Government

We have seen before that any user system has great difficulties in formulating its problems, but also that the pressure from the demand side can do a lot to improve the PDU system. It appears that a clearing house for such needs is very necessary. Such a clearing house should also have power and finance to contract needed research, or pressure existing researchers to do it.

(c) Prototype development center

As we have seen there is a great need for developing prototypes of development strategies such as training methods, strategies of media use, extension methods, intra-ministerial to develop such prototypes are haphazard and unsystematic. There emerges, then, a need for a center to design and test such prototypes on a small scale. Such a center could also perform the knowledge retrieval function mentioned under (a)

(d) Better use of existing media

Although the large sums of money Government spends on extension agents seems to suggest awareness of the need for promoting knowledge utilization, the use made of other media, such as radio, newspapers, administrative staff, the Ministry of Information, etc, suggests no such awareness. It would seem that the existing media could, with small changes, play a much greater role in promoting useful knowledge utilization.

(e) Improve intra- and inter-Ministerial communications

Since Government plays such an important role in PDU, its inadequacies negatively influence the system. Government is a large organization, comparable in many ways to industries. Industry has battled for many years with problems of improving its communication network and structure and over the years, considerable experience has been gained and success achieved. Such innovations as management by objectives, interlocking rings, participation in decision-making, etc, seem hardly to have replaced management by directives, hierarchical organization, and command structures in Government agencies. It would seem that the services of an industrial management consultant could prove very beneficial.

(f) Counter tendency toward inequality

We have seen that autonomous PDU processes tend to stimulate the increase in the gap between rich and poor, an increase that Kenya can ill afford. (IDS is currently testing a strategy for minimizing the disparity in Tetu.) It seems more emphasis should be placed on more equitable development and that more resources should be used towards achieving it.

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Ronald G. Havelock et al (1970), Planning For Innovation: A Comparative Study of the Literature on the Dissemination and Utilization of Scientific Knowledge, Ann Arbor, Mich.: Center for Research on the Utilization of Scientific knowledge, ISR, University of Michigan.

DISCUSSION FOLLOWING PAPERS by
N. Roling and J. Ascroft

Chairman: Professor Ghai

JACOBS: Drs. Ascroft and Roling and their colleagues must be congratulated for putting together useful data on dissemination practices, particularly in view of time limitation. One could, however, punch holes in much of what they said.

In the second of the papers, "Concepts", we have been given a good, broad background on the communications network and systems theories by which to guide our discussion. The suggestion that we should evolve "a science of knowledge utilization" is a very good idea.

There is, however, one major deficiency which I feel must be rectified. Among all of the definitions given, at no point have their papers, or any other paper, addressed the question of "What do we mean by scientific research?" What do we mean by "science"? I think we ought at this session, for the purpose of further Workshop discussions, to agree to two things. We are concerned with scientific research. The essence of science is that it proceeds by principles of logic and the essence of logic is that your ideas, your hypotheses, your theories, or your conclusions be stated in such a way as to indicate what sort of data would constitute a refutation of them. And, secondly, you always open up your ideas, hypotheses, and theories to criticism. But so many individuals and organizations have not opened up their research to criticism, nor have they stated their ideas, hypotheses, theories, or conclusions in such a way as to indicate what sort of data would refute them. This is why so much so-called research in Kenya and other places has not, in fact, been scientific research.

BELSHAW: Referring to Dr. Roling's presentation, his models of problem solving and social interaction describe the research conclusion as a solution. I think the conclusion is only a proposed solution. The models should show a feedback loop from the testing of the proposed solution, its possible rejection, and further feedback to the basic research. These remarks are based on a study of agricultural research and problems on its non-adoption in East Africa. Basically, research findings are not worked through to the testing phase: farm trials or pilot projects are often missing. Nor does research carry on far enough to working out a specific method of implementing a solution, thus another research job or at least a decision making job is required. In other words, the researcher gives someone else the work to do. This accounts for resistance to implementation and valid scepticism: Is this research proposal really the answer if it has not been tested and there is no evidence that it works.

CARRUTHERS: I appreciated the first paper but would like to say that I was sorry more was not said about research other than that carried out through means of personal interviews. In Government, most of our research involves a process of thinking about a particular problem for an extended period and trying to analyse the problems through information gained from written sources. As an external observer in the Ministry of Agriculture, I have been struck by the pressure of work on civil servants.

Thus, for instance, if one spends an hour on a file he feels guilty, yet he should, in fact, spend two or three weeks on that particular thing. We need more management techniques applied in Government in order to free some of the better technical personnel from administrative duties so that they can carry out research.

MUTISO: Arising from the problem of just resource utilisation coupled with the problem of the boundary of the system, specialisation should be on what type of research? Your suggestion is that there are some technical people who should be involved in research within Government. There exists plenty of research which has been in Government but which could be done by other people, e.g. some institutions outside. The Ministry of Agriculture is aware of this because we have been dealing with them through the Special Rural Development Project. This is a political issue: how are the university other research Institutions to proceed. How do you contract research to people without an institutional base? Most often by the very nature of contracting out, you have foreign, expatriate people. Then the question of longevity arises since most expatriates are here on a two-year contract. They have to finish the research by squeezing it in or they have to leave it uncompleted. This is an area where we need to think about the boundaries of the system and what outputs we need from the political arena to make policy decisions so that there is some way of setting perimeters and we can proceed to suggest solutions in this context.

OUMA: I wish to address the point Dr. Jacobs raised on the definition of scientific research. Would a lot of the paper work being turned out in Government qualify as scientific research? For example, in the Ministry of Agriculture, someone decides to undertake a project. He tells his junior, "Give me a paper on this, showing how to implement it." Would you call this research? What do we mean by "research"?

KUKUBO: It is true that in most cases researchers create barriers to communication. There are approximately five copies of research findings written in foreign languages deposited in the Archives. The people who conducted these researches are far away and when we write to them they reply that they cannot translate the material into a usable language. And, when I was at the Coast I came across archival material that was 90 years old, written in Arabic script. When I asked for this to be translated, I was told "This is too old for us to translate".

If Drs. Roling and Ascroft approached us in the National Archives, we would have given them data on duplication of research since 1956.

I am trying to prepare a copy for distribution. It is too late for this Workshop but the University will have a copy so they will know which fields have been overcrowded with researchers.

What I would like to point out is that all along we have been hearing that there are so many intellectuals without work. What is the possibility of using these people? We have a lot of material in the Archives, but this material is useless

until it is indexed and annotated. We cannot get school certificate people to do this type of work. There are people who can do it but no one has come up with a proposal that this is the best use we can make of idle scholars.

FARRANT: Persons in Government departments, particularly ones concerned directly with development, are under enormous pressure to get out on the ground and begin programmes. As a result, we undertake programmes without having all the needed information. A typical example is what we are doing now on the development of rural water supplies. We are very unsure of the scope of these water supplies and how much investment capital we should put in to the various agricultural zones of the country. We could do with basic research to tell us the capacity of the water supplies but we are under tremendous pressure to get the water supplies on the ground. If we say we would like to go a little more slowly, we are dismissed as being obstructors of progress. There is clearly a widespread lack of appreciation of the value of research by many politicians and others in key positions. One only hopes as our research programmes become more geared to the needs of the country that resources will be provided so that there are people who can get on with the research while we are getting on with the implementation, and that the one will slightly pre-date the other.

ASCROFT: This illustrates what we have talked about in our paper. It may be described as "Shoot first; ask questions later". We are having a great deal of difficulty in this area because Government, due to pressure, needs to get quick results.

HOPKINS: I agree that one of the main problem is the question of being out of phase, as Mr. Farrant said.

Kenya is producing a fair amount of social research, although I am rather worried about the proportion (10% only) which concerns itself with vocational education. Even though research production as such does not seem a major bottleneck, it seems from the Roling-Ascroft paper that Kenya has a number of conditions which are unfavorable to dissemination. I hope much attention will be focussed on dissemination including the use of mass communication.

NG'ENYI: Since there is quite a lot of research being undertaken in Kenya at the moment, the question of organisation is important. I think we should really discuss the organization of the production of the research. But in our deliberations we must recognize if a committee, council, or whatever is formed it may introduce a lot of obstacles. An organization necessitates involving quite a number of people and this actually leads to delays. For example a project committee currently exists which involves representatives from several Ministries, in addition to delegates from other bodies. Every-time it meets only about three representatives attend. Therefore, nothing happens. Because of this that project has been going on for over six years.

OKELLO-ODONGO: One factor seems very important: the role of the

researchers. My experience in the University and Government indicates University people feel that some of their research findings are not being properly utilised by Government. This may be wrong. For example, a researcher concludes Method A leading to Result Y is the best procedure. Then, frequently the researcher considers this the end of his work. It is passed on to the decision maker who has to decide which method he wants to use. Here sometimes researchers may become furious because the decision maker chooses Method C instead of A to reach Result Y.

Roiling: We tend to look at the PDU system from a simplistic point of view only considering the producer or research findings and the utilizer of research findings and leaving out the whole problem of testing the findings for implementation, the pilot study or prototype development.

I agree that government has no time to wait for small-scale experimentation. However, that does not mean that there should be no small-scale experimentation. Government should go ahead, it cannot wait. Meanwhile, however, it should allow small-scale experimentation to find methods for improving its own strategies and procedures.

To whom should the researcher communicate his findings? Government and political leaders seem more adept than the researcher at communicating to the public. Thus, I suggest researchers should communicate their findings clearly, in a language that is understood, to the right person who will then pass on the information to the public.

NELSON: As an ex-employee of a large commercial firm, I think we have a lot to learn from commerce. A good commercial firm, with research and development, is a classic example of how a good feedback system should and does work. Firms know whether or not they can persuade people to buy a given product. And, they do not produce a product which they cannot sell. In most large firms the development section is larger than the research section and is considered to play a very important role. There is not only a one-way flow from research to sales but from sales to research. I think that anyone here who has worked for commercial firms can probably provide us a lot of assistance on how to organize dissemination of research results.

GITUNGO: I wonder whether we, the researchers, are not lagging behind the needs and wants of the wananchi. They want to move faster. We should form a national body of researchers whereby the members could determine what is required by the public. What are they thinking? Are we taking too long?

There is a need for developing water projects and the public requires technical advice and assistance. But, qualified researchers have not addressed this problem.

The women's groups in Nyeri decided on improving the houses in their area. They formed a group and started work. As a result, there is a big improvement and they did not have to wait for scientific research.

CHAIRMAN: Researches are not all that far behind. For example, there is one person whose research project is going to be on technical education.

MUTISO: The women in Nyeri started the innovation. A researcher does not have to come and tell you about how to roof your house. An interesting aspect is that the women have come up with a completely new social network which actually is being used for purposes of self-initiated development. We must note, however, it is not all the women who belong to this type of group, but a particular type of woman. These groups may be crucial in terms of development. Development plans, though, have not taken into account the activities of this kind of group. How do you make findings on such groups and get them linked up with the overall development process, where a lot of other similar projects can be done? Why can't the Nyeri development ideas be carried to other regions? They articulated it.

MUDONGA: When the interviewers came collecting information which was presented in the first paper, we recommended strongly the establishment of a body which would co-ordinate research in this country, because sometimes researchers, particularly those who come from abroad, have pet interests and they neglect to inform the people in this country about their studies. A body is needed to ensure that research findings are circulated to people who could utilise the information.

GITATA: In regard to dissemination of knowledge, have you considered the East African Industrial Research Organisation which could be used to help local industries and businessmen in their new ventures? Local industry has problems in sending material to be tested in England and Japan.

ASCROFT: We did cover the East African Industrial Research Organisation.

ROLING: I think there is another problem in regard to foreign researchers, a serious problem. Many foreign researchers come here with their research problem defined because they are financed by a foreign university, and they are being paid to carry out a particular study. There should be a body which ask researchers to do studies which are useful for Kenya.

AGUNDE: Someone comes here with a two-year contract for a project, say, to develop a better variety of sugarcane. Perhaps the time is not sufficient to allow him to do this. So, he may not be able to give a very good account of what he has been doing, and leaves Kenya with the partially completed data. And, the person taking over from him may start along his own lines, which will again prove a waste of time. We should think about giving scientists a longer time to carry out specific projects, perhaps for four years, so they can carry out the necessary experiments and complete their designated tasks.

PROCESS OF COMMUNICATING RESEARCH FINDINGS
WITHIN THE KENYA GOVERNMENT

J.J. Kisa
Ministry of Finance and Planning

INTRODUCTION

For many years studies in economic development focused attention on the role of land, labour, and capital accumulation in the progress of nations. In recent years, however, there has been an increasing recognition of the crucial place of knowledge and organization as factors in economic development. These factors have been referred to variously as entrepreneurship, innovation, management, and more recently as human capital.

In the economically more advanced countries, available studies show that only part of the increase in wealth occurring in those countries can be explained in terms of the contributions of land, labour, and capital accumulation. The rest must be accounted for by increase in and utilisation of the stock of knowledge. This knowledge takes the form of education and training, acquisition of experience and manipulative skills, technological progress brought about by the application of the results of research to productive processes, and the organization of financial, natural, and manpower resources for the purpose of achieving maximum output. In this process research has a central role to play. It is through research that the known frontiers of knowledge are extended; it is through the application of research findings that new knowledge is translated into productive process, such as the use of improved seeds and fertilisers in agriculture, the application of scientific knowledge to the construction of machinery for various productive activities in industry, and application of management techniques to business organization.

Apart from the application of research findings to productive processes aimed at enhancing total production in the economy, research also helps in accelerating economic development by investigating impediments to rapid economic progress and seeking solutions to these impediments. This type of research directs attention to the identification of the constraints imposed by shortages of domestic finance, foreign exchange, skilled manpower, political and sociological traits, and deficiencies in general development policies with a view to discovering and recommending appropriate measures for tackling these constraints.

Thus we find that most countries today - both developed and less developed - are committed to and undertake some form of research activities as a means of promoting their economic progress.

THE REAL COST OF RESEARCH

Expenditure on research in the form of running expenses, buildings, equipment, land, and personnel has a real social opportunity cost in terms of alternative uses for these resources in the economy. In a poor country, such as Kenya, the resources utilised on research need to be evaluated in the manner as other resource uses. The return to research activities should be carefully assessed and the resources allocated to research determined according to national economic and social development priorities. The pursuit of research for its own sake is necessary in its own right for it may lead to the discovery of new knowledge which may later be applied to the acceleration of economic development. However, the pursuit of irrelevant, costly research is not only an expensive luxury which a poor country can ill-afford but can, in fact, slow down the rate of economic progress by diverting resources from directly productive activities. The allocation of resources to research must, therefore, be carefully planned in accordance with research priorities and a system established for translating the results of research into policy and action programmes. The planning of research implies avoiding the duplication of research efforts and borrowing of known research findings. This ensures optimum use of research resources.

THE PRESENT SYSTEM OF DETERMINING RESEARCH PRIORITIES AND UTILISING RESEARCH FINDINGS

The bodies which carry out research activities in Kenya are Government Ministries (such as Agriculture, Natural Resources, and Health), East African Community and the University of Nairobi.

There is at present no single machinery for determining research priorities. Each Government Ministry engaged in research determines its own priorities in consultation with the Ministry of Finance and Planning. The University of Nairobi decides on its own research priorities and so does the

East African Community.

Individual research projects are cleared through the Office of the President.

In the current Development Plan for the period 1970-1974 the Kenya Government announced its intention to set up a National Research and Scientific Council whose broad objectives would be:

- (a) To encourage the application of science and technology to national, economic, and social objectives;
- (b) To advise the Government on, and to assist in, the establishment of priorities for scientific research related to the development of industry, agriculture and medicine;
- (c) To co-ordinate research in all its aspects; and
- (d) To secure wide dissemination of the results of research.

At the time of formulating the Plan it was envisaged that the membership of the Council would consist of representatives from Government and from outside Government. It was intended to set up sub-committees of the Council to recommend to Government a co-ordinated research programme on an annual basis and to provide machinery for evaluating the benefits and the costs of research activities. The Council was to function under the umbrella of the Ministry of Finance and Planning. The Council has not, however, been established.

Subsequent developments have pointed to the need to cast the net a bit wider than had originally been intended. It was recognised that the task was not merely one of co-ordinating the planning and execution of research projects but also directing all activities relating to science and research in general which have an impact on economic development and the natural and human environment. This recognition led to a request by Government to UNESCO for an expert in the field of science policy. The expert is presently in the Ministry of Finance and Planning. Some preliminary ground work has already been done and discussions are currently taking place in Government which, it is hoped, will soon lead to a decision on a science policy for Kenya.

As regards the utilisation of the results of research this should perhaps be dealt with in two parts:

- (a) The utilisation of research findings emanating from Government Ministries and
- (b) The utilization of non-Government research findings.

Each Government Ministry undertaking research on a continuing basis has its own machinery for utilising its research findings. For example, the results of agricultural research are conveyed to farmers via extension staff. I understand that one of the papers being presented at this seminar deals specifically with agricultural research. I will, therefore, not elaborate on the subject in this paper. Research findings which come to light as a result of ad hoc research projects which are cleared through the Office of the President are carefully studied by the Ministry concerned and a decision made on how they should be utilised. The findings of other research projects undertaken by individuals at the University of Nairobi which are published are also carefully scrutinised to determine which aspects can be utilised.

THE NEED FOR A COMPREHENSIVE SYSTEM

I prefaced this paper with a brief discussion of the need to plan and co-ordinate research. I also alluded to the imperative of determining research priorities in accordance with overall national development priorities as a prerequisite for rational resource allocation. The foregoing description of the present system of determining research priorities and utilising the results of research reveals that there is no single, comprehensive system for planning research and utilising research findings. There is clear need for a machinery which will permit:

- (a) The identification of research priorities on a national bases, and
- (b) The processing of all useful research findings with a view to translating them into policy and action programmes.

The name of such a machinery is immaterial. It could be a Science Policy Council, a Research Council, a Committee or whatever. The important thing is that the functions of such a body be clearly and comprehensively defined.

There is no doubt that Government is aware of this need,

as I have already pointed out. Any contribution to the present discussion which this Workshop can make will be most welcome.

Let me take this opportunity to suggest that perhaps there is a need for research into research. By this I mean an intensive and extensive investigation of the whole range of research projects which have been undertaken, those which are in progress, and those which are contemplated. The aim of this investigation would be threefold:

- (a) To find out if those research projects which have been completed have any policy implications;
- (b) To discover the extent to which these implications have been communicated to policy makers; and
- (c) To assess and evaluate the usefulness of planned research projects.

This kind of investigation would greatly assist not only in bringing to the attention of policy makers important findings which have not been utilised but also in evaluating research priorities and programmes.

It is pertinent to point out that there may be instances of research findings which are either unknown to policy makers and therefore have not been utilized by the appropriate bodies, or whose utility is either marginal or questionable simply because the original research project was not adequately screened. Such findings should be examined to determine their degree of usefulness and to draw on the lessons they offer in formulating future research policy.

DISCUSSION FOLLOWING KISA'S PAPER
Chairman: M. Gachuhi.

PARTICIPANT: How are research priorities currently established within Government and what is the relationship between the Ministry of Finance and Planning and the other Ministries in determining what research is going to be carried out?

KISA: Government Ministries submit their research proposals to the Ministry of Finance and Planning. These proposals are scrutinised carefully to determine their priorities according to their contribution to national development. All Government research proposals must be evaluated from the stand point of their contribution to the achievement of development objectives. On the basis of this evaluation the Ministry of Finance and Planning decides on the resources to be devoted to the various research activities. In this whole exercise the Ministry of Finance and Planning collaborates very closely with the operating Ministries responsible for carrying out research. The revision of the development plan provides a chance for the Government to review all Government research proposals and programmes for the country as a whole. It is at this time that all Ministries put forward their research proposals. At other times, however, research priorities are determined in a piecemeal fashion as and when Ministries present their proposals to the Ministry of Finance and Planning.

MUTISO: Do you suggest that we should have separate science policy and separate science research within Government?

KISA: Science policy should encompass research as well. What is needed is a machinery for co-ordinating science policy and research. The name of the machinery does not matter so long as its terms of reference are clearly defined and understood. It could be called a Science Council. Its membership would have to include the University of Nairobi, the East African Community, and Government Ministries. The functions of such a body would have to be comprehensively defined. This body would be able to determine research priorities and such other matters as the application of science and technology to productive processes. As I said earlier, this matter is currently being discussed by Government. The body which will eventually be established will incorporate all other bodies concerned with research which have a bearing on the economy of this country.

JOSEPH: I refer to the last paragraph of your paper. May it not be beneficial if a researcher writes two reports of his findings: one for Kenya and one for their own purpose or country? Would this meet your requirements and agree with your objective?

KISA: In the last paragraph I say that there are some research findings which are not known and if they can be uncovered, there is a possibility that some of these findings may be useful in policy making. But, they may not have been brought to the attention of the appropriate policy making body.

This research may have been undertaken inside or outside Kenya. For example, studies in places like West Africa or the United Kingdom may be helpful to us.

JOSEPH: To some extent we should not compare, for instance, the system of education in Ghana to that of Kenya.

KISA: One has to be cautious about saying that the findings of research carried out in some country are applicable to Kenya, but that does not mean we should ignore the possibility. Some of the research conducted in our country is of very dubious or marginal value. We should draw on relevant and applicable findings of research undertaken elsewhere. If the findings are known and carefully scrutinized, we can use the findings in the development of this country.

OUMA: In Mr. Kisa's paper and discussion, I am rather disappointed that he suggests a research project which is supposed to be scientific should be scrutinized by a cost/benefit analysis. I would not like a council to function under the auspices of the Ministry of Finance and Planning because their cost consciousness would hinder viable research projects.

WAPAKALA: It is not clear as to how the Ministry of Finance and Planning functions in regard to research. If we want to develop the dairy industry, for example, there must be research workers who are concerned with the dairy industry and who are knowledgeable in this field.

KISA: The Ministry of Finance and Planning consists of two departments: the Finance Department and the Planning Department. The Planning Department has links with the Finance Department to ensure that the two departments come to an understanding with regard to various research activities. The operating Ministries have the professional personnel who identify areas of high research priority.

PARTICIPANT: How far have the discussions on a research council progressed? Won't there be problems including all non-Government representatives on such a Committee?

KISA: This body will be responsible for co-ordinating research activities under the umbrella of a science policy body. It will have representatives from Government and non-Government bodies. It is our intention that all fields of inquiry be represented.

MURITHI: It is important that the body plans research. Also, there should be a type of journal to keep research workers informed on studies being undertaken and to record a summary of all research findings. In addition a journal serve as a means of communicating research policy.

MACHARIA: How would a research council communicate with Government Ministries? If this is not clarified, trouble might arise between the Ministries concerned as well as between the Ministries and outside bodies. Conflict over the financing of research could prove disruptive to the council and to the concerned research organisations.

CHAIRMAN: The Ministries will solve this among themselves. It is not a good idea to ask Mr. Kisa to reply to such a question.

KISA: At the moment no body or organization has been formed. If one is formed, the University will not be left out. The interests of University researchers will certainly be represented.

GITATA: One wonders what would be the position of Government in regard to a regional science organization. And as far as a research co-ordinating body is concerned, I think we should include representatives from various interested groups in the East African Community.

KISA: This is a very important comment. We in Kenya do not have control over the use of other nations' resources but there is a lot of room for co-operation at the East African level. There is even the possibility of having co-operation on an extensive regional level, including countries like, Malawi, Zambia and so on. But this depends on the willingness of these countries to co-operate in such an endeavour.

KIARIE: I have a comment on Government researchers. I am not a research worker although I use research findings in my work. When one reads a journal on research, it seems as if Government is studying everything. But too many of these studies are being carried out by foreigners. At one time we Kenyans only had a few graduates but now we have hundreds who should be doing this research in all fields and in all parts of this country.

WILSON: I would like to go back to the discussion when Mr. Kisa was outlining the functions carried out by the Ministry of Finance and Planning. It seems to me if we look at the current Development Plan, the Ministry should be able to tell the priorities for each particular Ministry. The question is if the Ministry of Finance and Planning cannot suggest anything on the priorities in other Ministries, then how can the national research council do this in regard to the University and private organizations?

KISA: The Ministry of Finance and Planning does not have the expertise to determine what the other Ministries should do in regard to research. Take, for example, the production of export crops. We consider the Ministry of Agriculture is competent to identify the constraints hampering the expansion of production. It should be able to determine what research is needed to remove these constraints so that output may increase and so that our foreign exchange earnings may be increased. Such research would have a very high priority for the country as a whole. More specifically if CBD is a constraint on coffee production, research aimed at eliminating the disease would be assigned a high priority by the Ministry of Finance and Planning. Similarly, any research proposal aimed at reducing or eliminating unemployment in this country would command a very high priority.

RESEARCH CO-ORDINATION

P.G. Sitati
Office of the President

The fact that the Workshop is organised at this time is a clear realisation that those involved in this exercise feel that there is a need to do some kind of stock-taking of past undertakings. The Workshop deliberations will focus on a basic question: How can an intellectual best serve his country as a detached critic, technical expert, or a moral philosopher? Geoffrey Chancer, in "The Cantebury Tales," on this point remarks:

"The greteste clerks be nought the wisest men".

This paper is not intended to be a gospel on what I consider to be the role of a researcher in isolation but rather what the purpose of research should be in the sum total of the entire nation and the world at large. After outlining the purpose in this context, I propose to indicate what I consider to have been the bottlenecks in the whole exercise in Kenya.

The purpose of research should be the advancement of knowledge in a scholarly framework. It is on this basis that those engaged in research must involve themselves in continuous inquiry and study. Knowledge should not be sought for its own sake, but for its utility in alleviating human misery and promoting national development. It must be diligent and relevant to our national needs in both economic development and provision of social services. A researcher imbued with this motive must be able to make a distinction between what is theoretically plausible and what is practically feasible.

For any research to be useful, it must be bound by a code of ethics, i.e. intellectual honesty and discipline. A researcher must refrain from indulging in hair-splitting logistics and semantics or being pedagogically dogmatic. He must be guided by facts and figures and be altruistically analytical in attitude and approach. In some cases, a few scholars have mistakenly assumed the role of critics, to expose what in their own mind are follies of a Government or organisation. Such researchers are a liability to any society. Any undertaking should aim at seeing a meaning in a situation and evaluating it without biases.

I have stressed the purpose of research and the role of scholars deliberately because unless the aim behind any academic undertaking is clearly understood, we shall still be facing the already worn out criticism of the ivory-tower. To avoid this

situation, it is of paramount importance that the Government and scholars work as a team with common goals and intentions. If this is clearly understood, findings by scholars would be useful to Government in planning and formation of policy.

The existing situation in Kenya has left a lot to be desired. It appears that research is carried out on an ad hoc basis. Within Government there are research sections in some Ministries, for example, in Agriculture, and Finance and Planning. It is proposed that when more funds are available other research sections will be established as and where need arises.

In the course of last year, Government in recognition of the significance of research signed an agreement with the International Centre of Insect Physiology and Ecology for promoting scientific research. It also, in conjunction with the University of Nairobi, set up a Natural Resources Institute. These are only a few examples to illustrate the importance Government attaches to research.

Between 1968 and 1971 a total of 812 applications for research clearance were received, meaning an average of 203 applicants per year. Out of the 812, there were only 219 Africans. When the total figure is broken down into the fields of study, 671 were in the social sciences and 141 in pure science. The purpose of giving these figures is to challenge our own local scholars. There is no reason why we should let outsiders take greater interest in our affairs than ourselves. I highly recommend that local scholars should become more involved because they are familiar with the environment. In fact, it would cut down a lot of expenses for the academic world to get local people engaged in research.

While on this point, I would like to challenge the participants from donor agencies and governments. Why don't they commission local candidates to carry out research outside of Kenya in some of the social sciences? They send researchers for the whole way from as far a field as London and other places. Does it mean that there are no qualified local people or that they are there but not interested? For example, we don't need a foreigner to come and do research into Lwanda Magere, Ngai or any of the other many legends! I think that in the course of deliberations, this is a question to which we need to address ourselves.

I now wish to discuss what I consider is the sole purpose of this Workshop. Not to contradict myself, the 812 applications processed by Government is no mean achievement. But have these applicants conducted their researches and have their findings

been put to intended purposes? To my mind, it would be a pretence to say yes. So far the approach has been what I would describe as a shot-gun approach, extremely ad hoc and unco-ordinated. Some of the researchers to my mind just want to have a holiday or go sight-seeing; they think that by applying for research clearance in the President's Office, they can achieve their intentions under this umbrella.

There are specific regulations laid down by the Government to be adhered to by those authorised to carry out research in this country. One of them, and the most abused, is that all findings must be deposited with and vetted by the Government before publication or being taken out of the country. The Government is aware of several people who have come into this country, conducted research, and returned to their countries without revealing to Government their findings. This is a gross abuse of procedure. Currently we are investigating possible remedies of this problem. I would like to recommend that this entire practice should cease forthwith.

The Government has no intention of making researchers work under intimidation or duress but no government worth its name allows its regulations to be abused. In this case, these people get away with the material which they publish and get a lot of money for.

Observation has shown that there is no one organ which co-ordinates researchers. This has made it necessary to investigate and take action to institute a department either within a Government Ministry or in the University to co-ordinate all research. The main duties of such an organisation would be purely administrative, and academic staff in the University or professionals within Government would be closely connected with it. In the absence of such machinery, considerable waste still continues and we cannot afford to passively allow this to continue.

There is another proposal in which I would be interested to hear your reaction. That is, all researchers be granted associateship with the University of Nairobi before clearance is given by Government. If this proposal is accepted, the University would then decide on a kind of a supervisor who would ensure that the findings are deposited by the scholars and make recommendations to Government on what follow-up action might be required.

I believe that these ideas will be taken, not as being critical or cynical about the work that has so far been under-

taken, but as constructive and frank observations of the existing situation. It is the duty of this Workshop to come out with comprehensive recommendations which can be studied and possibly implemented to safeguard and retain the good name of the academic world. As you make your recommendations, I would like to assure you that Government is fully aware that research, by its very nature, does not produce results quickly and when studies are produced, the multiplier effect of the findings much outweigh both the time lag and what may, at times, be regarded as wasted expenditure. There cannot be any doubt that research is a vital instrument in development and developmental planning. That is why Government will continue to support and encourage researchers regardless of their origin.

DISCUSSION FOLLOWING SITATI'S PAPER

Chairman: M. Gachuhi

OKELO: Mr. Sitati has said something to the effect that those research projects for Ph.D. purposes, as far as the Government of Kenya is concerned are irrelevant! I must say that such a statement is a very sad one. It is quite clear that all the researchers that conduct their research work in this country, Ph.D. or not Ph.D. type projects, have to be cleared by the Government. In addition to this some researchers are also allowed to interview the officials, both public and private, in departments and sectors in areas relevant to their particular lines of study. In allowing them to interview the officials in question, in giving them some of the information they want, not only costs us money, but also takes a lot of time from some of the busy schedules of these officials. And this should not be taken lightly. By allowing them to look into our official records and so on, we are in a sense saying that their research projects are of some developmental significance and therefore relevant albeit in the short run or long run.

Secondly, I believe that it is definitely fair to state quite categorically that whereas some fundamental research may not necessarily have immediate utility, this category of research activities may breed very relevant points for immediate utilization in the processes of socio-economic development. They may also be of relevance and developmental utility in the long run. As such, the government must consider such types of research relevant.

PARTICIPANT: We must get Government interested in what the researchers are doing. Also, I wonder if there could be a Project Committee of researchers responsible for reporting the findings of various studies.

PARTICIPANT: I am wondering whether in our discussion here if we can find the ways and means of forming a body of middle men to disseminate research findings. It could be either University or Government based and should be composed of research professionals and people from the Ministry of information.

MUTISO: Research tells us that 20-30% of the research done about teaching is relating to culture. I would emphasize the importance of this to the Ministry of Agriculture. Adult studies should be one of the priorities in research.

OGUTU: On page 3, Mr. Sitati says the purpose of giving the figures is to channel our local researchers. I think we have to look at our own available manpower before we can channel services to foreign countries for research. If Mr. Kisa's paper is correct, we have no men available for this. Also, I would like to point out that in the past few years there has been a tendency on the part of our local researchers to pilot their own pet projects. Foreigners will come here for two years to conduct research and give the Government

two pages of their findings. I wonder if these two pages are of interest to Government. In other cases, some of the researchers fail to deposit their research findings with Government; in such a case, we should not accept the researcher back into Kenya.

SITATI: It seems to me that the problem of locals is whether they will carry out research on their own if they are not going to be paid for it. We should expect local experts to act in the interest of the nation, regardless if they are going to be paid salaries or not.

OMOLO: I would like to find out what is irrelevant and what is relevant research.

SITATI: The kind of research we are to be concerned with is what is relevant in our policy making and national interests.

GICHUHI: If we are to have a national research council, I would like to make a suggestion. If we are to borrow some ideas, we should borrow from the United States which has a system whereby a research officer is housed in the University. I think this helps to solve several problems. When a man is doing research on agriculture he is part of the Ministry of Agriculture in addition to being in close proximity with the University staff. He obtains reports from both. We need to consider such an arrangement.

MUTISO: I think it is necessary to have a National Research Council that is widely based. It would cater to all types of research in various fundamental fields and would direct research production into relevant fields. One of my suggestion is to have recommendations for further research and implementation where research is perceived as a pilot project.

NYUNYO: I am becoming convinced that the participants recognize where our deliberations are leading. To a very large extent, I think, some of the functions of a national council should be international: it can tell us what research has been carried out both nationally and internationally, and where the findings might be located. In addition, a council should have a list of topics for future research which has been provided by Government or private bodies. And, the council should be given research findings from Kenya.

Whatever terms you use in our discussion may be very important in determining what research we are going to make use of. I would also like to mention that this national council when established should not have executive powers because there are activities of the University should be discussed and settled within the sphere of the University,

SOME THOUGHTS ON PRIORITIES, DISSEMINATION, AND UTILIZATION OF
APPLIED SOCIAL SCIENCE RESEARCH

Professor Dharam. P. Ghai
Institute for Development Studies

INTRODUCTION

There is no need in this day and age to stress the vital importance of research for the progress of societies. Research is now universally recognized as a crucial element not only in scientific and technological advancement but also in economic growth and cultural progress. The industrialized countries are vying with each other to devote an increasing proportion of their national incomes to research and development in order to capture the lead in the complex and sophisticated products and technologies of the post-industrial age.

The developing countries have an even greater stake in research and all the benefits it can bestow. Not only do they have to traverse the vast technological gap which separates them from the industrialized world but in the process they must continually adapt the known technologies and institutions to suit their own social, economic, and technical environment. If the hard-won political independence of the emerging nations is to be preserved and consolidated, there can be no escape from the necessity to develop indigenous research capability in engineering, natural and social sciences, humanities and creative arts. A nation which fails to generate a capacity to identify, analyze and solve its pressing social and economic problems is condemned to stagnation or doomed forever to remain dependent on outsiders for ideas, skills, and technologies.

Granted, then, the overpowering case for research and development of indigenous research capability, there remains the crucial question of its effective organization and utilization. While resources devoted to research have multiplied in all countries, rich and poor, and the world is being flooded with a vast outpouring of learned papers, monographs and books, very little attention has been paid to the organization and utilization of research. The productivity of the scarce and costly resources devoted to research is dependent in the last analysis on the effective utilization of research findings. Indeed, in poor countries with pressing claims on their limited resources, it would be difficult to justify substantial

expenditure on research if it did not yield greater material and moral welfare than alternative uses of the same resources. The translation of research resources into increased welfare for the people is dependent above all on the organization of an effective system for promoting appropriate research and its efficient dissemination and utilization. Unfortunately, this subject has received very little systematic attention either from scholars or policy makers. It is, therefore, not surprising that there is in all countries considerable waste of scarce research resources in the sense of duplication and irrelevant research and a failure to disseminate and implement research findings. This Workshop on research production, dissemination and utilization is very timely and hopefully will contribute to the emergence of a national policy on research designed to enhance its effectiveness.

My observations on this subject are based on my experience in the Institute for Development Studies with which I have been associated the past five and a half years, at least four years of which I have been closely involved with the organization and dissemination of its research. Perhaps a few words about the Institute will be in order before I proceed to the main theme of the Workshop. The Institute for Development Studies is a multi-disciplinary as well as a multi-purpose organization. Its main function is research on high priority socio-economic problems of development in Kenya. This is interpreted quite generously to embrace a wide range of development problems, often involving multi-disciplinary teams. The research is concerned with specific problems of immediate policy relevance as well as with the more general, long term problems. From the very onset a substantial part of the Institute's resources have been devoted to research projects requested by Government or other public bodies. In addition, the Institute has collaborated with aid and development agencies, both bilateral and international, in carrying out a variety of studies. Apart from studies based on research, individual Institute members have also served as consultants, advisors, and members of a host of working parties, commissions of inquiries, and so on.

Apart from research and related activities, the Institute performs an important function in providing high level training and experience in research to Kenyan social scientists on the threshold of their professional career. This is done

at various levels: undergraduates are employed as research assistants to senior scholars; fresh graduates are taken on for a year or so and are encouraged to embark on independent research under the close supervision of senior members of the University staff; and, graduates who have done their course work are taken as Junior Research Fellows for work on their doctoral dissertations. In all these ways, the expertise at I.D.S. is being utilised to build up a steadily increasing pool of highly trained social scientists for the University, Government, East African Community and private sector. In addition to research and training, I.D.S. staff members make a major contribution to regular undergraduate teaching within the University.

It will be obvious from the preceding remarks that the Institute for Development Studies, as the single largest body in Kenya concerned with organised social science research for applied purposes, has been deeply involved with the main themes of this workshop: research production, dissemination, and utilization. In the rest of this paper, I intend to draw upon my experience at the Institute in making a number of observations on these topics. These relate for the most part to applied social science research, though they are relevant in varying degrees to other types of research as well.

RESEARCH PRIORITIES

It is true to say that in Kenya, as in most other countries, there is no national research policy in the sense of a comprehensive formulation of research priorities based on a careful survey of research needs and gaps, and an attempt to channel research resources into high priority areas. In the past some attempts have been made by a number of bodies to prepare inventories of some aspects of ongoing social science research. These have included efforts made by the OECD Development Centre as part of their world-wide reporting of research by development research institutes, the Development Research Inventory Project run by the Conference of Directors of Economic and Social Research Institutes in Africa (CODESRIA), the East African Staff College, and the East African Academy. However, one of these efforts have succeeded in providing a complete inventory of all social science research

underway in the country nor do they appear to have been used widely by research workers as a source of information.

In the absence of a national policy on social science research in Kenya, the content of research undertaken has been shaped by factors such as the interests and specialisation of research workers, the researchers' individual perceptions of research priorities, and the needs of individual ministries, and aid-giving agencies. This state of affairs is due to a number of reasons. In the first place, as already mentioned, there are not many countries outside the socialist bloc which have attempted to plan research and channel it systematically in certain directions. Research activities in most countries continue to be the least planned and co-ordinated sector of their economy. Secondly, in Kenya, large scale social science research is a relatively recent phenomenon. It did not start on any significant scale until the sixties. Its rapid growth in the sixties was due to a number of factors: the most important was the development of a national university resulting in the creation of social science departments and specialised research institutes such as the Institute for Development Studies and the Institute for African Studies; the growing needs of Government for more information and analysis arose out of a move towards comprehensive planning and increasing state participation in and management of the economy; and the growing involvement of international and bilateral aid agencies in Kenya's development generated its own demands for analysis of development bottlenecks and problems.

These factors have led to a rapid growth of social science development-oriented research in Kenya over the past decade. This research effort has made a major contribution to our understanding of the main social and economic problems faced by the country. It has yielded valuable insights into the process of development and has clarified the nature of the constraints on accelerated development. Many of the research findings have influenced in a number of ways the evolution of national development policy. At the same time, the experience over the past decade has revealed a number of weaknesses in the system of research production, dissemination, and utilization.

As far as the content of research is concerned, the following have been the main weaknesses:

(1) Duplication of research occurs because researchers, whether locally based or on short term visits from abroad,

have not always been informed of the research that has already been done. The result has been that the researcher has had to go over much of the ground that had already been covered. Even when the emphasis of the research has been somewhat different over earlier researches in the same area, a good deal of relevant data accumulated for the earlier studies have been either inaccessible or not used. Since data gathering is an extremely expensive undertaking, this has resulted in much wasteful duplication. One way of avoiding such waste would be to ensure that each new researcher made a careful study of the data available from official sources and those accumulated by previous researchers before launching on a major data gathering exercise. For this to be possible, however, there must be a centre for data storage and information to which he could turn.

(2) Apart from duplication of this sort arising out of ignorance of what has been done in the past, there seems to be a tendency for excessive concentration on certain problems. This may be due to the fact that certain research areas become fashionable, or that a scholar may have done pioneering work in a certain field and others get drawn into the orbit. Such projects may acquire a life of their own, and resources altogether disproportionate to the importance of the topic may be devoted to it. There is, then, a danger that such areas may be, as someone put it, "researched to death" while other important problems may go completely uninvestigated.

(3) Another weakness in the research undertaken arises from the fact that many scholars have objectives and interests which may be in conflict with the research needs and priorities of the country. This can happen for a variety of reasons, but the most important of these is that scholars have a tendency to select for research the kind of problems which are amenable to tools and techniques of analysis which would yield material for publications in professional journals or be suitable for doctoral dissertations. This is especially likely to be true of foreign scholars whose main interest during their short stay in the country is often to accumulate material for eventual articles, books, and dissertations. This bias in research is further reinforced by the dominant trends in theories and tools of social sciences in universities in the developed countries, in which both the foreign and local scholars have been trained. Thus in an effort to do "respectable research", applying the

latest techniques and methodologies, the researcher is likely to choose subjects which lend themselves to such analysis, and not necessarily those which are of high priority from a national point of view.

These are some of the problems arising from the researchers' side. Past experience indicates that Government requested or initiated research also suffers from a number of weaknesses. In the first place, just as each scholar has his pet interests, likewise requests from Government Ministries may reflect the dominant preoccupation of certain individuals in the Ministry and may not in any sense represent the concerted view of research priorities in Government or even in the individual Ministry. More important problems arise from the fact that individual Government officers may not always have a full appreciation of the opportunity costs of scarce research resources in relationship to the unit requested to conduct research. This may lead to excessive and indiscriminate requests for research and often to inappropriate kinds of research in the sense that such research could more appropriately be conducted by individuals and institutions outside the University. The result of all this is that scarce, high level skills may be diverted into low priority or the wrong kind of research, that is academic researchers having no comparative advantage over other individuals qualified to carry out research on a given topic may be requested to do the research.

PROPOSAL FOR INDICATIVE PLANNING OF RESEARCH ACTIVITIES

It is clear that many of the above weaknesses in the selection of research projects arise from the laissez faire situation in the domain of research. Most scholars recoil with horror at the very suggestion of any kind of planning for research activities. Yet it is clear that the choice is not between laissez faire and centralized direction of research and that the present system suffers from a number of serious defects as outlined above. In the Kenyan situation of extreme scarcity of local, high level research workers and the presence of a relatively large number of expatriate scholars, often provided under the technical assistance arrangements, combined with important gaps in some crucial areas of development policy, there would appear to be

a very strong case for some sort of indicative planning of research resources and activities. At the minimum this should provide for a more or less complete inventory of past and ongoing social science research, a broad assessment of research priorities, and an indication of the main research gaps. This information should be available to all the current and prospective academic researchers, the relevant people in the public and private sectors, and the interested international and bilateral aid agencies.

The institution of this kind of indicative planning of social science research will have the following benefits:

- (1) It will cut out a good deal of waste arising from duplication of research, lack of information and pursuit of trivial research.
- (2) It will provide useful guidance on research opportunities and needs to local scholars as well as to the rapidly increasing number of Kenyan graduate students who currently waste a great deal of their time searching for suitable research topics.
- (3) It will direct the attention of expatriate scholars working in Kenya to the national research needs and hopefully influence their research efforts in the direction of high priority areas. Perhaps even more important, an indicative research plan of this nature would result in a more efficient recruitment and utilization of expatriate researchers, especially those provided under various technical assistance schemes. It would also be helpful in influencing the research decisions of foreign graduate students who are coming to Kenya in increasing numbers.
- (4) The above (1-3) will result in increased research input into high priority areas of social and economic policy which may have been neglected in the past.

It should be stressed that this proposal is not a call for any kind of centralized direction of research resources into certain areas. I have deliberately used the term "indicative planning" to imply that research undertaken will be influenced into high priority areas by providing information to current and prospective researchers, both local and expatriate, and by recruitment of new researchers, and not by dictation from a central body.

If the idea of some sort of indicative planning for research is acceptable, there remains the question of its implementation. This paper is not the place to suggest details of the machinery that might be set up to work on the research inventory, the assessment of priorities, and gaps. Perhaps the Workshop could go into some of these details. Pending further discussions, it is suggested that funds might be secured to appoint one or two persons to do preliminary work in this field and to prepare concrete proposals which could be discussed at the second workshop later this year. The unit could be located in the Institute for Development Studies during the preparatory phase of planning. The unit could also assist in the dissemination of the research already completed or in pipeline, as is discussed below.

RESEARCH DISSEMINATION AND UTILIZATION

Even if a system could be devised to influence more research in high priority areas, the ultimate objective of research would be impaired in the absence of an efficient system for disseminating and utilizing research findings. It has already been remarked that in all areas there remains a vast gap between research findings and their effective utilization in policy making. The conventional means of research dissemination is through seminars, workshops, conferences, papers, articles in learned journals, monographs, and books. This is adequate if the objective is to reach a small band of specialists working in a given field. But, if research is meant to influence policy decisions as well, these means are inadequate. Most policy makers are so burdened with day to day affairs that it is wholly unrealistic to expect them to do much outside reading. Furthermore, most of the publications embodying

research results are lengthy and couched in technical jargon. Consequently, most of them never get read by policy makers.

In order to bridge this gap, I have elsewhere advocated the appointment of research brokers. Their function would be to act as a go-between among researchers and policy makers. This would involve the monitoring, summarizing, and often rewriting of research findings and presenting them to relevant policy makers in appropriate forms. These research brokers should be located in Government Ministries and should liaise with the unit proposed above. Apart from ensuring that research findings are brought to the attention of relevant people in appropriate forms, these research brokers would be in an ideal position to initiate and co-ordinate Government requests for research.

Policy makers have often complained that most of the applied work carried out by university researchers is too "academic," general, and not sufficiently concrete or detailed to provide useful guidance. Some of these complaints, at least, could be taken care of by establishing a system of research brokers and co-ordinators. Furthermore, extensive contact between the researcher and potential user at all stages of the research, from initial preparation to final completion, could ensure that the research dealt with issues which are of direct policy relevance.

Often the effective utilization of research findings may involve continued efforts by the researcher going beyond the completion of research and its presentation to policy makers. Many recommendations by their nature involve changes in the procedures and techniques of carrying out particular activities: some involve organizational or structural changes in the decision-making bodies, and most give rise to secondary repercussions flowing from the initial changes. In some or all these cases, the continued participation of the researcher as implementer, advisor, or consultant may be required. All this is very time consuming, but the effectiveness of research in terms of its functional use in policies and projects may well depend on this additional effort by the researcher.

On their part, the policy makers might well make some effort to read papers and attend seminars in their area of interest. Furthermore, prompt attention to commissioned research is desirable for the morale of the researcher. There are few things more demoralising for a researcher who puts a

lot of effort and thought into a study directly requested by the Government than to find that it lies for months gathering dust in Government offices or that he is even denied the courtesy of a simple acknowledgement! Unfortunately our experience at the Institute for Development Studies indicates that this is not just a hypothetical possibility.

Individual researchers and research bodies will be failing in their duties if they confine their efforts to reaching only fellow specialists and policy makers in Government. In a country like Kenya, where there is a great scarcity of high level, independent public commentators on complex development issues, researchers have to fill this role. They can do this in part by participating in discussions on radio and television, and through public lectures. A particularly effective way of public dissemination of research findings on pressing social and economic problems would be through a series of weekly articles in the national newspapers. This would have the advantage of increasing the public's understanding of complex socio-economic problems and, hopefully, raising the national debate on these issues to a more sophisticated level.

DISCUSSION FOLLOWING GHAI'S PAPER

Chairman: Dr. Molnos

CHAIRMAN: It is necessary to point out that there is a maximum of 3½ hours available for five papers and discussion. Yesterday we raised one problem after the other. We had a production of problems. If we are to conclude with positive recommendations to be accepted and implemented, we must set a priority on topics to be discussed. Therefore, I implore the participants to speak only on suggestions for action-orientated solutions to the numerous problems, especially those concerned with dissemination.

GHAI: I think my paper makes some concrete recommendations as to how we might improve the efficiency of determining research priorities and dissemination.

(a) I suggest that we should have a data storage centre which would be available for all researchers. At the moment there is no one, single place where a person has access to social science data.

(b) I propose the Workshop discuss the machinery to be set up for indicative research planning. It would be appropriate to appoint one or two persons to draw up the details for such.

(c) I propose the appointment of research brokers.

HOPKINS: The idea of articles in the press is very good. However, the question of feedback arises. There is no guarantee that the information really gets discussed. I would hope that the articles could be tied in with discussion groups at various levels, i.e. for officials and then for the general public.

NGENYI: By using the term "indicative research" is Professor Ghai saying we should not have an elaborate organisation involving so many systems and so many people, whereby in the end it becomes ineffective. If this is what he meant, I suggest that whenever anything is produced there must be a purpose and consumer. It appears the biggest consumer of research production is Government and I do not see how the consumer can easily consume if he is not directly involved. Therefore, Government must have a say.

CHAIRMAN: Professor Ghai could you please explain the meaning of "indicative planning".

GHAI: The term is used quite extensively in economics. For example, France has been experimenting with the concept of indicative planning: planners make projections of the economy, of the main components of national income, and how it is likely to evolve but no attempt is made beyond that to influence by direct means allocation of resources. It is assumed that the contents of the plan will influence decisions.

In the context of research management, a similar kind of plan would be valuable. First of all, one section would have a more or less complete inventory of ongoing as well

as completed applied social science research. Secondly, it would consider what the broad research priorities are within the country. Thirdly, it would evaluate the major omissions and gaps which need to be rectified by further research.

Just the provision of this kind of information will have very beneficial effects. We know that there are many research scholars, foreign and local, who spend weeks and weeks hunting for a suitable research topic. If such a plan were available, it would cut down on such waste of time by directing attention to high priority research topics.

Government should be centrally involved. What is required is a committee, perhaps consisting of people concerned with research in the University, private sector, parastatals, and above all, Government Ministries. This committee would carry out the exercises mentioned above. I do not say the committee should be concerned with the direct control of research. Such would be difficult to do efficiently. And even if it could be done efficiently, I would still hesitate to say that the committee should have total power to direct research. It could introduce further delays and further bottlenecks to research production, e.g. people have to wait for research clearance, if we established yet another body and it did not function efficiently. If you start with indicative planning and it works, then the committee could be given more and more co-ordinating powers.

BELSHAW: I note that in the French indicative planning procedure when the planners want to indicate future priorities for particular sectors, they have to ask the major firm what their ideas are about plans for investment and future productivity. The parallel would be that in the process of this indicative planning, the major research centres should themselves perhaps propose for two or three years ahead what they see as their own priorities or what capacity they have and what competence they are accumulating to carry out research in particular areas. Also it is essential to have an up-to-date inventory of what research has been done and that which is coming to completion.

What is seen to be the role of the East African Research Information Centre? Let us note that in Kenya, unlike Uganda and Tanzania, we do not have an up-to-date listing of recent papers on research. Makerere Institute of Social Research when considering the problem of dissemination to potential users produced a policy abstracts document sub-titled "A Journal of Policy Communication". This presents one-page summaries of research in cheap mimeograph form which has a wide distribution. This might be looked at as a possible channel to get research findings rapidly to the potential users of that information.

CHEGE: We have mentioned using articles in local newspapers as a channel of dissemination. When you look at the circulation of local newspapers though, it is mostly urban while much research is for people in the rural areas. Is there a possibility of launching a rural newspaper in which the same articles at a lower level of writing could be put into rural newspapers?

VICKERS: Most speakers appear to be from the University and Government. Dissemination needs to reach the general public, people who do not normally have an opportunity of getting ahold of academic papers. I think the suggestion that there should be wider dissemination in the newspapers is important, but it needs to have a planned follow-up, e.g. discussion on TV and radio on what had been printed the previous day. It is the people who read the newspapers who are going to do the implementing at the rural level, although they may be urban-based. The people living in the villages, who don't get an opportunity to read the papers, are not the policy makers or implementers at that level.

GACHUHI: I would also support Mr. Hopkins. There are obvious levels of dissemination of information and there are some types of information that perhaps cannot be widely spread out. The Institute of Adult Studies has started recently a type of public forum in urban centres. They get individuals involved in different kinds of work to discuss their activities with the people. As a way of disseminating social research findings I wonder if this method could not be extended, especially to the rural areas - travelling speakers to address public barazas in the local language.

MACHARIA: The kind of things the Institute of Adult Studies has done outside Nairobi are at a very low level for traders and farmers. A group of young lecturers at the University got together informally and worked through the Institute to have courses organised upcountry in provincial and district centres, to tell the people what they have discovered in various fields of study.

OKANA: Indicative planning is quite acceptable. Along with it Professor Ghai has recommended some group of persons should be chosen to go into the workshop suggestions with a view to preparing something concrete, probably for the next workshop. It is the job of a group such as this to explore more closely the possibility of establishing a research brokerage. There are four types of people:
(a) researchers themselves, (b) research brokers
(c) policy makers e.g. civil servants, and (d) implementers e.g. politicians or ministers.
A brokerage system should function as a go between for all these groups of people.

MWANGI: Before we reach the stage of having brokers, the research workers themselves will have to agree to do this work to a certain extent. But it seems very difficult for researchers to produce something for the common man - a simple document. I do not see why they are not able to inform us in a simple language!

- 75 -
RESEARCH ON SOCIAL SCIENCE RESEARCH - SOME THOUGHTS
& IDEAS FROM THE PROGRAMME OF RESEARCH ON THE
MANAGEMENT OF RESEARCH AND DEVELOPMENT

Theodore W. Schlie
Institute for Development Studies
University of Nairobi

INTRODUCTION

The purpose of this paper is to briefly describe the Programme of Research on the Management of Research and Development at Northwestern University and to draw together thoughts and ideas from that programme which might be applicable in beginning to sort out questions and issues about social science research which this Workshop might wish to pursue. The major focus is on four aspects of research and development: organization, project selection, technology transfer, and national science policy. Before beginning it should be pointed out that the words "science" or "scientific research" in this paper will refer to the more traditionally accepted natural and/or engineering sciences, such as physics, chemistry, biology etc., while "social sciences" will be used to refer to economics, psychology, sociology, and so forth. This is merely for convenience. It is not intended to convey any indications of superiority - inferiority or other distinctions.

World War II historically seems to have provided the stimulus and push for the tremendous expansion in scientific research and development (R & D) which subsequently occurred. For example, the United States government, which has provided about two-thirds of the total R & D funds in the United States in post-war years, increased its R & D expenditures from \$74 million in 1940 to \$1,083 million in 1969.¹ Total R & D expenditures in the United States during 1970 were expected to be in excess of \$27 billion. Although the growth rate of these expenditures has declined in the past few years,² this still represents a huge amount of resource allocation.

Paralleling this growth in the United States of R & D expenditures has been a growth of research, study projects, and

¹ Victor J. Danilov, "27 - Billion for Research," Industrial Research, January, 1970, p.48.

² From a phenomenal annual growth rate of 22% between 1956-64, the U.S. governmental expenditures on R & D grew at a rate of only 4% between 1964-69 - barely enough to keep up with inflation. Ibid, p.48.

and programmes focusing on this scientific activity.³ Under Professor A.H. Rubenstein, the Programme of Research on the Management of Research and Development has gradually grown in the Department of Industrial Engineering and Management Sciences (IE/MS) at Northwestern University. At the graduate level, IE/MS is sub-divided into sections on Operations Research, Systems Analysis, Computer Sciences, and Organization Theory. The Programme of Research on the Management of Research and Development is included within the latter section where focus is mainly on scientific research institutions. Thus our research programme is centred on increasing the different fields are brought to bear on this research area.

The programme consists of a set of projects. Each of which is really a sub-programme in itself and comprises a number of distinct, but related studies completed over a period of years. The dividing lines between these project areas often overlap or are unclear. Some of these projects are as follows: an Idea (acronym for Liaison, IN terface, Coupling, and Technology Transfer), and the Organization and Diffusion of R & D in Developing Countries which actually includes Project Selection LENCOTT, etc., as they apply to developing countries. The latter project concerning R & D in developing countries really began in September, 1967.

It is perhaps useful at this point to distinguish between three kinds of activities in which people interested in R & D in developing countries may participate:

- (1) Research of descriptive, theory-building nature, whose whole main task is to explain and provide a basis for predicting the behaviour of individuals and organizations involved in the R & D process in developing countries.
- (2) Policy Formulation, of a prescriptive nature, whose whole task is to set standards and criteria to indicate what courses of action are desirable and "correct," and to provide guidelines for legislation and other kinds of social decision-making. (applied research)
- (3) Design, the nitty gritty task of converting research findings and experimental generalizations into precise - related organizations.

3

See a Directory of Research on Research, 2nd Edition, 1968, Programme of Research on the Management of Research and Development, Northwestern University for a listing.

RESEARCH ON R & D IN DEVELOPING NATIONS

To date, there has been very little systematic research on R & D in developing countries. Although there is a larger amount of literature on policy for this area, very little of it is based on existing research results. In addition, many policy prescriptions are in direct conflict with each other because "experts" disagree over such issues as whether basic scientific research is necessary in a developing country, what types of scientific training programmes are needed, etc. The design of R & D institutions is a continuous process by and on behalf of developing countries, but much of it is based on traditional organizational designs, or is unsystematic "cut and try" design involving little hard analysis of the effects of different design configurations on the R & D and the society it is serving.⁴

To give a more detailed idea of this field, some of the issues which arise repeatedly in doing research on R & D in developing countries are listed below. Those on which our project group at Northwestern is currently either doing research or design work are marked by an *:

- Relationships between multi-national and National institutions*
- Single-purpose or multi-purpose laboratories or institutions
- The amount of effort which should be devoted to searching the scientific literature as opposed to original or replicative experiments in solving problems or answering questions
- The locale, level, and nature of training and re-training for current or future members of R & D institutes - including criteria and methods for recruiting, selecting, and placement*
- Re-integration of Ph D's trained abroad into the research environment in developing countries*
- Qualifications of management and supportong staff of R & D institutions (e.g. Can or should scientists or engineers administer R & D institutions? Can or should n non-scientist or non-engineer manager administer R & D institutions)?
- The allocation of initial and subsequent funds between capital equipment/facilities and operating expenses such as technicians, salaries, supplies, travel, etc.
- Narrowly-focused, short-term projects/programmes or projects/programmes with a longer duration and potential multiple consequences*
- Methods of providing for and encouraging technical information transfer within a country and between countries*

4

An example, is given in an article by Philip M. Boffey, "Korean Science Institute: A Model for Developing Nations?" Science, Vol. 167, 6 March, 1970.

- Transfer of results of R & D from laboratory to application*
- Methods of selecting projects, programmes, and fields in relation to science and to economic objectives.
- The frequent conflict or mismatch between individual scientist's basic research interests and the technological needs of the country*
- The advantages and disadvantages of "friendly competition" (i.e., the intentional duplication and redundancy of projects)
- The role of pre-investment studies in research project selection
- In-house or contract R & D
- Links between universities, industry, financial institutions, and R & D institutions*
- Long-term bi-lateral arrangements with foreign "parent" or "sister" R & D institutions*
- Methods and sources of funding R & D institutions and projects*
- Co-operative research projects between individuals or institutions
- The organization, maintenance, and encouragement of scientific networks through such means as travel, correspondence, visiting appointments, etc.
- How to locate, fund, organize, and control the network of technical information and assistance sources and services*

The above list is not meant to be exhausting, and other issues, from my own experiences in East Africa will be mentioned in the following discussions.

SOCIAL SCIENCE RESEARCH

One of the first questions which might be asked is how much money is being spent on social science research in Kenya, in East Africa, and in the world. Before that question can be investigated, however, it must be made clear what is meant by "social science research". UNESCO has developed a classification scheme for the social sciences which could provide a valuable starting point for discussion, but some problems remain - and will undoubtedly always do so - with these schemes. One of the trends in both the sciences and social sciences is hybrid specializations of cross-disciplines e.g. biophysics or biochemistry in science, and economic anthropology or political geography in social science. Thus, a flexible but internally consistent scheme is needed in both the sciences and social sciences.

FOUR ISSUES OF
R & D ORGANIZATION

I am now going to comment briefly on four issues from my own interests on scientific research and suggest some questions for further discussions regarding research on Social Science research. These four issues will concern R & D organization, project selection, technology transfer, and national science policy. As an example of a research project on R & D organization in developing countries, let me cite my own study. I am interested in the problem of how to organize a multi-national scientific research institute which, of necessity, must be located in one of the participating countries, so that it can effectively serve all member countries of the multi-national region.⁵ The East African Agricultural and Forestry Research Organization (EAAFRO) is the largest of the East African Community's (EAC) twelve research institutes⁶ and has a relatively large national counterpart agricultural and forestry research systems in the partner states. Although considerable background work and interviewing has been done at EAAFRO itself, the main part of the project will involve interviewing as many national research officers and administrators as possible in all three partner states.

A model structure of the variables I will be investigating is shown in Figure 1. It is my feeling that the initial responses of people when presented with a stimulus do much to create a public mood about that stimulus, particularly when they receive publicity through the newspapers or other media. Perhaps publicity is more of a stimulus than well-reasoned and logical arguments. Therefore, my model utilizes the Stimulus - Response psychology of Learning Theory as it is related to the psychological aspects of integration.⁷

5

The word "region" in this paper will always be used in the supra - or multi-national sense, and not in the sub-national sense.

6

Examples of other EAC research institutes are: the East African Veterinary Research Organization (EAVRO) at Muguga, Kenya; the East African Marine Fisheries Research Organization (EAMFOR) at Zanzibar; the East African Freshwater Fisheries Research Organization (EAFFRO) at Jinja, Uganda; the East African Institute of Malaria and Vector -Borne Diseases at Amani, Tanzania; the East African Institute for Medical Research at Mwanza, Tanzania.

INTERMEDIATE & INDEPENDENT VARIABLES

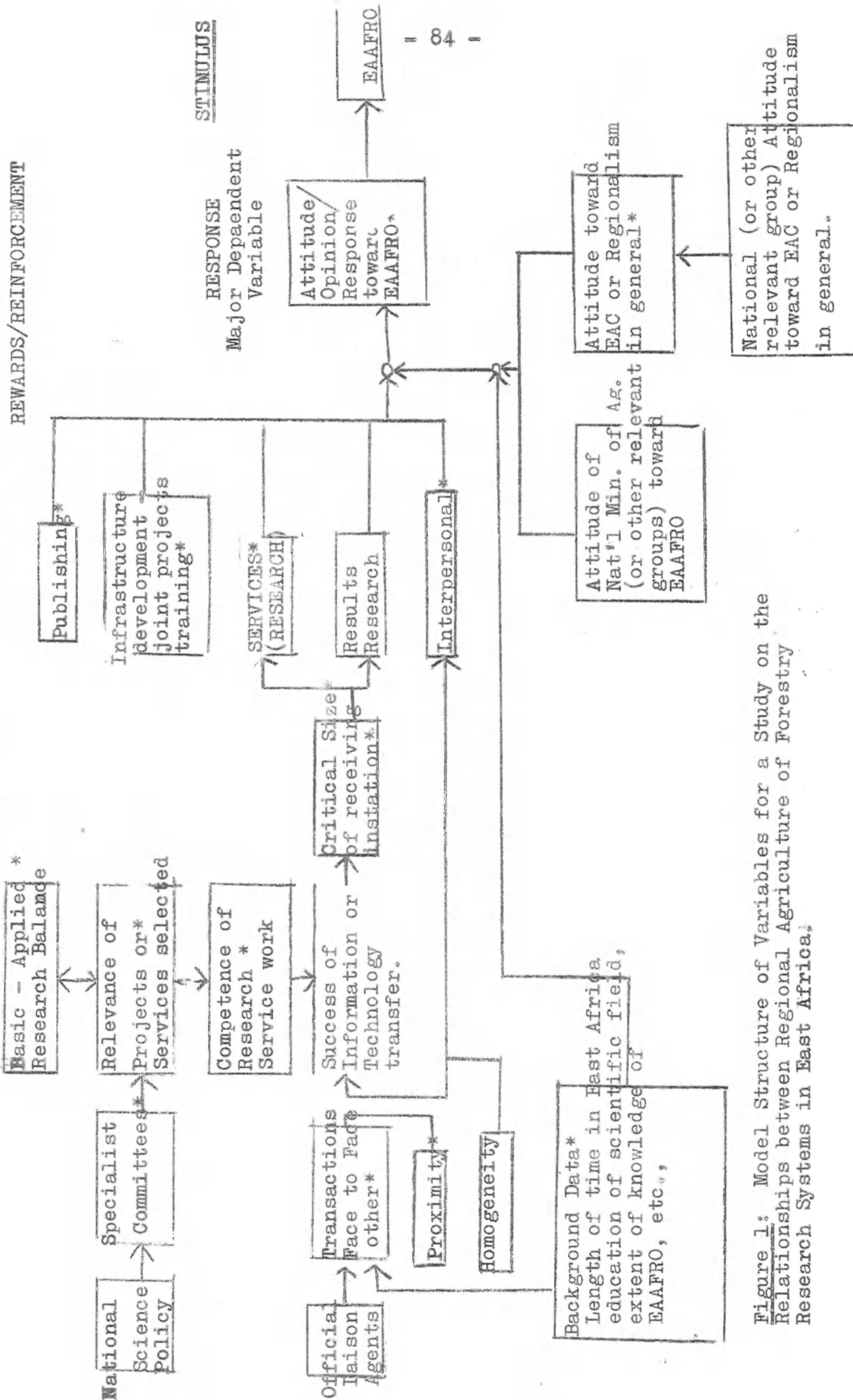


Figure 1: Model Structure of Variables for a Study on the Relationships between Regional Agriculture of Forestry Research Systems in East Africa.

Five Reward/Reinforcements could exist for national research officers in connection with EAAFRO, and various other variables may extend from them and explain differential responses to receiving or experiencing them. However, only those variables in boxes marked with an * will be investigated. The remaining ones are either not relevant or not feasible to investigate. It is no secret that the EAC's research institutions, particularly EAAFRO, are relatively controversial issues in the General Fund Services at this time and that some organizational changes may be forthcoming in the future.⁸ Hopefully, the results of this research project will be of some use to decision makers at both the Community and national levels when they are considering changes.

An example of a specific organizational issue which is important in agricultural research in developing countries today is whether to organize sections of research institutions or entire institutions around scientific disciplines or around specific crop or livestock objectives. In Kenya's National Agricultural Laboratories at Kabete, the situation exists where some sections, e.g. the Potato Research Section and the Cotton Research Section, are organized around specific crops. There are some anomalies in this system, however, which lead to interesting situations. An entomologist working on cotton insects, for example, might logically either be in the entomology or the Cotton Research Section. This might seem to be a trivial issue, but problems might occur in financing, communications, equipment etc., depending on differences between the two types of sections.

One of the most publicized agricultural research outputs in recent years has been the so called "green revolution" in wheat and rice. This revolution is the product of high-powered

7

"Henry Teune, The Learning of Integrative Habits," The Integration of Political Communities, edc., Philip E. Jacob and James V. Toscano, J.B. Lippincott and Co., Philadelphia 1964. The latest and perhaps most controversial reference to Learning Theory is B.F. Skinner, Beyond Freedom and Dignity, Knopf, 1971.

8

Multi-national research institutions also have their problems in developed regions. For example, See December 9, 1971 issue of the East African Standard which carried a story on Euratom.

international research institutes such as the International Maize and Wheat Improvement Centre (CIMMYT) in Mexico and the International Rice Research Institute (IRRI) in the Phillipines,⁹ which are supported by a consortium of donor agencies. Organizationally, these institutes take a multi-disciplinary approach but focus on specific crops. The Advisory Committee in the Application of Science and Technology to Development (ACAST) of the United Nations attributes the success in breeding new, high-yielding varieties of cereals to this organizational structure, and proposes "that seven new international research centres should be established to work in millet and sorghum, tropical roots and tubers, high protein crops and vegetables."¹⁰

In East Africa, research institutions focusing on single crops - coffee, tea, sisal, pyrethrum, cashew nuts - exist or have existed. Some are supported by industrial associations and others by national governments. Other research institutions under Ministries of Agriculture have operated on a wide range of crops for localized ecological conditions. The advantages and disadvantages of each organizational type and the proper "mix" of them in the agricultural research system of a country are important questions.

One exciting new organizational form of scientific research institution recently established in Nairobi is the International Centre of Insect Physiology and Ecology (ICIPE). Similar to other specialized international research institutes, ICIPE will utilize a multi-disciplinary approach by focusing on specific insects. The process is aptly described in a statement of their objectives, activities, and governance as follows:

The sum of work of the centre will be much more than the sum of its parts because of the vital importance of the interaction of scientists from various disciplines working together (or in

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A proposed international centre for research on livestock diseases to be located in Kenya is under consideration at this time. One of the points being discussed is how this proposed institute would affect the veterinary and trypanosomiasis research organizations of the Community.

¹⁰

United Nations Economic and Social Council, World Plan of Action for the Application of Science and Technology to Development - Report of the Advisory Committee in the Application of Science and Technology to Development Vol.1, E/4962, 17 March, 1971, p.13.

association) on phenomena relating to the same or similar insect species. For example, insect physiologists may discover secretions of insects and plants which significantly affect insect behaviour. Organic chemists will isolate and identify the structures of the active components of such secretions. Biochemists and endocrinologists will find out how and why they produce such effects. Ecologists will study the effects of such substances on insect populations, including their reproductive biology and social behaviour, and on biotic communities. New and more powerful analogues of such substances may be synthesized by the organic chemists, and the effects of such materials on insect species and other fauna and flora will be studied. This, then, is a highly interactive scene of scientists from many disciplines working on the same insects in the same ecological environment.¹¹

In addition to this feature, several organizational innovations are being attempted by ICIPE in relation to its training function and connections with foreign expertise and sources of funds: its Directors of Research; its relation to the University of Nairobi, where it is treated on the Chiromo campus; and its relations with East Africa and the rest of Africa. Although it is too early to judge the success of ICPE or these innovations, they do merit thorough consideration and study.

At least four institutions for social science research exist at present in East Africa. The specific institutions are the Institute for Development Studies (IDS) at the University of Nairobi; the Makerere Institute of Social Research (MISR) at Makerere University; and the Economic Research Bureau (ERB) and the Bureau of Resource Assessment and Land Use Planning at the University of Dar es Salaam. IDS was established in 1965 and is an integral part of the University of Nairobi, treated on par with the University faculties.

In co-operation with our Government, with other departments and institutes of the University, and with all other agencies concerned with development - national, regional and international - the Institute for Development Studies is responsible for initiating, co-ordinating and directing its own programme of applied and interdisciplinary research on high priority social and economic

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"The International Centre of Insect Physiology and Ecology - A statement of its objectives, activities and governance," Nairobi, 1970, pp 8 & 9. Also consult Thomas Odhiambo, "International Co-operation in the Social and Life Sciences," paper presented to the Committee on Science and Astronautics of the U.S. House of Representatives, January 27, 1971.

problems of development of Kenya in particular and of Eastern Africa in general.¹²

The main functions of the Institute are research and related activities, teaching contribution in the relevant departments of the University, the training of East African social scientists, the provision of facilities for visiting scholars qualified and prepared to make a significant contribution to the research programme of the Institute, the diffusion of research findings to a wider audience, and a variety of community activities designed to enhance popular understanding of the development problems of the country.¹³

MISR is the oldest of the above institutions, having been established by the British Government in 1948 as an independent regional centre for research in the social sciences, located on the Makerere campus.¹⁴

The Makerere Institute of Social Research (MISR) is an internationally recognized centre for research in the Social Sciences in an East African context. Its central function is to organize and conduct independent academic research studies on the social, political, and economic problems of East Africa. Related functions are to provide research experience for young East Africans interested in academic careers, to develop teaching materials for University students, to undertake research for government agencies on short term policy issues, and to provide a centre with which research workers from overseas may be associated.

The Institute is the research and publication centre of the social science departments of Makerere.¹⁵

The constitution of ERB, which was established at the University College, Dar es Salaam, in 1965-66, states:

The Bureau shall carry out research in support of the economic and social development of the United Republic of Tanzania and the teaching of economics in the country by:

- (i) organizing research carried out by the staff of the Bureau and other staff in Economics and related fields of the University College;

¹²

J.N. Karanja, Vice-Chancellor of the University of Nairobi, in the Foreword to "Institute for Development Studies- Research and Publications," IDS, January, 1972, p.1.

¹³

"Institute for Development Studies - Research and Publications," IDS, January, 1972, p.2.

¹⁴

Calendar. 1970-1971, Makerere University, Kampala, 1970, p.186.

¹⁵

Ibid, p.185

- (ii) co-ordinating and assisting research carried out by staff seconded from government, research follows from other research institutes and other visiting research workers;
- (iii) co-operating with government, public authorities and other organizations on special questions;
- (iv) furnishing advice upon the request of government, public organizations or other organizations;
- (v) arranging conferences, seminars or workshops on economic questions;
- (vi) collecting information necessary for the research activities of the Bureau;
- (vii) when appropriate, publishing the results of research.¹⁶

A similar statement could not be found for the Bureau of Resource Assessment and Land Use Planning of the University of Dar es Salaam in the short time available for writing ~~this~~ paper, but at least some of the functions such as teaching and training at the University are similar to those stated above.¹⁷

Certainly two very important external organizational questions for these types of social science research institutions concern their relationships with national governments and with universities of which they are a part. Government representatives are included on the Governing Board of IDS and on the Council of the ERB, but not the Executive Committee of the MISR. The ERB would also seem to have the most direct and explicit involvement with the national government concerned.¹⁸ Similarly, MISR would appear at first glance to have the most autonomy vis-a-vis the concerned national university, and ERB to be the most directly and explicitly related. Questions of

¹⁶

"The Constitution of the Economic Research Bureau, The University College, Dar es Salaam," January, 1966, Acc No. 66/225 class 18b in IDS library.

¹⁷

See Annual Report, 1968-69 and 1969-70 for the Bureau of Resource Assessment and Land Use Planning, University of Dar es Salaam Shelf No. DAR/BRALUP/AR 68 and DAR/BRALUP/AR 69 in the IDS Library.

¹⁸

See "Annual Report for the Year Ending June 30, 1970," Economic Research Bureau, University of Dar es Salaam, p.16 (In the IDS library); IDS, 1972, op cit 1 p.3; and "Makerere Institute of Social Research - Research and Publication 1970-71." MISR, 1970, p.i. Issues related to governmental secrecy regulations and academic freedom are also involved here.

teaching and training functions would be involved here, as would be the issue of financial support for these institutes.

Internally, the organization of IDS is the best described of all four. (See "Memorandum on IDS Organization," sent out by Peter Hopcraft on 15th December, 1971.) One internal issue which relates back to the discussion on scientific research institutes is whether social science research should be organized along academic discipline or along project objective lines. Makerere University says that MISR will be carrying out "active research programmes in the five disciplines of economics, political science, sociology cum anthropology, rural economy and social psychology".¹⁹ MISR divides its current research into eight parts: Economics, Political Science and Public Administration, Sociology, Social Psychology, Social Anthropology and Demography, Rural Economy, Law, History, and the Institute of Public Administration.²⁰ IDS seems to take a more project objective orientation in categorizing its current research into projects on Rural Development, Urban and Industrial Development, Employment, Education, Kenyan Economy, International Co-operation, and Miscellaneous.²¹ The ERB does not classify its research under any similar scheme, although it is obvious from the papers listed that it is heavily oriented towards rural development.

But the purpose of a multi-disciplinary approach, organizing around a project objective rather than an academic discipline, is surely to increase the co-ordination and interaction of people working on the same problem from different angles and thus (hopefully) solve the problem or achieve the objective sooner? Is this being accomplished? Comparative internal studies of IDS, MISR, and ERB might help to shed some light on this organizational issue, which is one of a number which might be discussed.

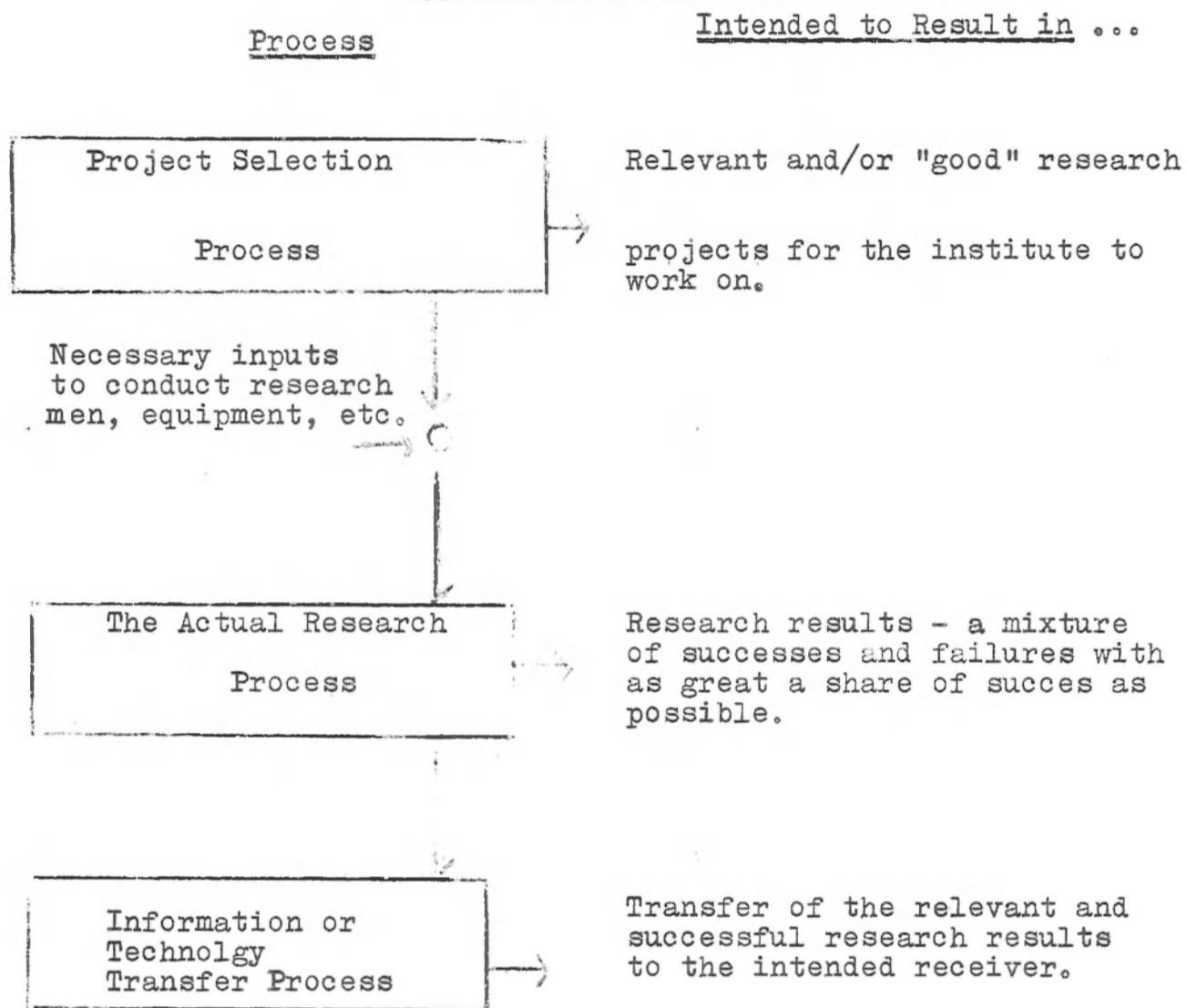
Figure 2 below presents a very simplified picture of the important processes which any research institution must be concerned with. A fatal breakdown may occur

¹⁹ Makerere University, Dp. Ct., p.187.

²⁰ MISR, Op. Cit., p.7

²¹ IDS, Op. Cit., pp. 7-9

Figure 2: The Important Processes of a Research Institute and their Intended Results



in any of these processes. For example, if irrelevant or trivial research projects are selected to work on, it will make no difference how good the actual research is or how well the results are transferred to the intended receiver. Similarly, even if the projects selected are relevant and "good" and the institute is able to transfer any results it obtains, this will be of no consequence unless the research process is able to produce some results. The most relevant projects selected and the best results obtainable are no good within the institute if they are not transferred to some intended receiver, whether it be a peasant farmer, an industrial plant, or another research institution.

Project Selection

Project Selection is where the research operations really begin. At the national level in Kenya, Uganda, and Tanzania, there are government regulations and restrictions on

research, both science and social science, which are selective in the sense that certain projects may be denied clearance. In Kenya, this function is performed in the Office of the President and in Uganda by the National Research Council in the Ministry of Planning and Economic Development. In Tanzania, one must apply initially to the University of Dar es Salaam for research clearance, the application then goes to a Research Clearance Committee in the Ministry of Economic Affairs and Development Planning which sends it to the Second Vice President's Office for approval. In all countries, the criteria that research should be related to the needs of the country is mentioned, but how this is operationalized and applied to social science research proposals is an interesting question.

Project selection is also carried out at the institutional level. In the case of scientific research at EAAFRO, for example, the following official criteria and process for project selection is stated in their annual report for 1969:

EAAFRO is responsible for undertaking research in the fields of agriculture and forestry on problems that;

- (1) are common to at least two of the East African countries and can be investigated most efficiently and economically by a central research organization;
- (2) require longer-term investigations or more intensive study than can be under-taken by National Departments;
- (3) require highly specialized and expensive equipment or the services of such specialists as can only be justified on an East African basis.

EAAFRO is not concerned with purely local problems unless specifically invited to investigate them by a national department. Likewise, EAAFRO is not an advisory organization as such, though scientific advice and guidance are readily given by the research staff on request to national and other research workers.

The current research programme . . . is designed to meet the needs of the National Departments of Agriculture and Forestry and is determined by requests and recommendations which emerge from the deliberations of a series of committees in which these departments and EAAFRO are represented,

Research requirements are first discussed by the specialist Research Committees . . . composed of research workers in the appropriate disciplines . . .

The recommendations of these committees are submitted for approval to the appropriate Research co-ordinating Committees . . .

The recommendations of the Co-ordinating Committees are duly considered by the Research Council, but the implementation of the programme approved by the Council is dependant on financial provision being granted by the East African Legislative Assembly 22

The social science research institutions discussed earlier also have project selection processes and criteria, although they are not nearly as elaborate or complex as the above.

A Research Committee at IDS considers and makes recommendations on the budgetary allocations for research projects carried out under the auspices of IDS, and also screens and appraises the project proposals of the Visiting Research Associates. It is composed entirely of IDS members. In the procedures for submitting research proposals for IDS funding, it is pointed out that:

The researcher should bear in mind that his research is justified not only on grounds of its scientific quality, but also for the importance of its implication for shaping and guiding development policy in Kenya.²³

Research priorities and projects at ERB are worked out by a Programme Committee which consists of members from the University of Dar es Salaam and the Ministry of Economic Affairs and Development Planning. ERB also actively participated in the formation of a National Research Plan which is expected to provide extensive guidelines for future research priorities. At present, it is committed to policy-oriented research in support of economic and social development in Tanzania.²⁴ No description of project selection at MISR could be found.

22

Record of Research - Annual Report 1969, EAAFRRO, EAC, 1970, pp. 2 & 3. One should note that this is the official statement which does not necessarily reflect reality. In particular, it seems to be agreed by most observers that the committee system described above has broken down in many instances.

23

Hopcraft Memorandum, Op. Cit., p.5

24

ERB, 1970, Op. Cit., pp 5 & 6.

Again important questions arise: How are general criteria regarding such a complex problem as socio-economic development operationalized to provide effective selection guidelines? How are these guidelines applied?²⁵ And so forth. This is important not just for actual social science research institutes, but also for funding organizations such as Ford Foundation or the Canada Council. At the individual level, project selection also takes place in a complex milieu of personal and social desires.

Two remaining issues in project selection will be briefly mentioned. One is the difficulty in trying to utilize quantitative cost/benefit analyses in choosing among alternative research projects. It is difficult enough to assess the quantitative costs and benefits of scientific research performed in the past,²⁶ but to attempt to predict these for the future is even more treacherous. It is possible to estimate the potential benefits from a developmental project because it is assumed, and usually correctly that the project can be carried out. In considering a scientific research project, however, the chances of success interact with the cost of research in situations of uncertainty. No one knows for sure if the project will succeed or not, or to what degree it may succeed. The opinions of scientific "experts," of course, can be elicited and a range of chances of success can perhaps be developed and plugged into sophisticated mathematical formulas, but it is frequently the personal hunch or the intuitive insight that selects what turns out to be the right scientific research project. If this is the case for scientific research projects, then trying to assess the quantitative costs and benefits of social science research projects must be even more difficult and complex.

One of the recurring themes about scientific research in developing countries concerns the importance of it being "applied research". For example, the World Plan of Action for the Application of Science and Technology to Development states:

25

After all, we can all probably write our own research proposals to fit any criteria we wish!

26

See R.G. Saylor, "A Social/Cost Benefit Analysis of Agriculture Extension and Research Services among Smallholder Coffee Producers in Kilimanjaro District," Economic Research Bureau, University of Dar es Salaam, no date, in which the author attempts to estimate the physical increase in production (benefits) attributable to research extension services. The results of this analysis are not entirely certain because of lack of statistical data and other reasons - as the author admits - but it is an interesting attempt and more efforts of this nature should be encouraged.

Another generalization is that the research and development infrastructure in developing countries should be weighted towards the practical problems of production and application rather than towards basic or fundamental work in pure research or science.²⁷

This is an issue on which many people become very excited, with accusations of science for science's sake, the wasting of government money on projects which are of interest only to the scientists themselves, etc. And in the past, when scientists were given much more freedom in running their research operations, such accusations often had some merit but the accusations may still have some validity today. But it is my opinion that there is considerable confusion over the terms "fundamental/basic/pure" and "applied" research, and that what people are really concerned about is the relevance of the research to national objectives. The Workshop paper "Social Science Production, Dissemination and Implementation in Kenya: An Exploratory Study" contains the UNESCO definition of these terms.

If pyrethrum, therefore, were to be considered a potentially important crop for Kenya and if no scientific research on pyrethrum were being done elsewhere in the world, then one can imagine some very relevant and valuable scientific research being conducted on the fundamental nature of the plant, with no specific practical objective in mind. And, it is also possible to imagine that some extremely irrelevant applied scientific research could be done in East Africa on the practical problems of igloo construction. In the social sciences, one is not yet faced with this public cry for applied research only, but it might be well to discuss these categories as they pertain to social science research and their implications.

Technology Transfer

The third process shown in Figure 2 is that of information or technology transfer. The transfer of research results or dissemination of information cuts across science and social science research.

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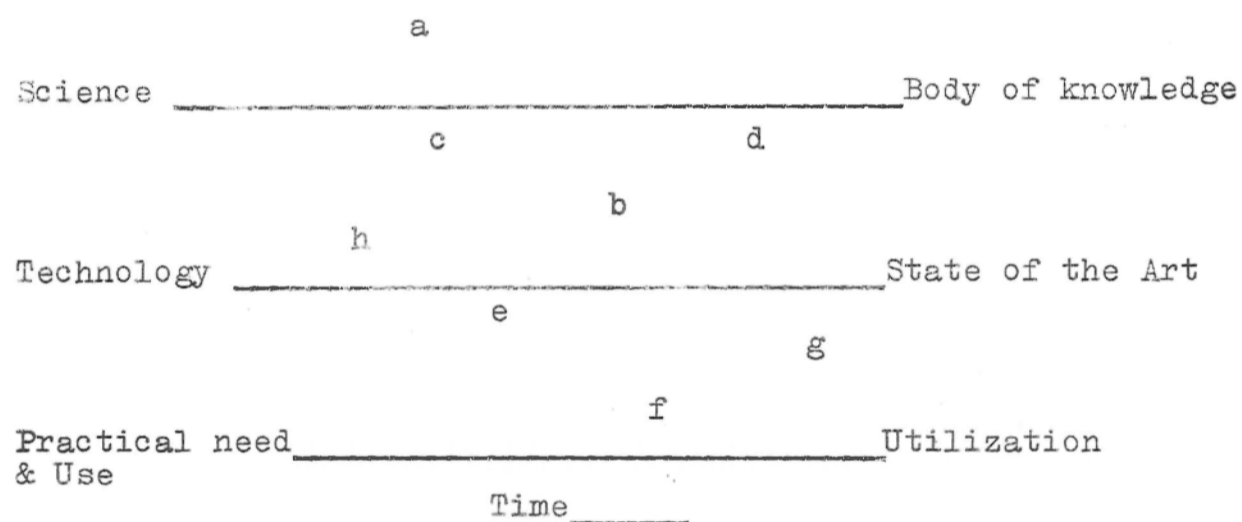
Economic and Social Council of the U.N, Op. Cit., p.44
The report goes on to add that this is only a generalization which should not be followed dogmatically.

Figure 3 explains the technology transfer process. The developers of it state:

Using this model, it is possible to identify the various loci of transfer that may take place, and to consider the possible sources of idea generation.²⁸

I have developed a categorization of different types of technology transfer pertaining to organizations along four dimensions:

Figure 3 Science - Technology - Utilization Topology



- (a) Science to science
- (b) Science to Technology - slow
- (c) Science to technology - fast
- (d) Technology to science - e.g., the development of scientific instruments
- (e) Technology to technology
- (f) Utilization to utilization - "diffusion"
- (g) Technology to utilization
- (h) Science direct to utilization

(1) the scientific level of the organizations concerned, (2) organizational boundaries, (3) national boundaries, and (4) cultural boundaries. (See Figure 4.)

28

The Introduction to Factors in the Transfer of Technology, William H. Gruber and Donald G. Marquis (ed.), MIT Press, Cambridge, 1969, p.5. Figure 3 is taken directly from the same source, p.5.

Using the symbols S and R to represent the Senders and Receiver of technology in the technology transfer process, dimension (1) refers to a "vertical" transfer when S and R are at different scientific levels, and to a "horizontal" transfer when they are at the same scientific level. Two scientific levels at opposite ends of a continuum of scientific research sophistication are envisaged for purposes of simplification, although it is realized that in the real world there are many intermediate levels: the Laboratory (L) at the higher end and the Factory/Farm (F) at the lower end. Using directional arrows to indicate S _____ R, there are then two possible cases of horizontal technology transfer: L _____ L and F _____ F. The first case is illustrated in instances where scientists in one laboratory have utilized results from another laboratory in their own scientific research. The second case is commonly known as "diffusion of innovation" e.g., one farmer showing another how a new piece of machinery works, Also it includes technological patent and licensing agreements between firms. Inherent in the nature of scientific levels is the implication that there is mainly one case only for vertical technology transfer, L _____ F, although it is possible that feedback information from F to L on technical problems might result in more research activity. Figure 3 shows how improved instrumentation at the technology level can go upward and influence science. These latter possibilities might therefore be indicated as F _____ L. In the case of L _____ F, steps in the "development" stage of Research and Development usually occur which may involve pilot plants, demonstration plots, field testing, etc. Where S and R are working closely together, the vertical technology transfer process may look more like L _____ F-----L _____ F-----L _____ F and the horizontal process like F₁ _____ F₂-----F₁ _____ F₂-----F₁ _____ F₂.

The second dimension simply categorizes the technology transfer process into intra - and inter-organizational flows. An industrial research laboratory and a factory may exist in the same firm, or they may not. Technology may be transferred from a factory in one corporation to a factory in another division, or from a factory in one corporation to a factory in another. There is a real question here, however, of how to define intra - and inter-organizational in some of these

cases. Are NASA and HUD²⁹ intraorganizational because they are both part of the United States government? When do divisions of decentralized corporations or giant conglomerates become so distinct that they would constitute inter-organizational technology transfer? More conceptual work needs to be done on this issue.

The third and fourth dimensions are related, but must be kept distinct. Either the technology transfer process from S____R crosses national boundaries (international) or it does not, and either it crosses cultural boundaries (cross-cultural), or it does not. These are not the same things. For example, technology transfer from English-speaking Canada to French-speaking Canada would be cross-cultural but not international; and an agricultural research laboratory in East Africa largely staffed with expatriate scientists and working on problems of indigenous small-scale farming would have cross-cultural but not international characteristics. On the other hand, technology transfer from the United States to English-speaking Canada would not be cross-cultural, but it would be international. Many examples exist in which the technology transfer would be both international and cross-cultural. The reason these categories are kept distinct is that the characteristic problems involved in each type of transfer are different. In the case of international technology transfer there may be balance of payments and foreign exchange difficulties, political restrictions on the amount of foreign influence allowed, national pride, sensitivities, etc. In the case of cross-cultural transfer, a misunderstanding of cultural norms or values or some similar obstacles might present problems.

Twenty-four types of technology transfer could theoretically result from such a classification system (See Figure 4) although it is probably true that some of them are very seldom found, e.g. horizontal (I____I), intraorganizational, not international and not cross-cultural. There is also an implied proposition here that technology transfer problems will increase as the

29

Quite a bit of technological "spin-off" has gone from the National Aeronautics and Space Administration (NASA) to cabinet agencies such as Housing and Urban Development (HUD) in the United States.

amount of complexity inherent in these typologies increases. For example, the most difficult technology transfer process would be vertical, inter-organizational, international, and cross-cultural. The two least difficult would be (L____L) and (F____F) horizontal, intraorganizational, not international, and not cross-cultural.

Figure 4: Technology Transfer Typologies

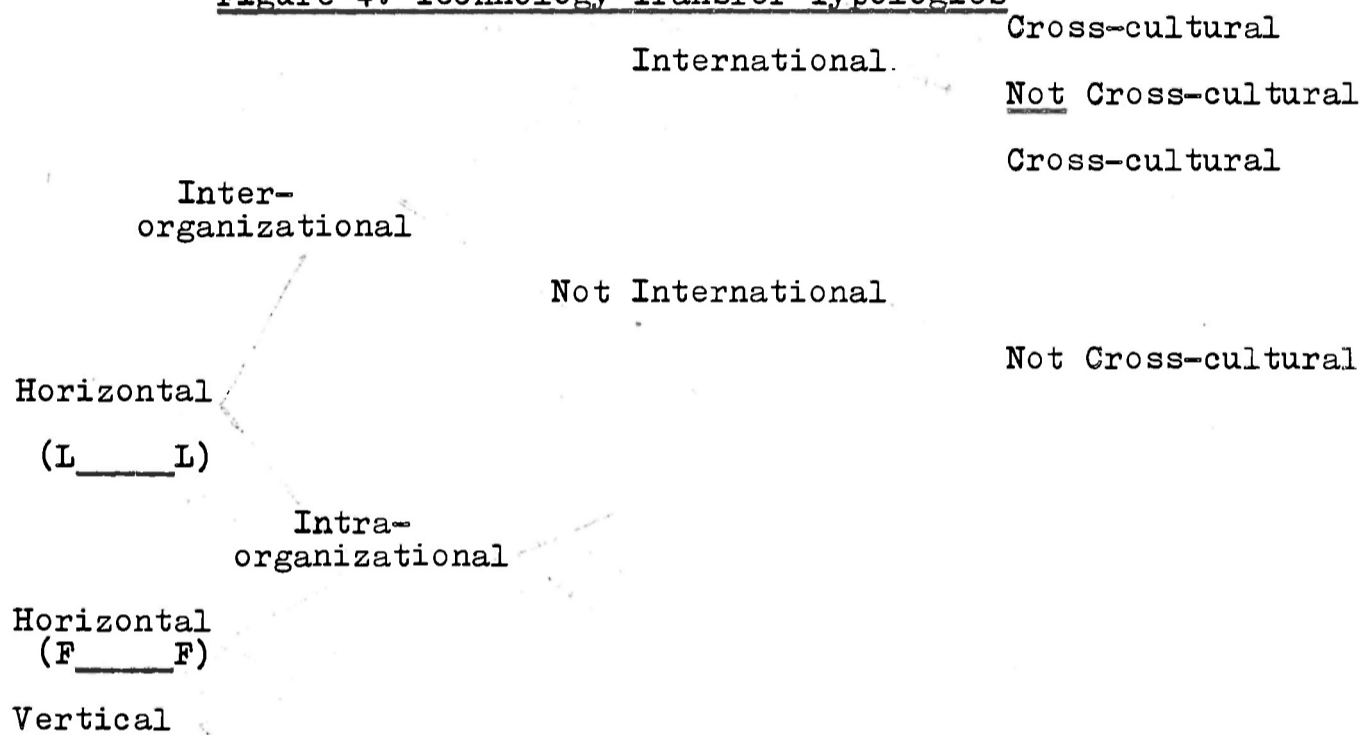


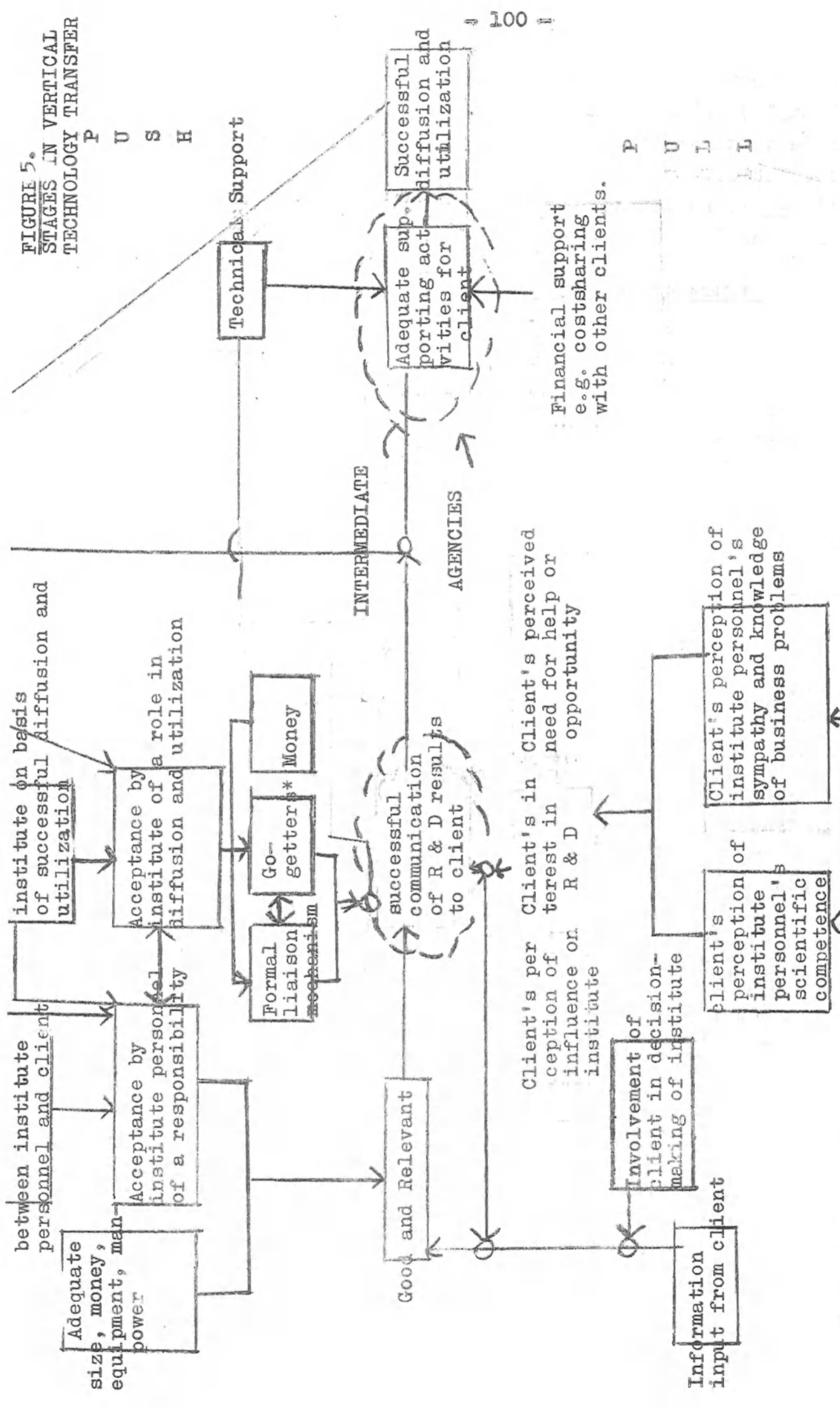
Figure 5 portrays model of stages in the vertical technology transfer process.³⁰ For effective utilization of research results the following conditions (in order) appear to be necessary:

1. The R & D has to be good in quality and relevant - the focus here is primarily within the institute with a secondary role for the client as a source of information concerning project selection;
2. The R & D has to be communicated to the client in an effective way - the focus here is equally on the institute, the client, and an intermediary body if there is one; and,
3. Supporting activities (financial, training of workers, etc.) must be provided to the potential client- the focus here is primarily on extension services or other intermediate bodies but these functions can be included as part of the institute itself.

³⁰

T Schlie, "Some Models and Propositions Related to Technology Transfer in Latin America," IE/MS paper No. 70/18, April, 1970.

FIGURE 5.
STAGES IN VERTICAL
TECHNOLOGY TRANSFER



**"Go-getters" are business-oriented scientists (or science-oriented business men) who are part of the research institute but are concerned with diffusion and utilization.

The upper half of the model shows the "push" functions of the technology transfer source while the bottom half shows the "pull" behaviour and characteristics of users. Propositions are implicit in each of the boxes in the model. For example, as institute personnel increasingly accept a responsibility for development, the R & D results from that institute should become more relevant to that end. One final point to make concerning the communications inherent in the S_____R process of either technology transfer or dissemination is the value of personal, face-to-face communication and the role of the liaison agent.

Although there are many forms of communication transactions, the most important seems to be connected with the mobility of scientists - the ability of regional and national scientists to personally get together. Examples of technology transfer by people who could be called "consultants" are:

The movement of people who are scientifically or technically trained into situations where their competence in a special field can be utilized in adjacent but different fields; or, the movement from a research activity to a task which demands a scientific search for alternative solutions in a similar technical area but with different objectives and institutional circumstances. Any institutional means devised to facilitate and expedite scientists' mobility will, eventually, act as a barrier to the objective it was designed to achieve. Therefore, the primary task facing the social sciences are how to cope with the need for institutional inventiveness.³¹

Admittedly, the idea that the mobility of scientists is a key point in information or technology transfer is not all that new. The Frazer Report, which formed the basis for East African research institutes, stated in 1961:

A research organization cannot thrive for long in isolation. Continual interchange of ideas with other research organizations, colleges and universities is essential. This cannot be achieved merely by circulation of scientific publications, although good library facilities are especially important to isolated institutes.

³¹

Tom Burns, "Models, Images, and Myths," in Factors in the Transfer of Technology, eds. Gruber and Marguis, MIT Press Cambridge, 1969.

Contact with other scientists at a personal level is necessary frequent exchange of people and ideas between one research group and another. It is this exchange that gives rise to new ideas and facilitate progress.³²

UNESCO also confirms the importance of this factor.³³ It lists six important scientific "mobility schemes" which exist among countries in Europe: international advanced courses; residential stays of researchers in foreign laboratories; the formulation and execution of multi-national research projects; brief missions to visit foreign colleagues; international meeting or conferences; and, systematic and periodic meetings to co-ordinate research activities.

Hopefully, the Workshop will find some of the issues raised here with regard to technology transfer worthwhile discussing in connection with social science research. Are there useful categories of social science information dissemination in East Africa? What are some of the factors which promote or hinder this process analogous to the ones in Figure 5? Who are the potential receivers and utilizers of social and science research and what are their characteristics? Can organizational devices be designed to promote the dissemination of information? ³⁴

National Science Policy

The final topic to be discussed in this paper concerns national science policy. UNESCO has defined national science policy as: the sum of the legislative and executive measures taken to increase, organize and use the national scientific and technological potential, with the object of achieving the country's overall development aims and enhancing its

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Report of the Commission on the Most Suitable Structure for the Management, Direction and Financing of Research on an East African Basis, A.C. Frazier, Chairman, Government Printer, Nairobi, 1961, p.25.

³³

UNESCO, Science Policy and the European States, Conference of Ministers of the European Member States responsible for science Policy, Paris, 22-27 June, 1970, p.142.

³⁴

For example, the Ministry of Agriculture, Food and Co-operatives in Tanzania has recently placed research and extension services within the same department in an attempt to promote closer liaison between the two. See Ian Livingstone, "The Relationship Between Research and Planning in Development," Economic Research Bureau, University of Dar es Salaam, no date.

position in the world.³⁵

The World Plan of Action has stated the need for these policies in developing countries.

Effective arrangements would require some central science policy-making body which would determine and supervise the development of an indigenous capacity and co-ordinate the work of national institutions in research and training as well as the work of the scientific and technological services in the country. The precise nature of the policy directing arrangements and the precise location of the central policy-making organ will vary according to the administrative traditions and structures of each country, and a number of alternative solutions are discussed... But it is essential that the counsels of science and technology be present at the highest levels of government. It is clear that in many developing countries such high-levelled bodies either do not yet exist or are not fully operative. The establishment of such policy-making bodies is a condition for the effective use of resources and deserves high priority.³⁶

The situation described above is generally true in East Africa today. Uganda would appear to be the furthest along in its national science policy efforts with a National Research Council in the Ministry of Planning and Economic Development. This Council was established by cabinet level executive action - not legislative - in July, 1970. It consists of six committees: Ecological, Agriculture and Animal Industry, Cultural, Social Sciences, Medical and Veterinary, and Science and Industry. Those advise the government on research priorities and their funding, identification, co-ordination, and implementation.

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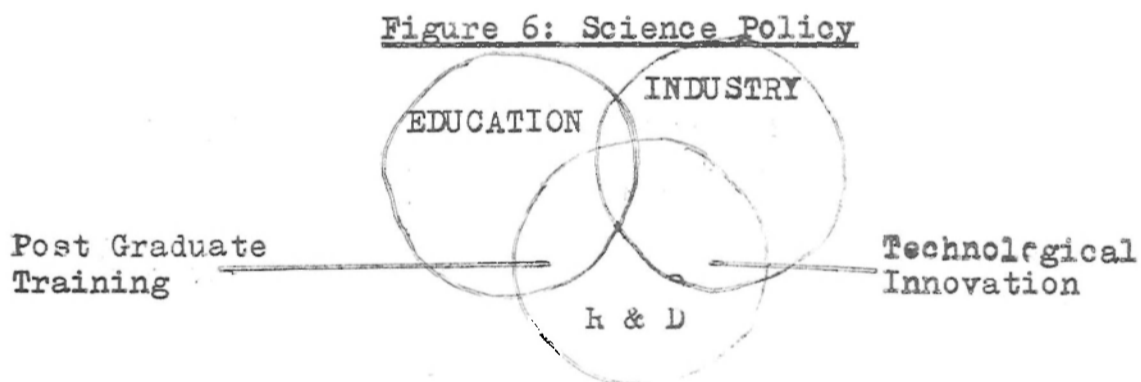
"The Application of Science and technology to the development of Asia - Basic data and over-all considerations," UNESCO, Paris, 1968, p. 116.

36

Economic and Social Council of the UN, *Op. Cit.* 1 pp. 45-46. For some good definitions, rationales, insights, and examples from the Canadian experience, see Sen. Allister Grosart, Chairman of the Steering Committee of the Special Committee on Science Policy, of the Canadian Senate, "Legislative Role in Science Policy," paper presented to the Committee on Science on Astronautics of the U.S. House of Representatives, January 27, 1971.

The Council is only advisory. It has no power to enforce its decisions.³⁷ In Tanzania, legislation was passed in 1968 to establish a similar body, and recently Professor David Wasawo was appointed its Executive Secretary. In Kenya, UNESCO now has a science policy advisor in the Ministry of Finance, Dr. N.R. Martin, and discussions are underway on the subject.

Much confusion still exists about what a national science policy is and what it does. At IDS on 26th October, 1971, Dr. Yvan de Hemptinne, Director of the Science Policy Division of UNESCO, held a special seminar on "A National Science Policy for a Developing Country - What? Why? How?" One of the points he presented was the Venn diagram (figure 6), to help explain what science Policy is concerned with. The three circles represent the educational, industrial, and R & D sectors in a nation. These sectors overlap to account for cases such as education and industry in on-the-job training, education and R & D in technological innovations. In the centre all these sectors overlap.



According to Dr. de Hemptinne, national science policy is concerned with that centre overlap of all three sectors and that part of the R & D sector which does not overlap with either of the others.

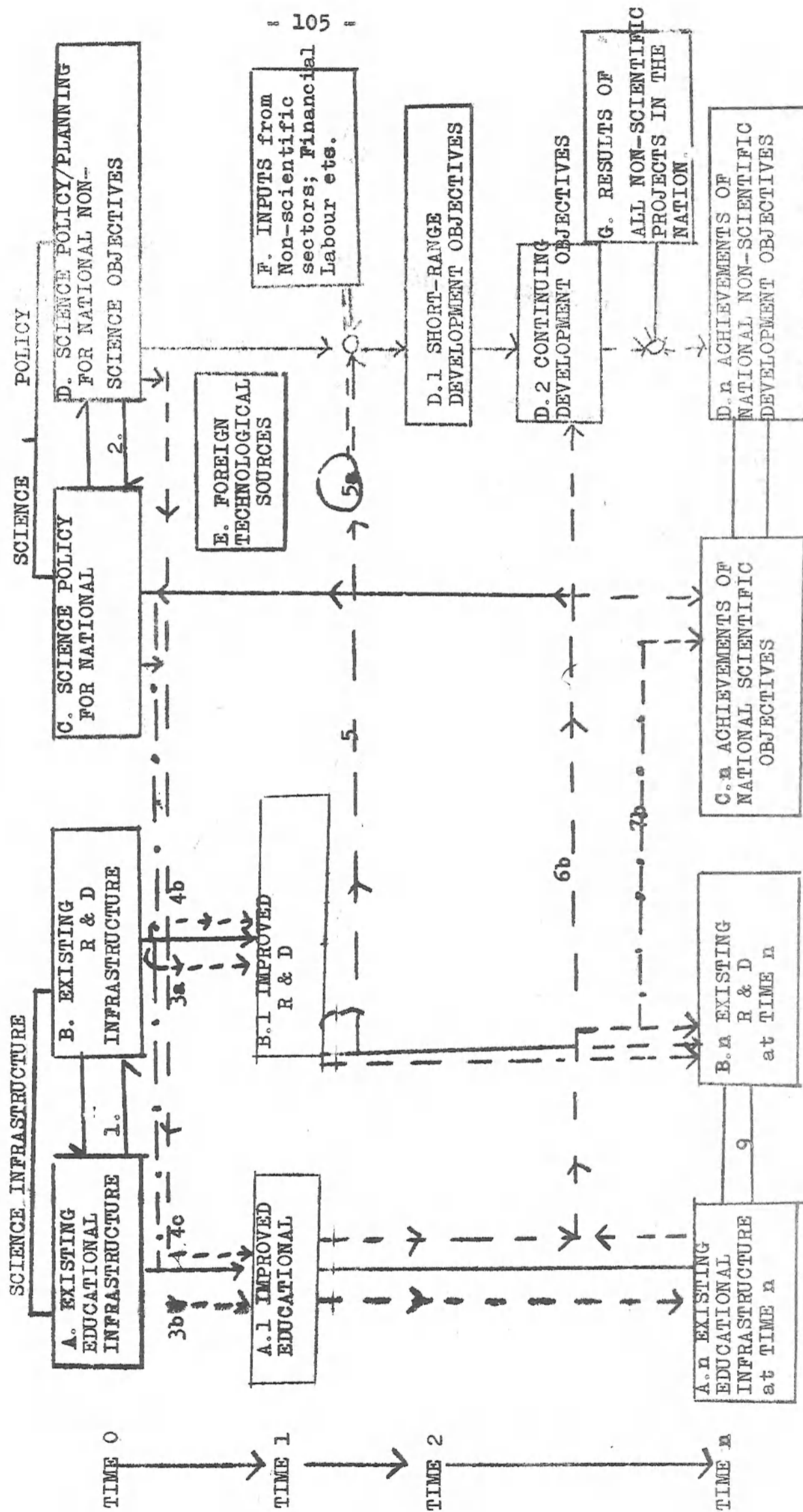
Instruction to the Explanation of the Science Policy Chart

This explanation of Figure 7 should be read in conjunction with studying the chart. The chart was developed with the intent clarifying some of the misconceptions and ambiguities about what science policy is and how it works. At the heart of the chart is

37

This information was received in conversations with National Research Council Officials. A draft constitution for the Council is being prepared at the moment.

FIGURE 7: SCIENCE POLICY AND SCIENTIFIC INFRASTRUCTURE IN DEVELOPING COUNTRIES



a conceptual distinction between two different kinds of science policy decisions: those which are made in the interests of science itself; and those which are made in the interests of some other, non-scientific objectives. The failure to make this distinction, it is believed, may cause many confusions, such as who should properly make science policy and what the role of science is in relation to economic development.

Another distinction made with regards to science infrastructure separates those institutions which are primarily of an educational nature from those which are primarily concerned with scientific research. The chart illustrates how science policy interacts with science infrastructure in an input/output fashion which can be read by following the arrows.

In order to understand this chart, the numbered and lettered examples should be read and followed on the chart in the order in which they are given. The examples have deliberately been made as free of scientific jargon as possible so that non-scientists can follow the ideas with ease.

A. Existing education infrastructure includes any institution of an educational nature. e.g. national set of primary, secondary, and university facilities, plus technical training school, and teacher training colleges. Some scientific research may be done in the universities, but the primary function would be education.

B. Existing R & D Infrastructure. The set of all national and private scientific research and development institutions in the nation.

1. The on-going interaction between Education and R & D Infrastructures. Education should provide trained scientists for R & D laboratories and contribute to the general cultural background and attitude of the society towards science. Scientific research contributes to education in general when it makes new discoveries which add to the sum of human knowledge and by influencing the society around it with regard to scientific and educational values such as "cause and effect," and the testing of hypotheses. R & D institutes may also fulfill a training function for universities when university students work in their laboratories.

- C. Science Policy for National Scientific Objectives. That part of science policy which is concerned with the long-range development of national science itself, i.e. science for its own sake. For example, a nation might decide that its own scientific future would be enhanced if its capability to do biochemistry research of a fundamental nature was strengthened.
- D. Science Policy Planning for non-Scientific National Objectives. That part of science and planning which is concerned with the scientific component of both short and long range non-scientific national objectives. In developing countries, the primary national objectives are assumed to be concerned with socio-economic development. For example, suppose a national objective in a 5 year plan was to raise agricultural production to a fixed target figure. In order to raise agricultural production to the target figure, X acres of land would have to be irrigated and Y tons of fertilizers would have to be produced locally. Both the irrigation and fertilizer objectives would require a certain amount of scientific and technological work in order for the target to be met.

2. The on-going interaction between Science Policy for scientific objectives and Science Policy - Planning for non-scientific objectives. In practice this conceptual distinction is blurred and the parts overlap. A policy decision made to advance science in a particular way for its own sake is inevitably made with some idea in mind of what national socio-economic development objectives are, and a policy decision to advance science in another particular way so that a non-scientific objectives can be implemented is inevitably made with some idea of what national scientific capabilities are at present and are likely to be in the future.

2a. A policy decision to strengthen the national capability to do fundamental research in biochemistry, for the sake of

national science itself, would mean that investments would have to be made in the R & D infrastructure, e.g. biochemistry laboratories and equipment.

3b. And a corresponding investment would be required in the education infrastructure for more primary and secondary science teachers, and for professors and equipment at the university level plus further training abroad in order to produce local biochemists. The important factor is that the decision to make the investments was made for the good of national science!

4a. An examination of the scientific and technological requirements of projects designed to achieve the national objective in irrigation and fertilizer production occurs.

Some of this technological know-how can be acquired from abroad, so decisions must be made on what scientific and technological work should be done locally and what should be imported from abroad. For example, it might be decided that the technology for pumping water in the irrigation scheme will be obtained from abroad.

E. In approaching Foreign Technological Sources in order to import the technology to produce fertilizer, many decisions have to be made. First, there is the problem of knowing where and who to go to get this information on what fertilizer technologies are available. Next there is the problem of choosing the best technology for national needs and conditions, such as the cost of labour and capital versus labour intensiveness, and the local supply of raw materials needed. Finally, a decision has to be made on the terms of the transfer. Should it involve the source in a partnership arrangement or in a "turn-key" payments? These have to be set down in a binding contract. Eventually the technology for producing fertilizers is imported.

4b. It is also necessary, however, that research on the ground flow of water through certain soils in the irrigation scheme and on the nutritive fertilizer requirements of soils will have to be carried out by the nation's infrastructure. Therefore, additional resources, may have to be allocated for laboratories, equipment, and if needed expatriate scientists to improve the national soils research capability.

4c. The educational infrastructure is not likely to produce local scientists in time for scientific work which must begin immediately to achieve the objective within five years. If irrigation is perceived to be a continuing national objective of high priority, a "crash programme" in hydrology or soil mechanics might be established at the University.

A1. By Time 1, the Education infrastructure has been improved. The groundwork for future capability in biochemistry is being laid by an emphasis on the quality of science teaching at the primary and secondary level, and plans are being drawn up for a new University biochemistry programme. One or two promising University students may have been sent abroad for further training on the understanding that they will return to teach biochemistry at the University. A crash programme in hydrology and soil mechanics has begun and some University students trained in this field will be graduating soon.

B1. The nation's R & D infrastructure has similarly been improved at the end of Time 1. Not much has been done yet to add to the biochemistry laboratory or equipment facilities, but studies are being made of what in this field a small country can meaningfully specialize in and how to go about doing so. On the other hand there has been a great increase in the amount of research being conducted on the ground flow of water and the fertilizer requirement of soils. Expatriate scientists have been hired from abroad (or obtained through aid programmes); soil research laboratories have been built; equipment has been bought, etc.

5. After Time 1, the results of the local scientific research on the ground flow of water and the nutritive requirements of different local soils begin to appear. They are directed back to the projects aimed at reaching the nation's objective.

5a. These locally produced scientific results combine with technology from abroad form the scientific and technological component of such projects.

F. There are many other components besides science and technology in the successful implementation of a project designed to achieve a non-scientific objective. For example, for the objective of Y tones of locally produced fertilizer

to be realized, important decisions have to be made on the scales and locations of production plants, financing of the entire project, construction of the plant or plants, the supply of labour, etc.;, which do not directly involve the science or technology of fertilizer production. In the example of the irrigation scheme, ditches may have to be dug, land use surveys made, and extension courses for the affected farmers may have to be initiated. This box is to indicate all those other things which have to be done in addition to the direct use of scientific research and technology in order for a non-scientific objective to be reached.

D1. At the end of the 5 years plan at Time 2, the short range non-scientific objectives of the nation to irrigate X acres of land and produce Y tons of fertilizer locally are achieved to some degree.

D2. But before the first 5 year plan is even completed, a new 5 year plan for the following years is introduced. Irrigation and fertilizer production continue to be important national objectives in the new plan.

6a. In the medium range future, graduates of the University crash programmes on hydrology and soil mechanics begin to contribute to the nation's R & D infrastructure.

6b. The results of their research begin to form a greater share of the scientific component for achieving national objectives in irrigation and fertilizer production.

7a. At some distant time the educational infrastructure is producing biochemists in numbers sufficient to profitably utilize the planned expansion of R & D infrastructure..

Dn. At a time in the distant future, the long-range non-scientific objectives concerned with national socio-economic development such as agricultural production, industrial production, health, and housing have been achieved to some degree.

Cn. At a time in the distant future, the long-range scientific objective of strengthening the nation's capability to do biochemical research of a fundamental nature has been achieved to some degree.

8. There is continued and on-going interaction between Science Policy for scientific objectives and Science Policy - Planning for non-scientific objectives as described above.

An. At a time in the distant future, the educational infrastructure has reached a new state in which the educational programme for biochemistry and the crash programmes in hydrology and soil have played an important role.

Bn. At time in the distant future, the R & D infrastructure has reached a new state in which the research programmes for biochemistry of the ground flow of water through soils and the nutritive requirements (fertilizers) of soils have played an important role.

9. There is continued and on-going interaction between Education and R & D Infrastructure as described above.

Since a national science policy will also presumably make policy for the social sciences, this workshop may wish to discuss this prospect and its implications for future social science research. The organizational form of such a policy-making body, where it will fit into the national government, the membership and terms of reference of the body, etc. are all important issues. The other important aspect is the role that the social sciences should be playing in formulating and implementing a national science policy. In closing, I hope that this paper has been able to contribute something to the discussion at this workshop and that a stimulus was provided for action in the future on social science research.

A PROPOSAL FOR THE ESTABLISHMENT OF INDIGENOUS CAPACITY TO
CARRY OUT EDUCATIONAL RESEARCH TO SUPPORT CURRICULUM DEVELOP-
MENT AND EXAMINATIONS IN THE KENYAN EDUCATIONAL SYSTEM.

by
Ronald C. Hughes
Kenya Institute of Education

INTRODUCTION

The newspapers, speeches, government documents and institutional papers abound with assertions regarding the nature and importance of educational research. A few powerful research projects have been completed and others are in progress.

However, from within the Ministry of Education it can be seen that research data is not available to assist with practical problems of curriculum development, programme evaluation, selection examinations and the establishments of basic social and psychological knowledge about Kenyan pupils, teachers and schools.

Moreover one is hard pressed to produce a workable plan about the agreed upon required research, in terms of who is going to do it and how. As it is, it appears that a few individuals, usually expatriates, latch on to an important educational research problem of their liking and begin the laborious task of surmounting difficulties of implementation that result from the lack of experience and skill necessary for support of such research projects.

Thus some

Thus some research is getting done but THERE IS NO OBVIOUS PLAN FOR THE DEVELOPMENT OF EXPERIENCES AND SKILLS OF INDIGENOUS KENYAN RESEARCHERS AND SUPPORTIVE PERSONNEL TO ESTABLISH WITHIN THE MINISTRY OF EDUCATION A RESEARCH UNIT CAPABLE OF CARRYING OUT THE PRACTICAL KINDS OF RESEARCH REQUIRED BY EDUCATORS: There is needed therefore:-

1. A brief outline of the overdue and immediately required research.
2. A convincing detailed statement of the very special technical skills and personnel necessary for professional educational research.

3. A program to establish a core of educational research trained technicians,
4. A program to establish a core of professional Kenyan educational researchers,
5. A program to secure temporary, expatriate professional educational researchers,
6. A realistic plan of how and when to effectively phase-out the expatriates, resulting in leaving the Ministry of Education with an indigenous capacity to carry out its own necessary research.

1. RESEARCH REQUIRED

There is no disagreement about the necessity of having educational research data to assist with the development of a system of education particularly suited to Kenya. There is no lack of suggestions for educational research projects, but there may be some disagreement about priorities for the research. In the following section the author of this proposal wishes to outline briefly some of his ideas about the priorities for research within the Ministry of Education. These ideas cover the three broad areas of Selection Examinations, Curriculum Development and Background Information.

SELECTION EXAMINATIONS

It is of obvious national importance that the development of human potential in Kenya proceeds with utmost efficiency. Young people who are selected for higher levels of education and training should in fact be those young people who have the best abilities to benefit from that training and therefore the best abilities to assist in Kenya's progress. Available research data now tends to indicate that the highest scores on nation wide achievement tests are obtained more often by pupils from the cities and towns. This may be simply because of the kinds of questions on the tests. There may be many rural pupils with good abilities who are not selected by these exams. Research projects can be designed to increase the accuracy with which bright pupils from the rural areas are selected with high marks. Thus, research projects can be designed to increase the accuracy with which pupils are selected for higher education, and moreover can ensure that decisions of policy makers are reflected in the selection.

ANALYSIS OF EXAMINATIONS can be carried out to provide hard facts upon which test construction can proceed with improvement.

ITEM BANKS can be established which provide "model" types of questions which with slight but tried revisions are most likely to provide an accurate measure of pupil's achievement. The establishment of this item Bank would require years of continuing research, because it is not uncommon that only a few items are found to be any good after their administration.

APTITUDE and INTELLIGENCE tests could be developed for Kenyan pupils which might assist in the selection process,

SUPPORT FOR CURRICULUM DEVELOPMENT

The following are some suggested stages of curriculum development with a brief notation of the kind of support that could be expected from research and evaluation projects.

A. Diagnosis of Needs

1. Projects to add objectivity to assessment of existing situations and to identify needs.
2. Projects to assess and compare needs as conceived by different sectors of the nation.

B. Formulation of Objectives

1. Projects could be developed to assess the reactions to statements of objectives or to gather and collate such statements.

C. Selection and Organization of Curriculum Content

1. Projects to compare the efficiency of certain content materials would add some certainty to the selection process. These projects could aim especially at determining the appropriateness of materials for the particular pupils and teachers who would use them. In Kenya account would need to be taken of the complex differences existing from place to place.
2. It might be necessary to determine experimentally if certain format or sequences of presenting materials are better than others.

D. Selection and Organization of Pupil Experiences

1. Various teacher and pupil activities will require objective comparison to determine what experiences

are best for what pupils under what conditions.

E. Curriculum Evaluation

1. Obviously curricula must undergo continuous evaluation to promote change when necessary. These evaluation projects must take account of the initial and changing objectives of the curricula. Nation wide studies to determine the overall effects of programs could be considered.

BACKGROUND INFORMATION

A Research Department in the Ministry of Education could join in the slowly progressing process of gathering basic knowledge of the social and psychological aspects particular to the Kenyan school systems. This fundamental information is of utmost importance to Curriculum Developers, Tutors and teachers.

II FUNCTIONS OF A RESEARCH PROJECT IN EDUCATION

Among the many statements about the importance and kinds of Educational Research required in Kenya little can be found concerning Who is available with the necessary expertise to carry out the research. In fact it would appear that the belief is commonly held that anyone active in education is qualified to do research, and this implies that many people believe that there are no special skills, abilities, training or experience necessary to do educational research. It is basic to this proposal that Educational Research does require specialized skills, training and experience that are not commonly part of the expertise of most teachers, tutors or educational administrators. It may assist to understand the necessity of these specialized skill, if a study is made of the specific kinds of tasks and functions required of a research project in education.

The following brief outline attempts to identify many of the functions necessary for the carrying-out of research or evaluation projects, The outline is not exhaustive nor is meant to imply that all of these functions will be a necessary part of all projects. It is intended as a guide-

C. Preparation of the Instrument.

1. Careful consideration of measurement and evaluation principles.
2. Provision for efficiency and accuracy of data collection - consultation with Programmers.
3. Standardization of administration procedures.
4. Production.

D. Preparation for Analysis

1. Computer analysis - provision for card reading, document reading, document reading etc.
 - a. Programms to establish a record of the data.
 - b. Programms for analysis and print-out
2. Manual calculations
 - a. Statistical procedures and formulas.
 - b. Tabulations sheets.

E. Implementation

1. Selection of people to carry out measurement
 - a. Training
 - b. Supervision
2. Arrangements for administration of the measuring instrument.
 - a. Consideration for protocol, and public relations.
 - b. Contact with officials, administrators, teachers, subjects etc.
3. Selection of subjects
 - a. Sampling methods
 - b. Attention to protocol, public relations.
4. Standardization - at all levels of implementation, care must be taken that procedures for collecting data do not influence (unduly) the data itself.

F. Data Collection and Preparation

- a. Recording data - verification
- b. Card punching, document reading etc.

G. Data Analysis

- a. Application of prepared analysis procedures.
- b. Rendition of results
- c. Preparation and application of other analysis procedures as necessary.

H. Interpretation and Reporting

1. Reporting results
2. Drawing conclusions - with due consideration for the limits of statistical analysis, design, sampling and implementation procedures.
3. Relation of results to project objectives
4. Preparation of report at various levels.
 - a. Professional - including details of analysis,
 - b. Semi - professional - omitting details of analysis, emphasizing procedures, findings and implications.
 - c. Lay report - for understanding by the wananchi.
5. Communication of results at opportune times to concerned individuals, other institutions, researchers, decision makers, etc.,

1. PERSONNEL REQUIREMENTS

1. What personnel are required for the project?
 - a. Qualifications necessary
 - b. Functions
2. What will be the time commitment required from each person?
 - a. Will there be allowance for involvement in other project.
 - b. How can assurance be had that continuity of personnel, where necessary, can be realised? (To avoid having people who are unfamiliar with the project trying to carry it on).

III PROGRAM TO TRAIN TECHNICIANS

In order to carry-out the research functions listed previously it will be necessary to have a small support staff trained, experienced and competent to handle data-processing and computer programming tasks. This support staff should probably consist of three or four Kenyans at different levels of training and competency.

PROPOSED POSITIONS

- | | |
|----------------------------|----------------------|
| 1. Computer Programmer | 2. Junior Programmer |
| 3. Trainee Programmer | 4. Data Processar |
| 5. Trainee Data Processor. | |

These positions would correspond to existing positions in the Treasury Computer Department, in regards to salary and recruitment qualifications. However training and promotion would be especially designed for Educational Research functions.

INCENTIVE

In order to retain the services of technicians who have received training and experience in the program it would be advisable to establish opportunities for promotion based on competencies demonstrated on-the-job. That is, if an individual demonstrates that he or she can produce the work required at a higher position, promotion should be considered in spite of the fact that the individual may not possess paper credentials required for initial recruitment to that position.

IV. PROGRAM TO TRAIN PROFESSIONAL EDUCATIONAL RESEARCHERS.

Competent professional researchers can perhaps be obtained from various sources.

1. Individuals with two or three years post-graduate training in educational research who undergo intensive on-the-job training.
2. University graduates in education or social science who undergo further University training on-the-job training.
3. Under graduates and others with limited formal education who undergo lengthy on-the-job, who demonstrate exceptional competencies and who undergo appropriate university training.

PROPOSED POSITIONS

- | | |
|---------------------------------------|-------------------------------|
| 1. Project Leaders | 2. Assistant Project Leaders. |
| 3. Graduate Research Assistants | |
| 4. Undergraduate Research Assistants. | |

The development of the skills of these professionals should probably take place through three major programs:

1. Individually designed programs of training at undergraduate and graduate University levels.
2. On-the-job experiences through carrying-out appropriate research tasks.
3. A close "counterpart" relationship with one or more expatriates, who are well qualified, responsible and willing to pass on their knowledge and skills.

Development of these indigenous competencies would probably take place over period of two to six years depending on individuals' progress. While some Kenyans are attending overseas training in programs especially designed for them, others would be gaining the valuable on-the-job experiences with consultation of expatriates.

V. OVERSEAS TECHNICAL ASSISTANCE

PERSONNEL

Director - It is possible that no indigenous professional with adequate training and experience in all fields of international Development Education, Psychometrics, Cognitive Psychology, Curriculum Development, Research Design, Statistics and Administration will be available to act as Director-Coordinator initially. Therefore, some overseas countries must be approached and asked to provide technical assistance in the form of an individual suitably qualified to act in this capacity. The term of service for this individual will need to range between three and six years, depending upon the progress in university studies and on-the-job experience of various Kenyan counterparts who all will be prospects for the position of Coordinator or Director.

(A) During the last year or two of this person's appointment the Kenyan selected to become Director should have the opportunity to work in a close counterpart relationship with the expatriate.

Measurement and Evaluation Specialist - This individual would be responsible for the construction of measuring instruments, evaluation programs and research design. It would be mandatory that he have at least one suitably qualified Kenyan counterpart working under him. The counterpart would be directly responsible to the Technical Assistant for his daily routine, which in addition to normal work duties, might from time to time include attendance at relevant courses of study. Term of service 3-5 years.

Cognitive Psychology and Child Development - This individual would be responsible for research to establish a body of information re: the Psychological Development of Kenyan Children; Liason with C.D.R.U. and other units involved in child psychology studies; and consultation re: research

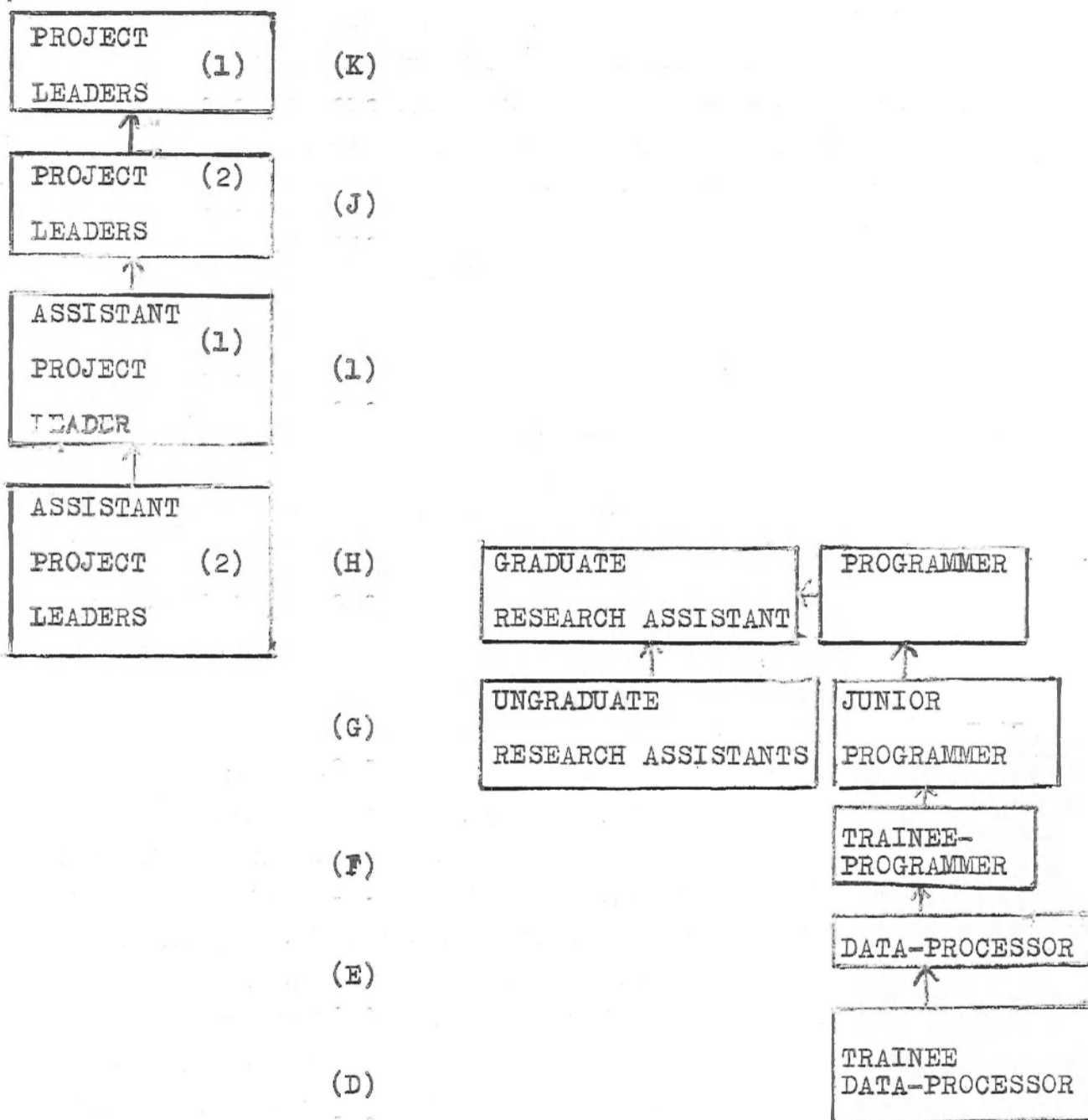
projects relative to cognitive development, guidance, and liason with individuals and departments concerned with guidance functions in the schools. It would be mandatory that he have at least one suitably qualified Kenyan counterpart working under him. Term of service 3-5 years.

Computer Scientist and Programmer - It is unlikely that a Computer Programmer with the wide training and experience necessary to enable him to make use of ICL software programs - the U.D.T., and other computer peripheral units, will be found locally. It may therefore be necessary to secure an expatriot Technical Assistant suitably qualified to handle the above responsibility, to establish a library of commonly used computer programs for educational research, and to supervise the work and training of local counterpart trainee programmers. Term of service 2-3 years.

Overseas Training For Local Professionals

To enable a core of indigenous researchers to eventually independently administer the programs of the Evaluation Unit it must be accepted that both-on-the-job experience as well as higher-academic studies at overseas universities are requisite. Application must be sought from individuals with outstanding academic records in undergraduate programs of education psychology, sociology, computer science, or mathematics (statistics), and/or demonstrated on-the-job competencies. Individualized programs of studies for three or four selected applicants would be designed by the evaluation Unit Coordinator and Staff in consultation with the overseas University designated. Consideration could be given for a preliminary scholarship, subsequent mandatory service to the Evaluation Unit following the overseas study in a capacity commensurate with achievement in the studies; and no contingency that the Evaluation Unit be bound to place the individual in any particular position following the years of study might also be considered.

PROPOSED RESEARCH DEPARTMENT PLAN FOR RESEARCH STAFF DEVELOPMENT



HELP THE KENYA NATIONAL ARCHIVES TO SPEED UP RESEARCH

S.L. Kukubo
Kenya National Archives

To meet one of the challenging research problems in this country, the Kenya National Archives is in the course of evaluating its responsibilities in the context of our country's needs for primary and secondary source material for research purposes and the ultimate utilization of research findings by Government and other users. This new outlook is aimed at helping our country and her neighbour states in creating a national image, strengthening their sense of history, and applying historical awareness or consciousness towards national realization.

In order to meet this challenge, the Kenya National Archives proposes through the Government to call upon and enlist the assistance of the University of East Africa in assessing our country's current use of available, non-technical intellectual resources. This manpower will help in initiating or assisting in the historical analysis and retrieval of archival material; in recommending necessary measures to be taken for full utilization of our indigenous scholarly resources; and in exploring the possibilities of setting up of such intermediate research study centres throughout the country as may be necessary.

Kenya is a country which is competent to perform the above tasks. The University, other institutions and parastatal organizations have members who are highly qualified scholars. Furthermore the various agencies of Government have qualified personnel. In addition, close contact between the Kenya National Archives (Research Warehouse) and the University academic community, who has up-to-date knowledge and links with scholars in numerous similar overseas institutions, can assist in soliciting the advise of foreign scholars to help Kenya in streamlining her Archives. Thus the Government can tap a pool of professional talent with competence in diverse areas of scholarly activities.

I am confident that given ample chance, on relatively short notice, our University and/or Government can assemble experienced professional teams of scholars able to undertake specific or general projects of interest and value to the whole world. Doubtless, the staff called upon is likely to cooperate closely with its counterparts in other overseas institutions facilitating both fieldwork and the follow-up stages of whatever

research and documentation that there is to be done.

To achieve the foregoing it is my wish, provided there is consensus of opinion between the parties affected, that we should ask for the co-operation of the University and other institutions to study closely the following areas which we in the National Archives is to serve the purposes mentioned in the first paragraph.

GOVERNMENT SCHOLAR UTILIZATION SURVEY

The necessity of such a survey is self explanatory. A survey of Kenya's non-technical intellectual resources would be to ascertain, inter alia, the following:

- a. The total resources of the country in terms of scholars with basic academic degrees or their equivalents.
- b. The present use, if any, that is being made of these scholars in education, Government, and private sector.
- c. Government policies for expanding the nation's scholarly community, and the accelerated rate of Government activities in the light of other events.

You will appreciate this survey will be purely a fact finding project geared towards providing Government the opportunity to evaluate its own non-technical intellectual resources, and to compare its experience and policies in advanced education and scholar-utilization with those of her neighbour countries. To be meaningful to Government, it is imperative that analysis, conclusions and recommendations should be provided.

HISTORICAL AND ARCHIVAL PROJECTS

Like many developing nations just emerging from Colonial rule, Kenya lacks serious, objective, and up to-date historical materials. This is a handicap which most severely concerns the Government in the following ways:

- a. in trying to build a new nation and ultimately a national identity from diverse ethnic groups;

- b. in trying to utilize past accumulation of colonial experience in dealing with contemporary problems and formulate possible future policies; and
- c. in trying to present through proper perspective our country to other nations.

Kenya can be proud because it has trained historians and other social scientists but regrettably relatively few of these scholars are available for systematic, well-programmed historical and other research for the following reasons:-

- a. These scholars are placed into service as teachers, administrators or simply laid off.
- b. Our country, to the extent that there is lack of manpower in the National Archives, lacks organized historical records and research bases and facilities in the National Archives.

In order to be of assistance to the country in initiating preparation of serious historical works as well as works in other fields, the Kenya National Archives envisages the following types of projects on the existing documentary resources and secondary oral resources.

1. The main bottleneck is the annotation of official and historical documents by brief explanations of their meaning and significance to the country's development in the various spheres. This needs carried out.

2. The documents we hold in the Kenya National Archives are in various languages and forms: this means that the University staff in the identification of which historical documents to be microfilmed and establishing or augmenting the microfilmed sections of indigenous archives. Although a definite effort is currently being made in the National Archives to identify documents bearing on various ethnic groups, individuals and events, these documents are not adequately indexed for use by interested persons. Such a job as documentation requires highly intelligent and skilled manpower. You will appreciate that a survey as envisaged in A above will no doubt reveal non technical intellectual resources which could easily be utilized to meet these requirements.

In the alternative, Government, other agencies and University can furnish qualified personnel to determine record groups in the National Archives in which research for projects of specific interest would be undertaken.

3. From annual statistics maintained in the National Archives of scholars who have made use of the facilities, it is apparent that the time has come when the preparation of historical or other works for publication from public and private documents, with descriptive explanatory sections and connections, should be undertaken by local scholars with inborn knowledge of local conditions under which some of the events have taken place. This will definitely avoid duplication of research and avoid too technical conclusions being reached.

4. From the beginning of this year the Chief Archivist, Mr. Nathan Fedha, with the help of Mr. Kendall Ward, the Vice-Chairman, Public Archives Advisory Council, has undertaken a new project. They are experimenting on a "living history" project to which all living national figures would contribute. This will be achieved, it is hoped, through comprehensive taped interviews by qualified scholars, and then preserved. In order for this project to be a success the assistance of the intellectual community is imperative.

ASSISTANCE NEEDED

The National Archives feels that the University, particularly the Institute of Development Studies and the Institute of African Studies, could be of assistance in these projects as well as non-academic scholars, public servants and other interested parties. These people would provide advise, to initiate the projects, and train the personnel of the National Archives to pursue these projects in the future should need for such be apparent.

If it were possible, the most valuable assistance which the University and other institutions could render to the Kenya National Archives would be providing trained historians and/or librarians on "harambee" basis to assist the Department in the appraisal, selection and documentation of material transferred to the Archives, in order to speed up and render profitable the process of making such material easily available for research. The sooner this is done the easier and cheaper research will be for scholars!

Secondly it might be profitable to pursue the possibilities of identifying historical material relating to Kenya in other Archives, notably in United Kingdom, United States of America, India, Pakistan, Italy, Germany, neighbouring countries and others which have had dealings with Kenya.

Finally, the idea of running a programme of tape recordings of oral interviews with national figure both past and present is also worth exploring. I am inclined to think that such interviews should include persons who lived in Kenya in the pioneer days as well as recent celebrities. However, I must emphasize that in order for the interviewers to tape conversations, the subjects must be selected in such a manner that it appeals to people who have participated in or observed the important decisions and significant changes that have affected Kenya's history. The tapes would then be transcribed and bound for archival library use. These should be made available to researchers in some way as other archival material.

If we cherish our culture and if we want our future generations to do the same, then I regard oral recording as an important and urgent matter in view of the fact that some of those still living remember the early days of colonial rule. It is important to record any information they have before it is too late. Human beings are "living libraries" and "fire" can easily claim them so planning may prove futile if we wait!

What concerns us in the Archives is not so much in nature of facilities the Department offers to the University, Government or other researchers but rather the need for our University's assistance and closer co-operation in the archival field. Take the following example to illustrate our plight:

No doubt you are all aware of the economic, social, educational, etc., developments which have taken place since independence. Registration of births, deaths, marriages, settlement schemes, Harambee projects etc., have all been manifested on paper and these papers will eventually end in the National Archives.

Who will undertake this enormous task to make the material readily available to researchers? The present manpower in the National Archives cannot possibly do this within the foreseeable future!

That the University of Nairobi is or should be an approved institution for purposes of the Public Archives Act (Cap 19) Laws of Kenya cannot be a subject of discussion here. Our contacts with the University have increased tremendously and we have become more than ever aware of the documentary research already being done and the great interest engendered among the leading academic personalities at the University. The Kenya National Archives would very much appreciate any comments and suggestions on the possibility and feasibility of the University and similar institutions working with and for the Kenya National Archives for the common benefit of our country.

Without the assistance of our local scholars the National Archives will not be able to make the vast amount of knowledge embedded in thousands of documents easily available for research. - Hence this would possibly lead to a tendency for scholars to frequent a known field other than venture into the unknown spheres with the result that duplication of research will be as obvious as it had been in the past!

THE NATIONAL CHRISTIAN COUNCIL OF KENYA:
DISSEMINATION AND UTILIZATION OF RESEARCH FINDINGS

Mr. Kiplagat
National Christian Council of Kenya

INTRODUCTION

For the benefit of those who do not know what NCKK is and what it does let me say a few words about it as a way of introduction. The National Christian Council of Kenya is an organisation of Protestant Independent Churches of Kenya, who have joined together with the aim of serving the whole men and the whole society. The Council is not only concerned with the spiritual needs of man but also the physical needs. The projects carried out by the Council reflect this basic aim. NCKK is involved in adult education through its departments of Youths, Home and Family Life, Church, Industry and Commerce, and the Limuru Conference and Training Centre. In the field of development there are rural training centres, village poly-technical schools, fisheries co-operative, urban development projects and the Mathare Valley project.

CHOICE OF RESEARCH PROJECTS

For the last ten years NCKK has carried out a number of research projects covering a wide range of fields: youth and unemployment; uncontrolled settlement in Nairobi; the control of industry and commerce; and ethnic relations among the churches in Nairobi. How are decisions made on the choice of projects?

A problem may be raised first by a staff member who has been faced with a problem in the course of his work. He presents the problem to this department which either takes a decision and votes or a project may be formulated and presented to the department of Biblical Studies and Research. The project is scrutinized and either approved or rejected. Once approved it goes to the Finance Committee which has the final word of approval. Sometimes an outsider, not necessarily a member of staff, brings a problem to the notice of the appropriate committee and then the process as indicated above is followed.

There is a second approach to the choice or research project which is commonly followed. In case of emergencies such as droughts, famine, mushrooming of temporary dwellings in the urban centre, and unemployment, the Council is often compelled

to give aid to the people affected, like famine relief, water, etc. With the meager resources we cannot continue to provide food, money or shelter. It is at this stage when a research project is formulated and carried out. For example, prior to independence in the early sixties social workers in the community centres came across serious family problems. A sociologist from U.S.A.A. was called to conduct research work into the patterns of spending among Africans to Nairobi.

HOW IS RESEARCH WORK CARRIED OUT?

Working parties are composed of staff members from a specific committee and experts drawn from other organisations. "Who Controls Industry in Kenya Today" was the work of a panel that set for almost a whole year gathering and interpreting data. "After School What?" is a study into the job opportunities for school leavers which was also carried out by a panel. The Kenya Churches Hand Book is the work of a team (Growth of the Churches in Kenya). Also, individuals carry out research work.

WHAT HAPPENS TO THE DATA COLLECTED?

Projects initiated by a department of the Council at least get to the stage of publication - mimeographed. Dissemination is first internal and then to the general public and Ministries concerned. We have had one or two research project reports published in book form.

In most cases, the findings form a basis for decision making and action to solve a particular problem. **The study on "After School What"** resulted in the establishment of the Village Polytechnical Programme. Data on controlled settlement led to a proposal and action on cheap prototype housing and cottage industries.

HOW CAN WE BE HELPED?

We need assistance in formulating better research policy which takes into account the different programmes the Council is involved in and the implications of each programme. For example, the Fisheries Co-operative Project was established in order to provide protein food and financial resources to the Turkana people. The Co-operative has become a successful business.

Fish are sold to Uganda, Ruanda and the Congo. More money has come in but the general level of development of the area is low. Money has not been directed into developing the region, instead it goes into drinking and prostitution. So by solving one problem another one is created. We found in our Mathare Valley Project that by providing simple houses the rents go up.

The staff feels there are many research materials lying about unutilised but one way of destroying the value of research materials is by flooding individuals or organisations with so much mimeographed stuff. If there was an organised body knowledgeable about the activities of various organisations they could select relevant material, predigest or interpret the data and even propose methods of utilisation what would be of great help. What I am really asking for is not a research council but rather dissemination of research information to existing organisations.

RESEARCH FINDINGS, THEIR DISSEMINATION AND
THE KENYAN POLICY-DECISION MAKERS

by

J. Mugo Gachuhi, Institute for Development Studies
University of Nairobi.

The goal of most social research undertakings, whether performed by private agencies, university institutes and departments, individuals, or whomever, is to find new knowledge that would assist in answering various questions which hitherto have not been fully explored or understood. In policy-oriented research, whether in developing or developed countries, the new knowledge is useful in helping policy makers choose the necessary and hopefully the appropriate decisions based on rationally arrived at information as well as empirical evidence.

However, before a decision maker can usefully utilize research findings, such information must be put in the language he will understand. By this it is meant that too often researchers submit the report of their findings in a manner such as to make it useless to the policy maker or implementer. This is so because, in most cases, researchers, by virtue of the fact that they are academically bent, consider any and most of their reports as an academic report, which must meet the rigorous scrutiny of their professional colleagues. Subsequently, they use high-powered trade terms even though they are aware that some of their reports are specifically oriented towards a special group, e.g. the non-academic policy maker. To the policy maker and policy implementer, more often than not, such reports are of little value, and it is not infrequent that similar research requests have been sent to the same or different researchers over and over again though the work has been done previously. The point is that communication between Kenyan researchers and Kenyan policy decision makers is at low ebb; where communication does exist there frequently seems to be a general mistrust which results in disregard of each other's activity, hence the inattention given to most research findings by decision makers. When such a situation occurs, it is not unlikely that the researcher might in the future decline to honour a research request from the policy-decision maker.

Neither of the parties is entirely free of blame. Too often, the decision makers make every effort to avoid contact

with field researchers, especially on matters concerning policy. This problem is so serious that some researchers have felt compelled to become their own "salesmen," knocking at the doors of unresponsive decision makers. When these "salesmen" finally are allowed to have a few minutes with the policy implementers, it is then that they are told that besides their reports being unintelligible they are also too long and too scientifically detailed, to the extent that they are unusable. Unless the researcher can make his report intelligible, short, and not too scientific, communication between the researcher and policy implementer is lost.

The Kenyan African bureaucracy, whether by choice or design, seems to be uninterested in social science research as a tool for improving policy decisions. In fact, one can go as far as to state that the communication gap that I alluded to above is not so much caused by the researchers themselves, especially local researchers, as it is caused by some bureaucrats. Why a highly placed African decision policy maker is afraid to meet and discuss areas of research interest with a Kenyan researcher is a phenomenon difficult to explain. It seems that there is some unexplained "fear" of research findings, viz, that some decision makers are unable to understand and interpret research reports even though the studies may be quite relevant to their work. Even in the cases where such reports are simplified, some decision makers when and if they look into the reports do not care to study them carefully. Of course it could be possible that some of the top policy makers who have the necessary academic qualifications to understand and appreciate such reports are inaccessible to the research worker so that the researcher is forced to deal with people who have never heard of research, and therefore they do not pass on the reports to their superiors since they themselves do not understand it.

The Kenya bureaucrats, perhaps for reasons known only to themselves, pass on the responsibility of attending research seminars, "brain-busting" discussions, interpreting research findings etc., to expatriate advisors. While one would not advocate intellectual provincialism, it is embarrassing to observe that very few of our nationals, whether from the University or from without, attend seminars. Too often one sees in discussion seminars, especially within the University but also without, only expatriate advisers and technicians attending. This occurs even in seminar discussions vitally

important in a given policy area. The Kenyan researcher cannot but wonder who in fact influences decisions and therefore questions what his role as a contributor to policy formulation and national development is, if he never shares a platform with his countrymen who apparently make the decisions (hopefully not totally dependent on advice of his expatriate advisors).

Continued absence of contact with policy decision makers makes local researchers feel as non-participants in a drama that involves their work. For example, recommendations made to decision makers by technical advisors are sometimes entirely based on a local researcher's findings without due credit being given. Consequently, there are times the researcher might rebel by doing research that is irrelevant to the nation's immediate needs. While participating in seminars, some of these advisors, though in a constrained manner, seem to interpret various aspects of government policy. While a case is not being made against the expatriate contributions to policy formulation and implementation, a case is being made that it is necessary for most of our Kenyan policy-decision makers and implementers to make a greater effort to participate in symposiums and seminars where research findings are presented or research proposals formulated. During those very rare times when our Kenyan bureaucrats have attended such a colloquium, their contributions have been negligible, leaving one sometimes to wonder if they see any usefulness in research activities, or the methods used to partially meet the nationally felt need for research dissemination.

One is then persuaded to assume that there is an intellectual bias or intellectual under-development on the part of some policy makers who would allow their non-citizen advisors to make statements on their behalf, whether explicit or implicit. Some of these pronouncements have far reaching implications and consequences in the policy of the country. On the other hand, there seems to be an over-developed intellectual superiority complex on the part of the academic researchers as well as academic types in general. Most of these local people have been trained in the home countries of our advisors and some of their ideas do not seem to be based on local experience, but rather on typologies which are based on the countries in which they were trained. Thus, some of their pronouncements differ very little from those of the

advisors. Some of these local braintrusts, too often dismiss the bureaucrat as an ignorant though highly placed and glorified Karani. Labelling each other or indeed dismissing each other as having nothing to contribute to our general and specific development aspects is something that, at worst, is a waste of national brain power and, at best, it is an act of national irresponsibility. In the end, it is the Kenyans who lose.

While truly the academic researchers and academicians in general have responsibility to their nation and international colleagues, e.g. in terms of publications and other high-powered intellectual dialogues, it should not come to pass that the scholars' international responsibility should come before national responsibility, which is first and foremost to use their intellectual and technical skills in collaboration with the decision policy makers in solving some of our most pressing problems. Nor should we support the practice of employing foreign experts to come to Kenya and give their opinions on issues when their only claim to expertise is through hastily done research, which was not carried out in Kenya but some other developing country whose ideology, ecology, colonial experience and culture has no similarity to ours. Possibly their research findings, even if conducted in Kenya, turn out to be no different from a study which may have been researched several years back. It is sad that because we do not have a mechanism through which we can disseminate research findings, often well-documented research reports collect dust and cobwebs in somebody's unused archive. For another person to do research or request it to be done in the same area without first knowing what happened to the previous study or why it was never used would amount to violation of the principles of the development and uses of knowledge. For the decision maker to hire experts from abroad, using most of our limited resources (whether the resources are in the form of technical aid or not), while ignoring and rendering redundant the national expertise that sometimes lies dormant within the country is also an act of mismanagement of our national resources.

Too often the country is flooded with experts. Most of these are apparently engaged in occupations such as technical advisors and draw handsome wages while having a "honeymoon." In the end, the impact they leave in the country is zero.

There are few developing countries that can afford to misallocate their very limited resources, e.g. skills, and yet continue to import those very commodities.

How do we then ensure that the decision maker and the research worker get together to work closely for the welfare of a nation? It would seem, first, that an inventory of available resources should be made. Secondly, an order of research priority should be worked out by the Kenya policy decision maker and the Kenyan research worker. Only after they have taken stock of their need, their ability to meet these needs using locally available resources, e.g. talents, funds, etc, should they then venture beyond our gates to recruit the needed and qualified personnel. In addition, recruitment of foreign technicians and advisors should be done jointly by the policy maker and any local expert in the area concerned. This should be especially so in the area of social and economic policy for it would ensure that only useful skills are brought into the country.

Thus, it is important that for the welfare of our nation a forum be established where top Kenyan policy makers and Kenyan researchers as well as University teaching specialists can get together to exchange views on a common problem. This in my view would be the best form of cross-fertilization. It is believed that such meetings would go a long way not only in the formulation and implementation of enlightened policies, but also in selecting relevant research areas for investigation with a goal in mind. The end product should be an improved working relationship between the research worker and the policy-decision maker so as to solve the mutual problem that confronts them and their nation. While neither the researchers nor the policy-decision makers have the time for coffee shop intellectualization, their marriage would go a long way in eliminating some of the mistrusts that presently exist between them.

In the final consideration of co-ordination between research worker and the policy-decision maker for the purpose of usefully and fully utilizing research findings, a national research body would have to be created which would be empowered to act as a mechanism through which research priorities, research dissemination, and research utilization could be channeled. The members of the policy-making body of such a national council should certainly

include representatives from Government, University, voluntary bodies and private firms in addition to others. Operational costs for such body should be met by both Government and University; and research funds both from within the country and from donor agencies should be made available so that individual researchers could apply for grants. The feasibility of such a national research council could be considered by the participants in this Workshop.

In conclusion, I would re-echo my earlier point that it seems odd that the research worker and the policy-decision maker rather than working together on mutual problems are generally working at cross-purpose. This occurs because of a general ignorance of each other's activities and areas in which they could complement each other. In addition to their co-operating on mutual and common problems such as referred to above, it is perhaps not too radical to state that the time has finally come when the whole idea of secondment was put into effect. It is believed that if University based people were to be seconded to Government for a year or so, they would gain the practical experiences, e.g. problems of planning and policy formulation, of Government bureaucrats. Similarly, Government workers seconded to the University would get rejuvenated in problems of research as well as become up-to-date on the latest knowledge in areas of their speciality. It would also give Government workers the opportunity to critically look at what they have been doing from a distance and thus hopefully improve their perspective for when they return their positions. The hoped for outcome of such an arrangement would be a greater equality between researcher and policy-decision maker and a greater understanding of each others difficulties when they meet again to discuss problems of development. Development decisions and techniques, policies, and implementation are a national task and not a private villa of one segment of the national manpower. Subsequently, problems of development should be tackled by any and all available manpower if their intricacies are to be understood, appreciated, and constraints eliminated.

DISCUSSION FOLLOWING SCHLIE'S PAPER
(N. Roling presented Schlie's paper in the latter's absence.)

Chairman: A. Molnos.

ROLING: I suggest that the functions of ensuring that useful knowledge is disseminated in this society be given to a body which is different from the National Research Council we have talked about. The responsibility for disseminating useful information could be vested in the University, in a department which is on equal footing with the teaching departments. After all, dissemination is a type of teaching. The University already has extra-mural functions: the Institute of Adult Studies and research institutes to some extent perform a disseminating function. However, it seems that the real function of research brokerage or go-between is not performed as it should - witness the many complaints we have had. I think, therefore, that a body responsible for disseminating useful research findings should be properly set up. The best minds in the University should be involved in this public function organized in a high powered, dissemination research - brokerage institution, probably coupled to an effective evaluation unit.

OLUMIDE: It is unfortunate that we in Africa have inherited from the West the concept that the main purpose of mass media is nothing but entertainment. We should think seriously about what the mass media should be doing for us. The only things in the newspapers are those which center on the three S's: sensationalism, sports, and sex.

MBITU: Professors and Government people need to take time out to talk to reporters. This should occur not only on a hot story. A quick lecture on how certain things are done and explaining a certain issue would assist the media in being able to convey messages to the public.

MUTISO: In actual fact, there is quite a bit of the brokerage function already being performed within Government and outside it by a lot of ex-advisors. This kind of consultant who is setting up in Nairobi is in the market for selling research.

MUNGAI: I detect ivory towerism. There are two aspects:
(a) communicating knowledge to the educated person, and
(b) communicating knowledge to the people.
You are suggesting using television as a channel of communication. I do not have television. You are suggesting television and newspapers - my mother has not TV - my father cannot read.

We know exactly the goal and end of this Workshop. We need a Research Council of Kenya.

There is a tendency for the University to dominate the whole thing.

PARTICIPANT: We have had much discussion. Speakers have made

recommendations and talked about difficulties regarding research and dissemination. I should like to make a formal proposal for this meeting to vote on:

- a) That this Workshop recommends the establishment of a National Research Council.
- b) That a steering committee be formed to devise an appropriate constitution - national research policy, etc.
- c) That the committee comprises five members, including the following:

- 1 representative from Office of the President;
- 1 from Ministry of Finance and Planning;
- 2 from University of Nairobi and
- 1 from Institute of Development Studies
who would act as Chairman.

MBITHI: I would ask for written proposals. These will be discussed tomorrow morning.

· DISCUSSION FOLLOWING PAPERS by:
Kukubo, Kiplagat, Hughes, and Gachuhi.

Chairman: A Molnos

CHAIRMAN: I urge all of you to fix discussion on dissemination aspects which are fully coincidental with the National Archives problems. I think positive suggestions should be made on how to help the Archives situation and the problems of the other speakers.

GICHAGA: In spite of the problems of the Archives, there is a need for a data centre. The centre which would classify and list the materials could very well be the National Archives even though the data was not located in the archives.

TIMM: Research is much easier to carry out than dissemination. We are not prepared enough and we do not prepare our students enough for dissemination. The man concerned with dissemination does not get academic status or administrative status as does an academician doing research and writing papers. We have to change in this respect our whole thinking and put dissemination on the same level as research. We have to ask ourselves, do people really look for information from research findings? We assume that they are. We have to do some research into this aspect. If people do not want to have information, we have to find out what will motivate them to accept information from researchers. Is this the task of politicians or the University?

What type of research is to be disseminated in the first place? We need a priority list. There is no sense in talking of trying to disseminate all research findings since many reports can only be understood by colleagues and can only be used by colleagues. Information should not be disseminated to people who do not care for it.

An agreement should be reached on what level dissemination should take place and on certain subjects that may be easier to disseminate than others. We should begin experiments in this.

If dissemination is the main problem then we need research brokers in Ministries to take research findings to the policy makers. But, I do not think it is enough just to re-write reports of researchers and then distribute them to policy makers. The brokers have to attend all policy-making meetings and bring their information to the policy makers in such meetings. If this is not possible, I do not see any place for research brokers or hope for better results.

Major research institutes like the Institute for Development Studies should start thinking about the possibility of stopping their whole research programme for a year or half a year and put all researchers on the question of dissemination in order to find out what can be done in putting all the material to use. So far it has never been tried, not in Europe or in Africa. But, if there is enough material, research institutes should put themselves to work to find out the best way to bring this material to the people,

We in the University are in a position to require researchers, especially post-graduate students, to have included in their paper a section on strategy, that is how to put their research findings into proper use. This could be introduced as a formal requirement for research these accepted by the University.

There is no question over whether or not we need a data bank so we have to agree what kind of data we include. Dated used by statisticians or data needed by researchers? There must be agreement between statisticians and researchers on what type of data should be collected and what priority they have.

If research planning and dissemination are as important as this meeting thinks, then we have to give all people connected with such the status in this society, the University and the Ministries that they need. There is no way around it if we do not put them in an appropriate prestigious status, all our work will be without success because this society is working in certain social prestige categories.

MUTISO: Something is beginning to emerge. I think clearly the last three papers bring out the problem of non-applied research. In terms of a national research council, a recommendation should be made that they make specific funds available in areas such as oral tradition and archival collection. We will need to make it clear that this council is going to allocate money to employ researchers to complete the necessary body of work needed for the long-run.

KATETA: I support the idea of a data bank. It would be wise to think of how we can identify research findings of commercial value to the country. I suggest setting up a bureau of standards, possibly attached to the Ministry of Works for material testing, etc.

WACHIIRA: The hours of the National Archives are the same as ordinary office hours so working people find it impossible to use the Archives. I do not know if the authorities concerned have thought of opening the Archives over the weekend, like for a few hours on Saturday afternoon. I propose some thought be given to this.

OUMA: The papers pose important problems which we are scratching on the surface. Yesterday the picture painted by some Government officials and some researchers was very gloomy, especially regarding reluctance on the part of certain people to give information.

Apparently our University friends agree that they want a National Council. The point is, what is this National Council going to be for? For the country? The majority of researchers are foreigners. When they go, should we close up? Are there resources to develop this? Are we sure we are establishing the proper foundation for this?

On the question of dissemination, there are a lot of

conflicting interests. What information should be given to a foreign researcher? What about the local researcher? They complain they do not get co-operation. Can we ask the Workshop to go into this kind of problem? What kind of information do you disseminate to the public? Government policy is so sensitive. What do we do? Tell the public the truth of our findings or do what will please the regime?

CHAIRMAN: You speak as if anybody wanting to do research can come this country. There is a research clearance procedure and no foreigner is allowed to do any research if he has not received clearance from the Office of the President.

SITATI: The intention of setting up a kind of National Council is to place the country in a situation where we know who is coming and his motive. Nowadays we get about five minutes to interview a person wishing to conduct research. I think a uniform organization in charge of the whole process would assist in sorting out these problems. But it all depends on the final Government decision on such a Council.

I would like to know if Mr. Hughes can clarify whether some of these things have at any stage been put to people in authority in that particular Ministry and what their reaction has been. I would not be a party to exposing what is happening in a particular Ministry.

HUGHES: The views in the paper are mine only. There are definitely people talking within the Ministry on a policy level about the same problems. No decisions have been made. I have not yet had the opportunity to present a complete proposal so I do not know what kind of response I will get from the Ministry. I presented the information here in hope of obtaining reaction and response from people who know it differently than I do, before I make a formal presentation to the Ministry. I am not aware of any negative reaction within the Ministry of Education to this sort of thing.

MBITHI: I must note that we are here now as a social unit, bringing different ideas and discussing these ideas as a Workshop. We are falling back into the problem of classified materials. We want to participate without any intimidation and to bring out the problems as we see them as individuals. Recommendations will be discussed tomorrow.

GATUNGO: Mr. Hughes's paper clearly indicated a challenge to Kenyan students to do the best they can to get interested in various aspects of research work. Usually foreign researchers are here for two years; therefore, it would be very beneficial if local people work hand in hand with the people from abroad. Then the local people can continue the work after the foreigner departs.

I very much support a National Council which would establish research priorities. Kiplagat gave us a very interesting idea of what the NCCK is doing in identifying needed areas of research and then acting on such. That is what we need.

MWILU: I wonder whether discussion in a large body such as this can possibly give us a direct picture and a sense of direction as to what we want to end up with. Couldn't we discuss these numerous recommendations in smaller groups and the report back to a plenary session?

CHAIRMAN: The basic problem is that the organisers of the Workshop did not expect so many people to be present. We did contemplate breaking up into smaller groups but it was too late to do this. The decision that this morning's discussion be limited to dissemination was discussed in the Workshop Committee as a compromise to solve the problem you raised. It is impossible to tackle so many problems with such a number of participants so we decided to limit the problems.

GACHUHI: Whether we create a national council or continue with existing institutions, I propose that our Government and our own institutions organise a fund to support local research. If we are dependent on foreign funds for research we are controlled by the donor.

It is time the whole idea of secondment was seriously considered: not just from the University to Government but from Government to industry and from University to industry. This should be considered in terms of dissemination, that is a means through which we could exchange views.

CHAIRMAN: Dissemination and communication is the problem of how two parties who are both interested in doing something for the country can be brought together for better utilisation of the resources.

LUKALO: We do not have any clearly established local norms. If you intend to pass on the information which is going to change the lives of people, then you must know exactly what you are doing and why you are doing it. Researchers should begin looking into the local situation, that is identifying local norms and systems to modify the local situation. For example, if the curriculum of schools is changed is this of benefit to the children? I think if we had some kind of machinery where these outside researchers could come and be told "This is what is expected of you" and "We want access to your findings" then we would have outside researchers who in the end would actually benefit the country.

It seems that everyone is saying a national council should be set up but no one is saying who should set it up. In the beginning the University should have their own council and if the government decides that a bigger council is necessary then there is a basis for it.

KIARIE: I want to speak from the churches' point of view. There are living social institutions of dissemination which are not being taken note of by Workshop participants. There are 300 church centres where every week we have occasion to meet a million people. Even Government does not have this opportunity of meeting so many people regularly.

In addition, religious broadcasts reach numerous people. I propose that researchers, local and expatriate, should make contact with people as ordinary citizens. Listen to the National Service. Have you heard what the wananchi are being fed?

GICHAGA: I am not sure that we do not need a Ministry of National Guidance.

MUTISO: We should recall researchers are also people who are teaching full time. We do not have much free time to drive 600 miles for interviewing and drive 600 miles back. But this is how most of us who are doing the research end up.

MUKANDA: I suggest, if such a research council is established there should be control of research results. They should be published in Kenya and in the cheapest way, if they are considered worthy of reaching a wide audience.

KAMAU: It has been suggested that we look at the users. There should be regular channels from the users, from the local people upwards. We have talked about defining problems and who is to define, but local people also are fully qualified to know their own problems and deal with them. Channels should be available and well publicised so that individuals know if they have problem they can get assistance from a particular place or person. It should be a circular communication system.

INUKAI: It took Japan 50 years to replace expatriates. We need more and more expatriate people in this country before we can replace them. Therefore, it is definitely important to have some sort of agreement whereby locals are working with the expatriates, otherwise even fifty years may not be enough to replace expatriates with local expertise. We do not have any information at this Workshop about how existing National Research Councils function or how research clearance is carried out in other countries. It would be quite useful for the next Workshop to have one or two papers on how other developing countries or developed countries have dealt with these issues.

PARTICIPANT: Is Government going to get a mandate from the council to implement what the council thinks is a good idea? Can we afford to do this kind of thing, e.g. curriculum development?

KUKUBO: The main problem of the local people is that the channel of communication from them to the intellectuals is blocked. The suggestion that the system should work both ways might not work unless the intellectuals reduce their status to that of the local people.

AGRICULTURAL RESEARCH IN KENYA*

Lax Bhandari, Ministry of Finance and Planning and
William Wapakala, Ministry of Agriculture**

INTRODUCTION

The past sixty years or so have seen a great deal of useful agricultural research in Kenya. However, until mid-1950s its scope insofar as crops were concerned was restricted largely to "crop introduction" and its attention directed chiefly towards finding solutions for the relatively small, though economically important, commercial sector. In animal research, on the other hand, emphasis was on finding control measures against the more common animal diseases of the area. Political independence has understandably brought about a change in research philosophy. Emphasis now is on the identification of a wide range of constraints inhibiting rapid growth in agricultural productivity and on translation of research results into action programmes. This calls for a well-formulated agricultural research policy and its integration with the overall development policy as economic growth depends on, among other things, a continuing flow of new technology which can only come from relevant research. Production, dissemination, and utilization of research results demand men, money, and materials as well as inter-disciplinary planning and management. All these, in turn, call for a dynamic role on the part of Government.

PRODUCTION RESEARCH

Given underlying basic sciences, the following may be treated as prerequisites for technological change:

- (a) Basic, applied, and adaptive research,
- (b) An effective system of providing inputs, and
- (c) Economic cost/price incentives.

*Owing to difficulties of overlap, the words "research" and "innovation" have been used interchangeably in this paper.

**The authors are employees of the Government of Kenya. All views, errors and omissions in the paper are, however, their personal responsibility. The present paper has drawn considerably on another paper, "A Review of Technological Innovations in Kenyan Agriculture" presented by Lax Bhandari to the 1969 Annual Conference of East African Agricultural Economics Society. The authors would like to express their gratitude to all research workers footnoted in Bhandari's paper.

Emphasis in Kenya, as in other developing countries, is on applied, problem-oriented rather than speculative research, but the authorities do appreciate that in the absence of basic research, i.e. any activity directed towards the increase of scientific knowledge or the discovery of new fields of investigations without any specific practical objective, it is not possible to achieve major technological breakthroughs. This appreciation on the part of the authorities has encouraged the production of rainfall probability or reliability maps which form the basis of planning agricultural production and studies on cropping practices, soil physics, water requirements of crops, nutrient-supplying capacity of soils, and nutrient requirements of the more important food and export crops.

In addition to basic research treated in the preceding paragraph, a good deal of work continues on disease-preventive measures such as quarantining plant varieties and destruction of varieties found to carry diseases, nematodes, and other pests which can have devastating effects unless they are intercepted promptly. Some of the diseases that have successfully been intercepted in recent years include Blue Mould of tobacco, bacterial diseases of maize, tobacco, tomatoes, potatoes, sugar-cane, nematodes of rice and bananas, and viruses of most of the food and cash crops.

In the field of general agronomy too, Kenya has made some contribution to the body of knowledge in Africa. The following may be listed as the more important contributions of research to agricultural productivity and output.

- (a) Development of cultivation systems for seasonally water-logged soils such as Vleis and Black Cotton.
- (b) The determination of ASN and CAN forms of nitrogenous fertilizers as more suitable for coffee than other forms through a study of natural soil nitrogen and the nitrogen nutrition of Arabica coffee.
- (c) The development of Foliar Analysis Technique in Arabica coffee as a means of defining mineral nutrition status.
- (d) The introduction of organic mulching which is one of the most valuable practices introduced in Kenyan coffee and pineapple industries in terms of yield and quality crop production.

- (e) Development of a potato variety "Kenya Akiba" resistant to one of the major diseases of potatoes i.e. Potato blight (Phytophthora infestans), and also showing a modest level of resistance to Wilt (Pseudomonas solanacearum).

It has been stated earlier that in the pre-Independence days, particularly before World II, applied research i.e. any activity directed towards the increase of scientific knowledge with a specific practical aim in view, was concentrated mainly on "crop introduction". It is noteworthy in this connection that every major crop was introduced before 1914 except pyrethrum which was introduced around 1930, and Annatto (bixa) and macadamia nuts (both of which had been in the country for many years as decoratives or backyard crops) which were brought into commercial cultivation in the late 1950s and early 1960s. Crop introductory work suffered between the two Wars because of lack of funds, inadequacy of research facilities, and misallocation of limited resources to innumerable repeated trials. Most crops had already been tested in the early years of the century and those that were found unsuitable notable deficiency up until the mid-1950s was that crop introductions were not followed up by breeding and agronomy trials.

It would appear that for most crops, both food and export, breeding work did not receive much attention until the mid-1950s. Work on maize breeding began in 1955 and the first synthetic variety (Kitale II) was released in 1961. The classical hybrids came in 1964. Livestock breeding is relatively very recent and work on establishment of grass legume pastures began only a few years ago. The year 1960/61 was most notable for isolation of cultivators and distribution of seed in the coffee industry. One of the few exceptions to the generalization that breeding work began in earnest relatively recently would appear to be the sugar industry. The Sugar Section, which has now been developed into a National Research Station, began its work in 1948 with varietal selection and agronomic trials on a co-operative basis on commercial estates and from this work Co331 and Co421 varieties of cane were identified as being suitable for general cultivation in the Nyanza Sugar Belt. These varieties are still the bases of the sugar industry in Nyanza

and at the Coast.

Despite the relatively late start of breeding and agronomic research, Kenya has achieved major breakthroughs in the maize, wheat, sugar-cane, tea and, lately, beef industries.

The current emphasis in maize breeding is on improvement of composite populations or varieties with large genetic variability because further improvements in the classical hybrids are limited: the pure and homozygous lines, from which they are developed, do not offer sufficient scope for selection. The current work is expected to result in yield increases of 7% annual compounds as compared with 3% annual single between 1955-65.

In the wheat industry, until very recently emphasis was placed on breeding for rust resistance and higher yields. Current work is also geared to producing high-baking quality wheats and finding out agronomic factors limiting wheat yields, while still emphasizing breeding for stem rust resistance. A major breakthrough can be expected if the high-yielding dwarf wheats, which respond to high levels of fertilizer and are relatively insensitive to day length, and which have made major contributions to farm productivity in Mexico, India, and Pakistan, can be made stem rust-resistant.

The National Sugar Research Station at Kibos is currently concentrating on cultural, drainage, trash disposal, irrigation, and pathology trials.

The Kenyan tea industry is today recognised universally for its technological advancements, the most important of which are:

- (a) The development of a large-scale viable smallholder tea operation,
- (b) The change-over from unselected tea seedlings to improved clonal stocks, and
- (c) The modernised approach to processing as exemplified by such processes as trough withering and controlled fermentation.

So far, Artificial Insemination remains the most notable innovation in the Kenyan livestock industry. The National A.I. Service, started in 1953, is one of the largest semen stations in the world, producing more than 500,000 doses per annum. The beef industry will most certainly undergo a further major break-through over the next four or five years as the "feedlot operation" approach is adopted commercially. The UNDP/FAO research project at Lanet has proved successful and already

some large-scale farmers are investing in feedlot operations. And yet another major breakthrough can come through wider use of grass/legume pastures in the mixed farming areas of the country; it is now being investigated by the Pasture Research team at Kitale. Grass/legume pastures are a cheaper source of nitrogen than pastures based on grasses alone because the productivity of the latter is limited by a shortage of nitrogen. A related area of research is the establishment of leys under a cereal crop. If this practice is adopted more widely it will reduce establishment costs and avoid the apparently unproductive period between harvesting the last arable crop and sowing the ley.

In the field of range management research, Kenya has embarked, with the help of FAO/UNDP, on a major programme aimed at providing data for the rational development of Kenya's range lands in order to realise the maximum productivity consistent with national interests. The ongoing programme is intended to bring out information on:

- (a) The actual and potential productivity of these areas,
- (b) Ways of increasing productivity, and
- (c) The animal or combination of animals which can most effectively use the forage produced.

It is hoped that utilization of the results from current investigations would enable the country to increase the number of animals in the national herd and thus help maintain a steady increase in meat exports while meeting internal demand for beef.

Political independence has had its thrust on agricultural research, as on other walks of life, and has brought about a growing awareness of the potential contribution of research to agricultural productivity. This is reflected in the enormous increase in planned development expenditure on research in the seven years of independence.

PUBLIC SECTOR DEVELOPMENT EXPENDITURE ON
AGRICULTURAL RESEARCH

<u>Development Plan</u>	<u>£</u>
1964-70	294.5
1966-70	332.0
1970-74	3,200.0

1. Table 8.8 - "Development Expenditure on Agricultural Research," Development Plan, 1970-74, Government Printer, Republic of Kenya.

The figures above exclude capital expenditure of East African Community Research Stations (EAAFRO and EAVRO), of industry-financed stations such as the Coffee and Tea Research Stations, the University, Wellcome Institute for Foot and Mouth Disease, research and consultant firms like I.L.A.C.O. (Galole Irrigation Scheme), and bookers (Mumias Sugar Project). Much of the increased capital expenditure on research is accounted for by an expansion and modernisation of existing crop and veterinary research facilities and establishment of new stations for animal husbandry, irrigation, and range management research. The Ministry of Agriculture today has under its direct or indirect control nearly 22 research establishments, excluding those listed in this paragraph.

From a study of the allocation of development expenditure on agricultural research in the current Development Plan, it would appear that future research efforts will continue to be concentrated on "the traditionally important agricultural products." These are coffee, sugar cane, cereal crops, and beef and dairy animals. The growing realisation of the potential of horticultural crops both as a means of diversification and of earning foreign exchange is reflected in increased research expenditure in the current Plan as compared with the previous one. However, there is no indication of any significant change either in research policy or direction. Breeding and control of pests and disease will in all probability account for over 75% of the total research expenditure of 3.2 million over the Plan period.

The Plan acknowledges that in the past the economic aspects of agriculture have not had sufficient attention, and notes that during the Plan period farm management and market research will be given greater emphasis. Despite these intentions, farm management has received little additional attention except for the "feedlot operations" project described above and whatever market research that has taken place has been sporadic, ill-planned, unimaginative and foreign-oriented. Two of the most notable deficiencies in the agricultural research programme relate to soil surveys and fertilizer responses of the various crops. As noted earlier, some useful soil studies have been undertaken in the past but, as yet, no comprehensive survey giving the physical, chemical and biological properties of Kenyan soils in relation to agricultural potential and appropriate fertilizer use has been undertaken. The Government is,

however, conscious of these deficiencies and is in the process of soliciting external assistance to carry out a comprehensive soil survey. Agricultural research is inherently a long drawn out process so that completion of a soil survey of high potential areas may take at least five years. Until then, therefore, important technical and economic decisions may continue to be taken intuitively.

DISSEMINATION OF RESEARCH RESULTS

Notwithstanding the remarks in the concluding paragraphs of the previous section, it would be fair to state that in comparison with many other Black African countries Kenya has made noteworthy progress in the field of agricultural research. It would, however, be ill-fated to take this compliment as an excuse for complacency.

As Garner notes, "the central intellectual problem of research is to master the physical environment, to harness the sinews of science and to exploit it for social and economic development on an inter-disciplinary bases."² This requires planning for a modernised structure of advanced research. In so far as it has been confined largely to the provision of the inputs requested by the research agencies. This is reflected in the virtually total absence of inter-disciplinary and inter-agency discussions or even "paper" contact. The economist/planners, scientists in Government research establishments, commodity boards, and University research personnel all work in virtual isolation of one another. This may be due partly to excessive work-loads of individuals in their respective fields plus more largely to a general aversion to appreciation of an inter-disciplinary approach and, more importantly still, to the absence of an overall co-ordinating authority.

This is particularly noteworthy because of Kenya's leading position in the field of agricultural research among Black African countries. Agriculturally less advanced African countries like Malawi, Congo (Brazzaville), Mali, and Madagascar have now had Agricultural Research Councils or their equivalents

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Robert Gardiner, Executive Secretary, United Nation Economic Commission for Africa, in forward to Agricultural Research in Tropical Africa, St. George Clerona Cooper, 1970, East African Publishing House.

for more than five years. In Kenya, the actual establishment of a National Scientific and Research Council is still in discussion stages although the principle was accepted as long ago as January, 1964. This prolonged delay is more reflective of the inter-disciplinary conflict for direction and control of research than common-place bureaucratic delays. For some-time some people high up in the Ministry of Agriculture, which employs the largest number of scientific personnel in the country, feared the loss of control of their most significant team of workers if there were one encompassing scientific body. They accordingly advocated an independent Agricultural Research Council. Indeed, an Agricultural Research Advisory Council composed of invited foreign and prominent local agricultural scientists did meet in September, 1969. The meeting was brief, the new background papers were extremely sketchy in their contents, and the participation was confined mainly to agricultural scientists. Consequently, the meeting achieved little other than some superfluous prestige for the Ministry of Agriculture at considerable financial cost. This is reflected in the fact that its Report has had little bearing on subsequent research policy.

As has been repeatedly emphasised in this paper, economic and social development is essentially an integrated process. It involves economic, technological, and institutional improvements which can only come about from a planned approach. Therefore, what is needed is a body which will bring under one frame the various institutes which work under diverse disciplinary, administrative, and technical authorities. The functions of such a body should be to identify and set research priorities, assess research projects, evaluate research results, and advise on methods of use. Such bodies have demonstrated their usefulness in India, the United Arab Republic, and Sudan. There is no reason why an inter-disciplinary approach should not succeed in Kenya.

Another major handicap to wider and deeper dissemination of research results is the inadequacy of the extension service, and inadequate co-ordination between it and the research services. The extension staff in closest, though limited, contact with the farmers are Junior Agricultural Assistants. Their formal education is limited to primary school certificate level and their agricultural training to a course at a Farmers' Training Centre. On top of the poor education and

insufficient training is the lack of any equipment other than an occasional bicycle. Consequently, even the most conscientious of the JAA's spend their working hours just walking back and forth between their homesteads and a farm or two. The Agricultural Assistants and Animal Health Assistants at the locational level are a little brighter primary school leavers with certificates in agriculture and animal health, so far mainly from the Embu Institute and AHITI respectively. Their duties include the maintenance of records and simple demonstrations. The more experienced of them are selected to teach at the Farmers' Training Centres. Neither JAA's nor AA's are sufficiently educated and trained to either advise farmers or communicate their problems to higher extension officers, let alone research workers. In fact, some of the more progressive farmers are more knowledgeable than the JAA's and AA's. The consequence of the thinness of numbers, poor education, and insufficient training of the extension workers at the lower level is that technically advanced innovations penetrate down to farm level only with difficulty and delay. Equally there is no feed back of practical problems to research workers who themselves are unhappy about their terms and conditions of service but continue the pursuits of their "pet" projects, for the most part, divorced from actual problems of the farm system and its particular constraints.

The Assistant Agricultural Officers and Agricultural Officers, while capable of transmitting knowledge, are also plagued by the problems of insufficient transport resources, heavy general administrative work, and frequent transfers.

It is safe to assert from the foregoing that the potential recipient of technological innovations has all too often been forgotten. Plus, the Ministry of Agriculture has adopted the attitude of benign paternalism in its relationships to the farmers, thus robbing them of the capability of responding in new and more complex ways to available technologically advanced innovations.

It is all too often stated that Kenyan farmers are averse to innovations. Understandably, farmers' willingness to adopt an innovation is conditioned by their physical and financial capacities. Thus, they will need not only a demonstration of the new technique but may also wish the promoter to underwrite the risk of potential losses. This aspect has been over-looked perhaps not so much because of unawareness on the part of planners and technicians, but because of financial and manpower constraints

and lack of institutional and intellectual systems of communication between them on the hand and the extension personnel on the other. However, there are examples to suggest that given proper leadership Kenyan farmers are prepared to experiment at their own risk. According to Jon Moris, coffee farmers in Embu took 9 years to reach 70% adoption level while macadamia nuts took a little over one year to reach 60-70% adoption level.³

Most modern inputs and techniques are expensive and the majority of the Kenyan farming community do not as yet have the purchasing power to adopt innovations, even if they were convinced of the innovations' economic and financial attractiveness. A good case in point is the use of fertilizers, the consumption of which has been rising fairly rapidly in the past ten years or so. However, the growth in fertilizer consumption is accounted for mainly by large-scale cereal, coffee, and tea growers and to a lesser extent by established smallholders in the coffee and tea industries. Government subsidizes heavily the consumption of super-phosphates and nitrogenous fertilizers, but unfortunately the majority of smallholders have so far benefited little from the subsidy because of weaknesses in the distribution machinery. The Working Party appointed by the Minister for Finance and Planning⁴ has made certain radical recommendations in this regard and hopefully smallholders will be able to take advantage of the fertilizer subsidy system in the future.

One last bottleneck to rapid adoption of technological innovation is perhaps the inadequacy of knowledge on the part of planners and policy makers of the motivations and socio-economic values of farmers. In recent years rural sociology has attracted considerable attention of University researchers, but it would appear that much of their work is gathering dust either in files or in academic journals. This may be accounted for by the general overemphasis on economics in the planning machinery, unenlightened development administration and

³ Jon Moris "Administration Penetration as a Tool for Development Analysis: A Structural Interpretation of Agricultural Administration in Kenya," paper presented at the Conference on Comparative Administration, Arusha, Tanzania, 25-28, 1971.

⁴ Working Party on Agricultural Inputs, 1971, Ministry of Finance and Economic Planning.

inadequate personnel resources. The establishment of a Special Rural Development Programme unit in the Ministry of Finance and Economic Planning is a welcome beginning but it still lacks the capacity to assess rural sociological problems and depends largely on the Institute of Development Studies in this field. Unfortunately, the physical separation of the two units makes it difficult for IDS rural sociologists to influence day-to-day policy decisions. The authors strongly recommend the full-time employment of a few competent rural sociologists by both the Ministry of Finance and Planning and Ministry of Agriculture.

UTILIZATION OF RESEARCH RESULTS

Evaluation of research in Kenya has been almost non-existent. This is perhaps due to the inherent difficulties of assessing the contribution of one of the many resources to increased productivity (by which, in this paper, is meant increase in output derived from a composite grouping of resources) and non-availability of competent evaluation personnel. Behind increases in productivity lie all the dynamic facts of life: technical progress and institutional patterns of society. Technology is but one resource and continuous disturbances and slow adjustments are essential features of technical change. Techniques of production change because of improving technical knowledge and changing factor costs. Both are continuous processes in time and together give rise to a new stream of techniques. For this reason it is extremely difficult to attribute a given rise in productivity, at a given point in time, to a given technique.

It is, however, clear from such indicators as increases in per-hectare yields of the most important food and export crops, increases in total Gross Farm Revenue as well as revenue from selected crop and other agricultural activities, and increases in the consumption of some modern inputs over the past ten years or so that Kenyan agriculture has responded fairly reasonably to technological innovations. The rate of adoption of research will increase further with improvements in the area discussed in the preceding section. It is hoped that the proposed Agricultural Research Council will devise some ways and means of assessing the contributions of research to agricultural production.

DISCUSSION FOLLOWING W. WAPAKALA'S AND L. BHANDARI'S
PAPER

Chairman: G. Ngenyi

PARTICIPANT: You have talked about crop and animal research in your Ministry, but you have not mentioned anything about Farm Mechanization and related problems of minimum cultivation. What research are you carrying out in these fields?

WAPAKALA: The Ministry of Agriculture does not undertake research in the field of farm mechanization. We do, however, have a unit within our Land and Farm Management Division. This Unit, based at Nakuru, carries out studies on tractor operations and costs, and evaluates new machinery for use under local conditions. Although it undertakes some investigations on operational costs, etc., these cannot be classified as research. Work of this nature throughout East Africa is co-ordinated through EAAARO's Machinery Co-ordinating Unit.

BHANDARI: Regarding research in minimum cultivation, much work has been done in Tanzania and we in Kenya, drawing on the Tanzanian results, have started some work with wheat at the Plant Breeding Station, Njoro.

WAPAKALA: After listening to a number of people talk about research, I have gained the impression that many of them do not know what is to be considered as research. We in Agriculture recognize the importance of having some form of machinery that will be able to direct research, call it a national research council. Speaking from a practical viewpoint, I am convinced that the establishment of a research council would give research workers in the country a feeling of recognition and also help direct their efforts.

PARTICIPANT: How does the Ministry of Agriculture work out research priorities for various parts of the country? Secondly, how does this affect the East African Community?

WAPAKALA: Choosing priorities for research is a most difficult problem, in the absence of a national research council. However, the practice today is that our research workers in the various fields e.g. wheat, maize, horticulture, coffee, put forward proposals as to what they want to investigate. The proposals are presented to a research advisory committee, composed of people from the Ministry and from the farming community. The committee thoroughly discusses the proposals making suggestions for improvement etc. Besides research advisory committees, we have field/research co-ordinating committees. These committees bring together research workers and extension staff, the purpose being that the research workers report recent developments on various crops and the field extension staff bring forward what they consider major production problems and also where necessary inform the research workers on the usefulness of the recommended practices.

At the East African Community level we have a rather complicated machinery for arriving at research priorities. Community research workers put forward research proposals. These are presented to what are termed as specialist committees (there are many of these) composed of partner states research workers, University staff, Community researchers and very often participants from Central Africa, Ethiopia and even the United Kingdom. The Committees discuss the proposals and at the end make recommendations as to what action should be taken. These recommendations are in turn reviewed by the National Chief Research Officers for Agriculture and concerned Community Department Heads, who make further recommendations which are presented to the Agricultural or Animal Industry Research Co-ordinating Committee which makes final recommendations to the East African Natural Resources Research Council. And that is not the end of things. The Council in turn makes a report to the Social and Research Council of Ministers for policy decisions and where finances are involved the report is further submitted to Finance Council of Ministers.

BHANDARI: In addition to what Mr. Wapakala has said, the problem lies not so much in establishing priorities within Ministries or within areas of inquiry, but between the diverse types. Here we are behind. The planner has very little understanding of the use of research, and such affects the Ministry of Agriculture as well as others. We brought out in our paper that research must be carried out for the development of this country. Our paper points out that all research is evaluated in terms of costs and prices and alternative choices for expenditure.

GITUNGO: We all think that the national council is the answer but I am wondering whether the Ministry of Agriculture and others will be included. I question whether we may be having other committees dealing with research and evaluation in various fields, and thus a number of small committees or councils will be functioning. This would cause problems in communicating findings to other countries and to the public.

MURIITHI: I think you have been unfair in your statements on animal research. For instance, you suggest that research in animal breeding is recent. To my knowledge research in animal production in this country has been going on for many years.

WAPAKALA: As I remarked in the course of introducing our paper, we concentrated our consideration of agricultural research on crop production. However on the question of animal breeding I am sure that I am right when I state that until the programme now being implemented at the National Animal Husbandry Research Station, Naivasha, was launched the work that existed was not organized and as such its impact could not be felt. Many farmers have individually carried out selection etc. but we cannot consider this as research.

CHEGE: I would like to suggest that apparently the Ministry is doing little in finding markets for horticultural produce. There are several horticultural products which can be sold abroad but you find individuals in Kenya finding markets on their own and the Ministry not even following-up of these. Some individuals later find they can not even meet the demand generated and yet the Ministry seems to do nothing about it. One wonders why an individual can establish such outlets and the Ministry does not. Also there is the issue of machinery. In a country like Uganda, they have attempted to design and produce their own tractors. I should like to urge the Ministry of Agriculture to be more active in such fields as marketing (local and international) and in intermediate technology.

WAPAKALA: You have made two points - one on marketing of agricultural produce and second development of tractors suitable for small farmers. We in the Ministry are aware of the importance of finding markets for our horticultural produce and for this purpose the Government established a statutory board, the Horticultural Crops Development Authority, which together with organizations like the Horticultural Crops Union and Kenya Horticultural Exporters promote export of our horticultural produce. Regarding the development of a tractor as in the case Uganda, you have rightly indicated that this is being done by Makerere University and not the Ministry of Agriculture. This would mean that you should have directed your question to your fellow colleagues in I.D.S. and other departments of the University. Indeed yours is an Institute for Development and I should have thought that you would be looking into some of these matters rather than asking us.

SCHINDLER: There is one aspect which I think has been neglected. It is not easy to bring forth new ideas and to convince the farmer in the field of the results of these research findings. It entails education. But, little is being done on agricultural education. Who should study the best methods of disseminating agricultural information? Is there anything your Ministry is doing in this educational aspect or are other Ministries responsible for this?

WAPAKALA: We have some arrangements for training farmers to appreciate new techniques but we do not have a method of evaluating the effectiveness of the system of training that we are using. The training we have involves farmers going to attend courses in farm crop and animal management at a Farmers Training Centre (there are over 25 of these centres in the country).

SHAH: We have neglected to look at water development in our discussion of research. A major problem in this field is whether we should provide individual connections or communal water supply. Research on this could make a major contribution to Kenyan development.

If we are going to establish a body, it should not be a National Research Council but a type of committee. I am

afraid that we would get less from a Research Council. But, if it is inevitable that a Council be established, it should not be formed at this time, rather a committee should look into the research carried out for the development of the country.

OKANA: As we know Kenya is an agricultural country and therefore everything should be done to emphasise agricultural education in this country. At one time it was decided to offer agriculture as a subject at many secondary schools, but this has now been done away with in a number of schools, What are your Ministry's views on this decision to do away with the teaching of agriculture in secondary schools?

WAPAKALA: I think you know better than I do that the responsibility of teaching agriculture at the pre-secondary level rests with the Ministry of Education and we only come in after people leave school. Since we are not responsible for deciding on what should be taught at school, I cannot see how you expect me to tell you about the work which could be done by the Ministry of Education.

TOWARDS A NATIONAL RESEARCH COUNCIL
POLICY AND COMPOSITION

G.C.M. Mutiso
University of Nairobi

BACKGROUND

The purpose of this paper is to make a case for the organization of a National Research Council, which would be responsible partly for production (finding researchers) and implementation in addition to dissemination of all research findings, applied and basic. It would embrace all social science research. Discussion herein will not centre only on social science.

One is impressed by the fact that in most countries there are mechanisms by which the thrust of research production, dissemination, and implementation are controlled, usually by informal non-state agencies. In fact, for the greater part of Western experience, since research was not formally tied to demands of the State, it took place outside the State machinery concerned. Researchers were heeded only when their findings threatened the very existence of the social order and the State. Such a situation led to the Gallileo's having problems.

With the acceptance of the welfare state and its collorary-planning, researchers of all types, but especially social scientists, acquired a role within the state which they never had before. Now their findings were to be part of the basic rationalization of State policy. In this situation the State could employ researchers in its bureaucracy and control them as other bureaucrats of the State were controlled, for the Arcau imperii. Of course, there were situations where the State could not employ all the researchers it needed so it co-opted them either by differential rewards or setting up funds for their research. However, one should note that the funding of research by the State is very recent phenomenon globally. It has led to serious problems, especially in areas of basic (non-applied) research. Indeed, universally this is the area where most problems in controlling research arise. Basic research funding needs seem only to obey one rule - that you must have crazy researchers wanting to work!

In general the ex-colonial countries are in a very peculiar situation as far as funding of research is concerned. There exists informal policy which allows funding of research to come from outside agencies and governments. This in essence means that the countries accept not only the research priorities of these agencies and governments but also the theoretical and methodological parameters of the funding outfit and its researchers. This situation is not ameliorated when local researchers, made in the image of the funding agency, are the ones conducting research.

What are the political uses of research in a country like Kenya? One could say that in agreement with the set goals of Kenya, research must help in the creation of the Kenya State and in so doing help in generating new knowledge. In short, research must fulfil the policy research needs of the State and provide basic information about a new society which should not a priori be assumed to be like any other historical society.

To date, research in Kenya has been disorganized. Agencies and governments from outside have pushed for programmes which are supposed to make such and such a contribution to development and have their agents to do the research and to sell the programmes. Locals have similarly wanted to do some research and have looked for funds from outside. Where their research needs have not coincided with the priorities set up by the outside agencies, areas of research have suffered. To give an example, it is clear that songs are socially and politically important in Kenya as commentaries on the socio-political situation as well as transmitters of values. Yet the foreign foundations and governments who during the past 10 years have been interested in funding only development projects have ignored this area. We Kenyas have also accepted their priorities. It is indeed telling that the University of Nairobi does not, as yet, have a school of Music and Drama! Other examples are in energy, technology, communication infrastructures, content of school curriculums, etc. Policy research has been defined too narrowly and we have acquiesced.

Control over research has been recognized by the Kenya State as an area worth moving into; hence, we have the Office of the President issuing clearance on research. Yet the thrust of this seems to be oriented only towards the methodology of research, although it is true that there are areas of research

which have been closed to foreigners. In my opinion however, there are still many of them coming here to do studies very dubious from a national point of view.) What are the political requirements for future research in Kenya? I enumerate the goals of research as:

- (a) It should generate data for solving specific policy problems;
- (b) It should be nationalist if we are serious about nation-building and (by implication) nationals should have the last say;
- (c) It should look for alternative futures for the country (hence fulfilling the need for basic research); and
- (d) It should help researchers to work in areas of research where those who accept other societies as terminal models have not concerned themselves.

NATIONAL RESEARCH COUNCIL

Towards these goals creation of a National Research Council is an urgent political issue. It should have the following basic functions:

- (a) The National Research Council would clear all research;
- (b) Control all external funding of research;
- (c) Isolate new areas of needed research;
- (d) Act as administrative clearing house for non-in-house Government research;
- (e) Administer locally raised research funds; and
- (f) Disseminate research information (both Governmental and other).

The National Research Council should be composed of the following members so as to fulfil its two roles: control and academic evaluation of research.

- (a) Chairman. Part-time. To be appointed by the President and the Chancellor of the University of Nairobi. To function as Chairman of the Council which would be the research policy making body and to be appointed for the period decided upon by the President.

- (b) Executive Secretary. Full time. Appointed to be the administrative officer of the Council. He should be a doctorate level social scientist with broad inter-disciplinary sympathies and capable of evaluating the academic as well as political implications of research since the work of evaluating research and funding criteria would be done by him.
- (c) Staff of 20 initially. Full time. These would be recruited to do the necessary work of running an office of this type. The majority should be people who are able to evaluate specific discipline areas. Provision ought to be made to guarantee their careers.
- (d) Council Members.
 - (i) One representative of the Vice-Chancellor of the University of Nairobi and its Constituent College.
 - (ii) Representatives (one each) of the various teaching Faculties of the University of Nairobi and its Constituent College.
 - (iii) One representative of the National Christian Council of Kenya.
 - (iv) One representative of the private sector.
 - (v) Two representatives of the Financial and Planning components of Government.
 - (vi) One representative of Kenya National Union of Teachers.
 - (vii) One representative of the East African Academy of Sciences.

All would serve for periods of not less than FIVE YEARS so as to obtain continuity and expertise within the organization.

Since the purpose of the Council is partly political (in controlling research for national ends), it is important that all members and staff be nationals. It is even more crucial that the Council be set up as an independent agency with veto powers over other bodies as far as seeking and administering external funds for research and researcher is concerned. It is also important that the Council be protected from the exigencies of the political arena and the network of advisers,

both of which have interfered with research in the past. Since the Council would need to function and possibly overrule many agencies, perhaps it can only be set up like the Civil Service Commission responsible only to the President.

What I want to reiterate, in conclusion, is that there is a myth current in Nairobi that research is neutral politically. This is perpetuated not only by donor agencies and their representatives and researchers but is acquiesced to by most of the Kenyans who make decisions about what type of research is to be consumed either by the State or by private individuals. I am convinced that this myth works against our national interests in that it guarantees research in priority areas which do not fit in with Kenyan priorities and serve to perpetuate an intellectual neo-imperialism. Only when we break its boundaries will we make research more relevant to the overall demands of our emergent Kenya society.

Finally a word on academic freedom - a concept which has been used to argue that the State should not have anything to say about research priorities. I think this criticism is baseless. If one is in a national university, clearly one has accepted the State's role in intellectual life. The issue, then, is just what are the limits of State intervention. As long as the State requires utilization of manpower to help in problem areas, I would argue that the local advocates of unlimited academic freedom miss the point just as much as those outside the academic community who argue that all academics should join the civil service. The only operationally meaningful way is to set up a Research Council manned mainly by local academics to determine what research policy is going to be. This is the essence of the proposal. We have the competence in our nationals. Let us use it.

DISCUSSION FOLLOWING DR. MUTISO'S PAPER

Chairman: G. Ngenyi

OUMA: Could you clarify a few points on page two, the second paragraph. In what areas would you request foreign agencies and governments to carry out research? Would they tolerate control by the Research Council? You propose that a National Research Council be composed of a Chairman appointed by the President and a staff of 20, most of them from the University. Is this not extensive over-representation by the University? And, in the last paragraph page five, I think you have misunderstood and emotionally defined the concept "academic freedom".

MUTISO: As clearly spelled out on page 2, the National Research Council is not going to define the individual needs of Ministerial research. Ministries will be represented by the Kenyans in the National Council. On what basis they are to be represented will have to be decided here is just a way of stimulating a discussion of the matter. I would like to make a case for not allocating slots in the National Research Council in terms of representing bodies. If indeed we Kenyans cannot get the point that we can have national representatives on the Council looking after Kenyan interests, I do not see what else remains for us to discuss. Also, I would like to say that we have to discuss the form of the proposed Council in this room. If we are serious about research for Kenya let us discuss it. Yet, I insist that it is only Kenyans who will ultimately decide.

MOLNOS: It has been said several times that it is very difficult in Kenya to get research grants and also to draw up priorities for research. As I can see, there is money available and there are certain areas that money can reasonably be invested for purposes of development. It is true some money will have to be wasted in finding out the priority areas. All researchers might support the recommendation that development topics should be given to priority. Priorities for research and money to be allocated for research should be for the interest of the Nation and the Nation should decide. This Council will have to consider problems of development and also provide reliable information to policy makers.

SITATI: I think we need to reconsider what Dr. Mutiso said about a Research Council financing the way there may be no money forthcoming for any research at all. We have research sections in the Ministries. Does he suggest that these are to be placed under the Council? Also, it has been suggested that all research should be under the Council. Does that mean this particular National Council would be in charge of all research projects and control all research being carried out in Kenya?

I would suggest that in establishing a research coordinating body attention be given to a specific kind of decision making body: that is one in which representatives of particular fields of expertise discuss research proposals in their area of specialization.

MWOK-HANDA: In our discussion of preventing overlap of research, I feel that the whole world is connected. We must keep in contact with current research in the entire world so we do not duplicate studies. This should form part of a research council's responsibilities.

PARTICIPANT: From my point of view, the National Christian of Kenya should be represented on this council we are suggesting. NCKK is an international body which deals with human research. We should also have representatives from Government, University, and the commercial world. The research council should direct papers on relevant research to those organizations which are concerned with a particular field.

COOPER: I would like Dr. Mutiso to clarify why on page 3 he used IF and ONLY.

MUTISO: I did not suggest IF and did not suggest ONLY. I think I feel that a National Research Council is meant to do something which we are trying to think of whether useful or not. I do not have to suggest, I was asked to do this or discussion paper. It will be left for the next Workshop or somebody to think about alternatives and try to work out the details of such.

MUCHIRI: I do not entirely agree with the views expressed in Dr. Mutiso's paper. The University is a national University, similar to any Ministry in Government. The University contains the best brain researchers in the country. I am disappointed that in a gathering like this, containing several University people, that we critically looked at what bottlenecks might arise if a Research Council were established. We must be realistic about certain aspects.

CHOLLAR: I would like to ask a question concerning Dr. Mutiso's proposals for Council members. If we should have representatives from the Kenya National Union of Teachers, then why not have representatives from COTU? He recommends that the University have 9 representatives while all other organizations will have a total of 5, this means domination by the University.

MUTISO: The Chairman should be a political appointee and the rest of the members are not all from the University. Furthermore, the University people are also citizens and they could be appointed as such to represent and utilize their expertise.

MUNYASIA: I have been very impressed by Dr. Mutiso's paper. He has taken the trouble to reach a decision on the composition of a Research Council. The Council is an issue which has been taken lightly here and some concrete conclusion must be reached before we close the Workshop.

If there is a need for the Council, should the Government continue to finance other units in the Ministries and if so after this Council is formed will it be financed

by Government and be able to finance other institutions. I feel that if a Council is established, the small units in the Ministries should be stopped.

BHANDARI: I would like to make it clear that I am participating as an individual, not as a representative of Government. I would like to tell you ladies and gentlemen, the Ministry of Agriculture alone employs about 6,000 research officers and this is the Ministry which employs the majority of researchers.

You are going ahead with the question of the representatives of Government on your suggested Research Council. You are speaking without the backing of knowledge and experience and I am afraid this is a useless exercise. The idea of a national research body is not new. It was in the Development Plan and Government has been discussing its scope and working on the details for many months.

Dr. Mutiso's paper is one designed to make clear his view of the scope of a National Research Council. There is considerable research going on in many institutions and this can not be replaced as suggested by certain speakers. This research body can not be an executive body since a great deal has already been done in this country and with the accumulation of many years of experience we should not eliminate the various organizations which have accumulated many years of experience.

ACHOLA: Dr. Mutiso mentioned that someone who will be in charge of the Research Council should be a political appointee. I do not see the necessity for this. If there is a national body, the essential point is that the work is carried out. I would recommend that we have a Committee instead of the Council composed of representatives from various sectors.

PARTICIPANT: There appears to be general agreement on the need for a body to co-ordinate research. I would like to recommend very strongly that this Workshop select a committee to work out the details.

- (a) What sort of body should be set up, e.g. should it have executive powers?
- (b) Should it be appointed by Government or should it be a private body? And so forth. Once these kinds of things are determined, I think it is necessary to have a working committee to establish the functions of the body.

I feel that having a body with executive powers will solve a lot of problems, for example, in Government and private sectors. We need to recommend Government departments should have a voice in what they are to do.

I would also strongly suggest that a committee be formed to investigate what research has been carried out.

GICHAGA: There is a great need for establishing research on water development as a top priority in research. I support the proposal that a committee be appointed to work out details and alternative solutions and then to submit these for discussion.

VICKERS: One of the most valuable assets of our country is human resources. The importance of the 60 voluntary agencies should not be discounted when considering a body for dissemination of information. And on the proposed Council, the voluntary agencies possibly through the Kenya National Council of Social Services should be given a voice to ensure their co-operation and active participation.

There needs to be a research broker who really is familiar with the activities of each of the voluntary organizations as well as commerce and the various departments of the Ministries. It would then be possible for this resource person to direct certain papers on relevant research to those departments or organizations who are particularly interested in certain fields. This would also provide a single person who could be the focus for ensuring an integrated approach to a certain problem rather than a multi-attack approach, which leads to conflicting ideas and advise that causes great confusion, thus complicating the problem it is supposed to help.

On the dissemination of any material, it is important just to decide "what" and to "whom", since certain results only need to be channeled to certain levels. Having decided this, it is then important to use the expertise of those who really know how to disseminate information in the most effective way. Experts in publicity and public relations should advise on packaging and disseminating results. Then it should be up to the practitioner in the field to utilize these results.

CLOSING DISCUSSION

Chairman: Mr. D. Macharia,
Institute of Adult Studies

CHAIRMAN: This morning we will summarize what has been done in the last two days. We will go through what the committee thought were the main findings and suggestions of the Workshop. Afterwards, participants may address the points. (See Findings and Suggestions of the Workshop page 171 - which incorporates the changes agreed upon by participants after Dr. Mbithi's original presentation)

GHAI: I suggest that there might be some provision to appoint one or two persons who will work through the details of the suggestions made and bring them forward in a finished form for the next Workshop or some other form. The foundations, agencies and others might indicate support for this appointment to be carried out over the next three or four months.

(The Workshop agreed to this proposal. By secret ballot the following persons were chosen to serve on a Steering Committee:

Dr. Mbithi	Mr. Kiplagat	Mr. Gitata
Mr. Wapakala	Dr. Gachuhi	Dr. Roling

NELSON: This flow of information chart is a synthesis of some of the ideas offered by participants during the conference, and a framework on which to base further discussion. (See chart on page 169.)

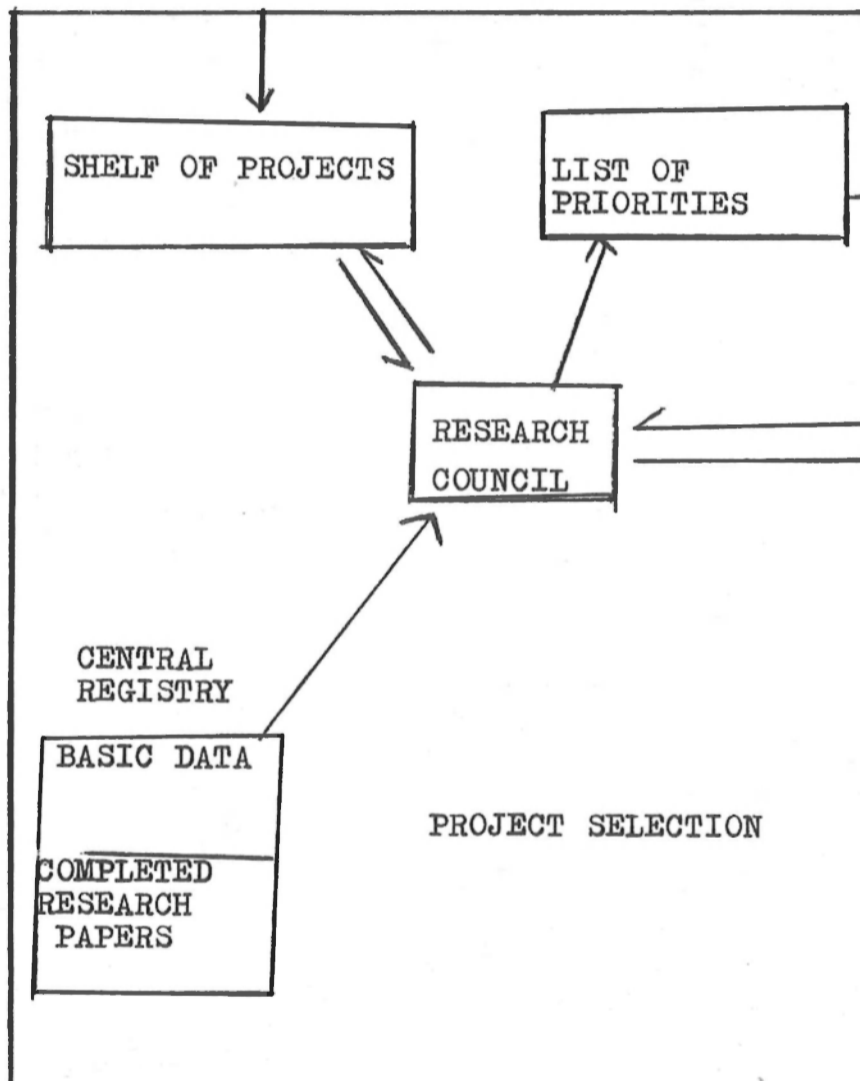
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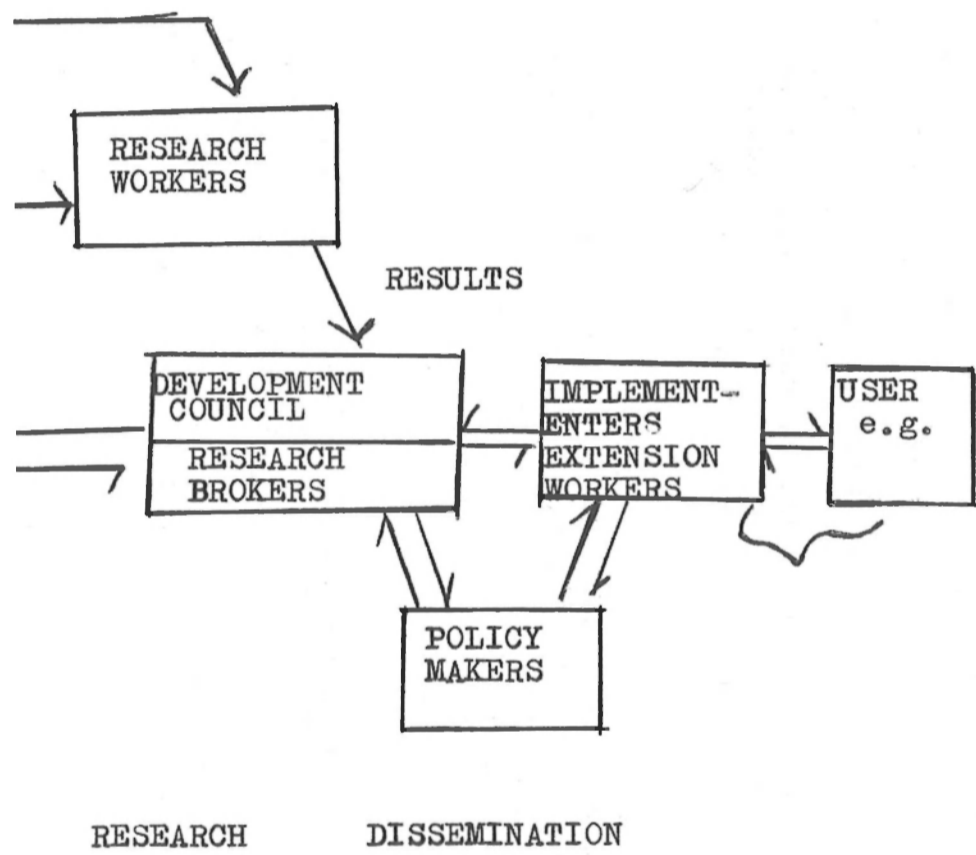
Shelf of Projects: This would include suggestions thrown up by previous research, and problems arising from work at the field level. It would be useful for those contemplating research, and for those policy makers with problems requiring investigation.

Central Registry of Basic Data and Completed Research Papers: This would be a central library where all Research Papers were kept, and would include a data bank so that anyone interested could not only find out easily what data was available, but could use it for further analysis. This would help to reduce duplication.

Research Council: This would be separate from, but working closely with a Development Council. Using the shelf of projects and an evaluation of the likely pay off of each project in social terms, the Research Council would decide on a list of priorities. They would work with the Development Council in preparing proposals for the Shelf of Projects.

List of Priorities: This would be available to research workers for selection of research projects. There would, no doubt, be more compulsion for those working in government research posts to accept the priorities offered. For those with non-government finance it would be an indication of the national needs.





Development Council: This would work with the Research Council on the dissemination of research results. Research Brokers would work with the Council in their various fields ensuring that research results reached those policy makers who needed them, and they would also ensure that results were prepared in a form that the non-specialist user would comprehend.

Extension: The flow between the Implementer, e.g. the Extension Worker (in Agriculture), and the User e.g. the farmer, does not appear to be a dissemination problem belonging to a Research or Development Council. There is already a large Extension Service in Agriculture working to solve this.

ASCROFT: So far we have been talking as if the question is whether a body should be created rather than taking its creation for granted. Yet in the background research for this Workshop, opinions were polled and most people replied favourably to the formation of a council. What was not established is the form, nature, structure and powers that such an organisation should have.

The research that we undertook with the participation of most of the researchers engaged in PDU, showed that most believe that the University is the body that is largely producing research and that the body largely responsible for utilisation is Government. This is probably the reason why there has been factionalism at this conference between the big two - University and Government. There have been status problems also: lack of dialogue between the two factions.

Dissemination falls between these two stools. A most fruitful kind of work can be done in the process of collecting information for dissemination. We can pinpoint those areas where there has been overproduction and underproduction; and we can also see those research findings which have been implemented and those which have not been implemented. Focus on dissemination that is going to come into being since dissemination provides a link between production and implementation.

The highest human value is self-control. I like to think that I am in charge of my own behaviour, other than being manipulated by others. By the same token, the degree of a nation's self-control is also the degree to which it has freedom. By creating an organisation without self-control we are in great danger of creating a monster that is likely to consume us.

I suggest organizing a body to promote our own self-interests as well as the interests of Kenya - a self-controlling body. The Medical Association is such. Doctors belong to it. They don't represent Government or the University. One is there because he is a doctor and all the people in the association are medical practitioners. I am calling for an organisation made up of people who have a common interest: an interest in the production, dissemination, and utilisation of research. That is what is common to all of us. I am recommending an association composed of people interested in research of professional research workers to form the National Research Council.

SUGGESTED RECOMMENDATIONS AND MAJOR CONCLUSIONS AND
FINDINGS REACHED BY THE WORKSHOP

Drafted by Workshop Committee
Presented by P.M. Mbithi.

As pointed out at several recent conferences and by various Government officials and individuals concerned with development programmes, research in Kenya is characterized by a lack of communication and co-ordination between various bodies. This results in:

- (a) research duplication and overlap by different research organizations working in the same field,
- (b) very poor dissemination of research findings at a level and frequency which would be useful to those who could use the results e.g. policy makers and practitioners in the field, and
- (c) lack of public awareness of various findings and programmes.

In response to this problem a Committee on Research Production, Dissemination and Utilization was formed from staff members of the University of Nairobi. The Committee scheduled this workshop.

The points which were discussed and form the basis for recommendations are:-

1. What is the existing and probable future mechanism for identifying and articulating our research needs, bottlenecks and research priorities? Is there a need for a co-ordinating, administrative body such as a National Research Council?
2. What are the best techniques for co-ordinating and integrating our varied research efforts? What are the best ways of efficiently utilizing our research resources, such as available manpower and expertise? How can we accelerate the localization of research resources and at what cost?

3. What is the role of social science research in planning policy formulation, teaching and adult education?
4. What are the best structures and processes for disseminating research so as to reach our population and aid in alleviating ignorance and poverty? Are there other alternatives to the use of scientific journals, complicated jargon, writing long academic reports etc?

This workshop, realising that we are recommending very many functions and activities, recommend that there be some provision to appoint one or two persons who will work through the details of the suggestions made and bring them forward in a finished form for the next Workshop or in some other form. This stock taking Committee will include the following:
Dr. P.M. Mbithi, Dr. N.G. Roling, Mr. M.Wapakala, Mr. Sitati, Mr. Kiplagat and Dr. Gachuhi.

We recommend that the Steering Committee explore the matter of financial support for this Committee's activities with the relevant foundations.

SPECIFIC PROBLEMS AND SUGGESTIONS RAISED BY THE WORKSHOP
WERE CODED INTO THE FOLLOWING CATEGORIES

1. Research Brokerage
2. Improvement of Documentation and Establishment of a Registry and Data Bank.
3. Channels of Communication (establishment and improvement)
4. Identification of Target Groups (Horizontal and Vertical)
5. Increasing Consultation and Interaction
6. Production and Utilization of Research
7. National Research Council
(arguments for, against and suggestions on structure)

1. BROKERAGE/MIDDLEMEN

Definition: - Translating and packaging research results for practitioners, selection and use of proper channels, and feedback towards policy making.

- Problems:
- Presently too much research and little dissemination.
 - Dissemination through existing channels tends to be to those who need it least.
 - Researchers create barriers by using difficult language and presenting findings only in academic journals.
 - No credit to researchers for disseminating to local people.
 - Research conclusions seldom in a final form for implementation.

SUGGESTIONS FOR IMPROVEMENT

- Establish machinery and procedures to act as go-between, brokers of research.
- The teaching of research methods should include methods of dissemination.
- All researchers should devote more time and concentrate on dissemination (alternative to first suggestion)
- IAS should disseminate and adapt research findings through their adult education classes.
- Use other media in addition to existing channels e.g. church, teachers and voluntary organizations.
- List relevant institute people and their interests so that they can be sent relevant materials only (clearing house)
- Provide rewards and raise status of disseminators.
- Encouragement, support and credit be given for dissemination.
- Brokers should participate in policy making.

2. IMPROVEMENT OF DOCUMENTATION AND ESTABLISHMENT OF A REGISTRY AND DATA BANK.

Definition: Material collection, classification, sorting, cataloguing and storage,

- Problems: No system for identifying ongoing and completed research and available materials.
- Data exportation.
 - Present archives not equipped for data banking, information retrieval, and dissemination.

- Role of archives not understood, frustrated by lack of staff, funds, and ability to retrieve from abroad.

SUGGESTIONS FOR IMPROVEMENTS

- Support research programme to introduce systems to improve data banking retrieval etc. in National Archives.
- Establish liaison with other developing countries to learn of methods and results of their pilot Development Projects.
- Request Kenyan diplomats to assist in returning exported archival materials.
- Establishing a Central Registry which would also store data and research documents (Archives should explore possibility for expanding its functions.)

3. CHANNELS

Definition: - Methods of transporting scientific information to practitioners and users.

- Problems:
- Popular media do not carry relevant and useful information to people who need it.
 - Lack of feedback mechanism to carry needs of local people to decision makers.
 - Too much use of academic journals and academic seminars, little use of well-known channels.
 - Existing media used at wrong times (e.g. Wazee wakumbuka).
 - Books with Kenyan material produced overseas expensive, drain of foreign exchange.

SUGGESTIONS FOR IMPROVEMENT

- Explore other meaningful local media, e.g. "public men".
- Use combined techniques such as small discussion groups.
- Have rural newspaper.
- Have Journal of Policy Communication to disseminate policy recommendations.
- More extensive use of existing media, including publishing houses and cinema.

4. TARGET GROUPS

Definition: - Potential and intended recipients of scientific information, can be horizontal or vertical.

Problems:

- Who should communicate with whom.
- Need to identify needs of people. Those who need new information don't get it.
- Lack of knowledge about different research needs and interests among practitioners, implementers and policy makers.
- No clear definition of target audience.

SUGGESTIONS FOR IMPROVEMENT

- Establish and continuously expand a list potential implementers and users of research and relate materials to be disseminated to target group.
- Evaluation unit(s) to determine impact of dissemination and/or implementation of scientific information.
- To facilitate vertical communication ask the Ministry of Agriculture and the Ruling Party to expand their functions.
- Mobilize people to be receptive to scientific knowledge.
- Include foundations and donors as target groups.
- More extensive use of horizontal communication.

5. INCREASE CONSULTATION AND INTERACTION

Definition: - Increasing dialogue between researcher and practitioner.

Problems:

- Mutual suspicion and counter accusations.
- Expatriate experts often go-between for researcher and practitioner.
- Tendency towards commercialization ("consultancy") of materials from researcher to practitioner.
- Practitioners often don't have time to read.
- Practitioner and researcher out of phase:

researcher cannot give solution when asked, practitioner is not ready to accept completed research as solution to problem.

SUGGESTIONS FOR IMPROVEMENT

- Secondment between different institutions housing researchers and practitioners.
- Researchers produce alternative solutions as automatic prescriptions.
- Although Government must take decisions as problems arise, it should, meanwhile co-operate with researchers to find better solutions.
- Local experts should be involved in selection of expatriate experts.
- Researchers should have continuous consultations with field people.

6. PRODUCTION AND UTILIZATION OF FINDINGS

Definition:- Generation and use of scientific findings.

- Problems:
- Civil servants need time to think through research problems, design and use data.
 - Continuity of research hampered by failure of expatriates to pass on knowledge to Kenya counterparts, who are used as window dressing.
 - Lack of expertise in specific areas (e.g. curriculum development)
 - Two year contracts for researchers not enough to disseminate and implement research findings.
 - Donor financing narrows down priorities and plays down important areas (e.g. oral tradition)

SUGGESTED SOLUTIONS

- Role of research should be to produce alternatives rather than single prescriptions.
- Use of expatriates/locals in continuing teams to avoid discontinuity.
- Research should not stop at diagnosis but be involved in dissemination and implementation to produce workable prototypes for Government.
- Government to seek control of all research funds to encourage researcher commitment.

- Civil servants be given more time, facilities and opportunities to concentrate on research

7. NATIONAL RESEARCH COUNCIL:

Definition: A body which performs certain functions with respect to the production, dissemination and utilization of research findings.

- Problems:
- NRC cover social science and physical science or only physical science.
 - NRC only co-ordinating, only advisory or also executive.
 - NRC creates time delays in clearance.
 - NRC creates opening for pressures to suppress projects (c.f. Uganda, Tanzania)
 - Fear of excessive control by Government (MFP)
 - Bureaucratic red tape.

SUGGESTED FUNCTIONS:

- Eliminate duplication and overlap of research activities.
- Set up code of ethics for researchers to avoid screening activities of researchers.
- Enforce existing Government regulations, e.g. foreign researchers should deposit findings. Screen foreign researchers.
- Identify and list research priorities
Produce inventory of research.
- Indicate research areas for future focus.
- Reduce excessive concentration on certain projects.
- Encourage initiative to do data gathering and research at lower levels.
- Set out criteria for relevance.
- Formulate national science policy.
- Make researchers and practitioners the same under terms of council.
- Subsidize needed research.
- Allocate resources or advise on allocation of research resources within confines of national plan.
- Cover all sciences.
- Advisory powers.
- Close co-operation between brokers and National Research Council.
- Encourage publication of local research findings.

CLOSING ADDRESS

N. Nganga
Deputy Permanent Secretary,
Ministry of Finance and Planning

Mr. Chairman,

I am very happy and indeed feel honoured to have been asked to give the closing address for this Workshop.

In requesting our support for this Workshop, the Committee Chairman stated that "the production of research findings, dissemination of these findings, and their implementation in Kenya is characterized by a lot of waste, such as waste of scarce public funds, scarce talents, and scarce public time. I wish I could say that I disagree with him. However, it would be both hypocritical and unhelpful to do so.

In providing support for the Workshop, therefore my Ministry has welcomed this opportunity for free discussion on a subject which has raised much official as well as public comment. Many of you will be aware of general accusations and allegations made from time to time that Kenya has one of the most researched economies. Indeed there are now certain levels of Government where the mere mention of a "feasibility study" leads to the most vehement reactions. All this, unfortunately, is not without some justification. If one looks at the whole area of scientific research and experimentation in addition to social, economic, and political investigations, one cannot help being somewhat dismayed by the amount of resources that have been utilized in these fields. Perhaps a few figures may help to illustrate this point.

In Kenya today there are no-less than 48 major research establishments. Of these 20 are national Government institutions, 13 are East African Community establishments and 15 are supported by the private sector. These do not include the minor short-term research programmes undertaken throughout the private as well as the public sector which are too many to enumerate. In addition to these, there are the regular market surveys, and organisational and management studies as well as pre-investment studies which are undertaken as the need arises.

Perhaps the magnitude of this work can best be illustrated in terms of costs. It is estimated that the gross national

expenditure on research and experimentation in 1970/71 amounts to £5,14 million. This represents approximately 1% of the estimated Gross National Product for the same period. These figures do not include the sizeable foreign aid contributions and the cost of imported research.

The significance of research in our economy can be stated in a somewhat different sense, namely, in terms of expenditure on scientific and technological services related to research and experimental development. It has been estimated that this expenditure will in 1971/72 amount to nearly £20 million, of which about £17 million will be met by Government. During this period there will be nearly 3000 scientists and nearly 9,000 technicians in the country and of these about 600 scientists and over 1,000 technicians will be engaged on research and development. These figures are quoted simply to illustrate the very large amount of financial and human resources which go into research technological development in this country. I need not add that for a developing country like Kenya, this allocation of resources can only be justified if research can be shown to be in keeping with some basic objectives and to lead to definite, identifiable results.

There has been a major preoccupation with the question of who undertakes research. The role of expatriate advisers and experts has seemed to cause concern in some quarters. Let me first say that this seems to me most contradictory when various accusations are made couched in nationalistic terms by people in the highest institution of learning which should also be the depository of liberal thought. In this case, let me state most emphatically that Government appreciates the services of anybody who has anything to offer towards the attainment of our ambitious development goals, provided this is done without danger to our social, economic, and political philosophy. Let me also add that we in Government are fully confident of our ability to control and guide the activities of foreign advisers and experts without wasting too much time on exaggerated fears of distortion to our goals.

There has been a tendency for researchers to consider research to be an end unto itself: that once you have done the basic fact-finding and furnishing of data, you put it

into a bound volume, give it to someone, and hope that he does something with it. As a result you find, say in Government offices in Kenya, masses and masses of volumes of bound copies of reports, i.e. research findings, feasibility studies, social programmes and research papers. All of these pile up dust and are not very useful to anyone. This occurs because of the failure to consider research as a means of facilitating, not only what has been referred to as policy making but, the evolution of thought in society.

You spent some time, which is absolutely right, discussing dissemination of research. I must say I welcome this very much. I would assume that you dealt with the question of interpretation which, although it is part of the dissemination of research, is a slightly different kettle of fish. Researchers, like many of you, have a talent or skill and a language, including mathematical calculations that accompany the language. The whole recording and monitoring system of research is geared for people who understand the language of the researcher.

There is a very great gap between the stages of data gathering, processing, and monitoring and the interpretation of it into both a form and a language that the ordinary person or the so-called policy maker can understand. Unless these people can understand the research findings, they will shove them aside because they are too complicated and continue making decisions on the basis of commonsense or horse sense.

This situation can arise because of the present method in which research findings are presented. The presentation is of great importance because it is at the very core of the implementation stage. You cannot implement something which you do not understand. So, when your Workshop Committee comes to draw up and follow up the Workshop recommendations I do hope that they will spend time considering in the section dealing with dissemination, that the presentation of findings to the ordinary layman who uses research findings should be in a form and language suitable for that kind of person.

You have, of course, referred to this in the discussion of target groups, but there is an aspect of this which must not be forgotten: the target group for most research work is not the individual rural person but the whole of Government's extension service in various fields. The extension staff

consists of thousands of people who are really there to interpret policy and the way in which one goes about implementing it. Research findings may show the extension staff how they should go about things. The extension staff would be available to help with the dissemination; I think there is great need to look into the question of the greater use - much greater use - of such existing organisations.

The other kinds of machinery that you have considered, e.g. the newspapers, and the other public or mass communications media, are extremely important. But, let us not deceive ourselves. These reach only a given level of people for the time being. We must, therefore, increase the net of people who will be reached by the mass media of communications.

There has also been a tendency to magnify the difference, which I consider to be imaginary and academic, between those who are referred to as intellectuals and civil servants. Again I find it most incomprehensible that this should be so evident in the area of social sciences where liberal thinking should be more expected. It must not be forgotten that the civil servant in this country has had an extremely hard time in taking over the management of public affairs in such a short time and with no appreciable loss in standards of performance. This has required more than usual dedication and application including the use of a great deal of free time on public affairs. It is a wonder that the contribution of such public officers to workshops like this has remained substantial in such circumstances.

There seems to be the idea in some circles that decision making, which is the function of policy makers is an easy and pleasant pass-time. It should be understood that decision making is a trying and at times agonising thing. Most policy makers need more data and information before they can be certain that their decision is the most appropriate. In such cases they would gladly welcome the assistance of intellectuals, experts, and research workers. We must remember that the image of the policy maker as a blustering and blundering administrative bully is no longer relevant in Kenya and we should not waste time and effort labouring under its ghost. Today's policy maker realizes that his decisions will only stand if supported by adequate evidence and data.

But he also realizes that the country cannot wait until the results of research work have been checked, counter-checked, researched on, and tested in a pilot project which has then to be evaluated, monitored, and appraised. All these worthwhile steps have their use and the policy maker knows this. What he does then, rather than ignore them, is to attempt to telescope them and to be more adventurous in implementing results before they are counter-checked and researched. I am sure you agree with me that this is necessary if our rapidly evolving society is to keep on evolving while we are testing out theories and research results. You have spent a lot of time discussing the question of suitable machinery for designing, guiding, and co-ordination of research work in the country. Significantly, you have failed to come to very definite conclusions. Significantly because there has been a tendency to consider research in isolation from something which is perhaps more important: the whole question of the country's science and research policy.

It is not a question of simply organising research into an area where there is need-whether this is a basic, urgent, or a long-term need. It is a question of taking stock of the whole world of research on science and technology and deciding, as a country, the amount which we can do or can justify for the use of the economy's resources. In many cases we can only adapt to a large extent what other people have done and try to develop for the very different and unique needs of our country our own science and technological objectives, without which it would be difficult to design a research policy. This is the way that Government is looking at the problem. I understand that it has been stated that Government has established a National Research Council. Let me say that, in fact, Government has not established such a Council. Government is not going to establish a National Research Council. It is going to establish a National Science and Technology Policy Council: a much wider body with representation from all facets and aspects of science and technology i.e. representation from Government, public institutions, and the private sector, which will look into the whole question of science policy rather than research "per se".

As far as a research council is concerned, there is room

to consider what kind of organisation, under the National Science and Technology Policy Council is needed to carry out research. One organisation trying to co-ordinate research in social science, medical science, biological science, physical science, etc., would find it impossible to carry out this work adequately. In fact, it may be found that the machinery is a set of bodies that would work under the umbrella of one body responsible for the whole policy of this country.

I want to clear up this point - that the Government has not established any of these institutions but is working towards establishing a National Science and Technology Policy Council. This is not, as some people have indicated, a recent suggestion or something that cropped up only recently. From the very beginning of this country's conscious planning in 1964, it has been stated that Kenya needs co-ordination of its science and technology policies and consequent research activities into these areas. This was stated in the previous Plan and in the current Plan.

Establishing such machinery is not easy. The suggestion which some of you have made that this should be an organisation to represent current or existing institutions may not be found to be the acceptable solution. Representation of organised institutions presupposes one thing, which is wrong: that all these institutions exist for a felt need, that they must be there and they must become part of the wider machinery. I would like us to feel free to look into the field and consider which areas of interest should be represented. The issue is not to decide which institutions should be represented. The issue is what disciplines are represented.

But let me say, before I finish, that the establishment of a co-ordinating body is not the solution to all the problems of research co-ordination. Whatever his inclination or area of interest, every research worker preparing a research programme should ask himself "What will this contribute towards the betterment of society? or Will the world be any better as a result of this work?" If the answer to any of these questions is positive, then, all the difficulties which may otherwise arise will have been solved.

I am very pleased that you have appreciated one very serious weakness in conferences and workshops which is that everybody pack up their bags on the last day and leaves, quite happy that someone, somewhere - the chairman or the rapporteur - is going to do something about the recommendations. You have made provisions for avoiding this by electing a Steering Committee.

Finally, Mr. Chairman, let me on behalf of Government, thank the Friedrich-Ebert-Stiftung for sponsoring such an important activity. I also commend the University of Nairobi and in particular the Institute for Development Studies, for organizing it. This is not the first time when the Institute has identified a challenge and has gone out to meet it in an admirable fashion.