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PREPARING SHELTER POLICIES, PROGRAMS, AND PROJECTS FOR URBAN SETTLEMENTS

A SHELTER TRAINING WORKSHOP FOR SENIOR PROFESSIONALS

November 5 - November 30, 1979

WASHINGTON, D.C.

SPONSORED BY
AGENCY
FOR
INTERNATIONAL
DEVELOPMENT

OFFICE OF HOUSING

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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D C 20523

November 5, 1979

Dear Workshop Participant:

I am pleased to welcome you to the Shelter Training Workshop, "Preparing Shelter Policies, Programs, and Projects for Urban Settlements." I hope that you will find this experience worthwhile and useful in your future work.

During recent years, there has been an increasing awareness in the developing countries of the need to address the shelter problems of the urban poor. Countries faced with rapidly growing urban centers, both small and large, have turned to low-income community upgrading, sites and services, and minimum shelter approaches as well as to supporting community facilities and services to improve living conditions of lower-income families.

These understandings and initiatives come in response to enormous problems. By the year 2000, responsible estimates tell us that over one billion people will reside in urban areas. Most of the new residents will be poor. An unprecedented level and type of investment will be needed to provide even basic amenities. Public agencies in developing countries are now experiencing the need to increase their technical and administrative capacity to handle these different and expanded responsibilities.

The U.S. Agency for International Development has a significant body of experience with shelter programs in some 50 developing countries The workshop being held this November is being sponsored by AID to provide senior professionals with an opportunity to discuss and review a full range of shelter policies and programs and related technical tools. Participation in this workshop should help us to learn from one another's experiences and better equip us to provide the best possible shelter and living conditions with the available resources.

Sincerely,

Peter Kimm

Peter M. Kimm
Director
Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

INTRODUCTION TO THE WORKSHOP

THE SHELTER SECTOR

In recent years, governments and international agencies have begun to use the term "Shelter Sector" to refer to a wide range of housing and related activities. "Shelter Sector" as it will be used in this workshop includes all aspects of housing, related infrastructure and facilities in residential areas, and the social and economic programs required to enhance living standards.

Important relationships exist between the planning of physical standards for shelter and the financial capacities of target populations and public agencies. These must also be considered in the context of social and economic priorities. All of these relationships will be emphasized during the workshop.

Within the shelter sector, the primary focus of the training workshop will be on the requirements of the urban poor.

OBJECTIVES OF THE WORKSHOP

1. To provide an opportunity for senior professionals to exchange among themselves their experience with shelter sector problems and programs.

2. To set forth an overall shelter sector framework ranging from national shelter policy formulation to individual country programming to specific project preparation.

3. To identify critical shelter issues which should be addressed and alternative programs, methods, and techniques available for action-oriented response.

4. To stress the interrelationships of the financial, economic, and social aspects of shelter with physical planning, design standards, and construction requirements.

THE AID OFFICE OF HOUSING PROGRAM

Housing Guaranty Program

The growth and magnitude of the world's shelter problems prompted the United States in the early 1960s to experiment with a new concept -- the Housing Guaranty Program. This approach facilitates the transfer of resources and technologies to countries concerned with shelter and related urban problems.

The unique AID activity enables U.S. private sector lenders to provide long-term financing for low-income housing programs in the developing countries. The U.S. Government underwrites these transactions through the provision of a full faith and credit guaranty.

AID charges a fee for its guaranty, which covers operating expenses and provides reserves against claims. In recent years guaranties have gone to finance basic shelter and related services for the urban poor.

The kinds of programs financed by the Housing Guaranty Program are the following:

1. Slum upgrading, including facilities for water, sewage, electricity, roads, and so on, as well as building materials for self-help home improvement.

2. Sites and services, including preparing vacant areas for productive shelter use by surveying and plotting the land, installing water and sewage lines and roads, construction and providing building material loans and technical assistance for self-help shelter construction.

3. Core housing, involving basically a sites and services project approach with the addition of a rudimentary housing shell on each lot (perhaps four walls, a roof, and water facilities) designed to be improved by the owner.

4. Low-cost housing units for sale or rental.

These types of projects are financed in the context of supporting the growth and development of national shelter policies and shelter institutions, such as national housing banks and national housing agencies.

Technial Assistance and Services for Shelter Sector Activities

The Office of Housing provides technical assistance and services to borrowing institutions under the Housing Guaranty Program, in support of other AID programs, and to countries willing to pay for professional services. This assistance covers a range of areas including the planning of shelter and related community facilities, surveying, social programming, housing policy formulation, and project implementation. Assistance is provided by short-term individuals or teams and long-term resident advisors.

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MISCELLANEOUS

SHELTER SECTOR WORKSHOP: WEEK #1 AT A GLANCE

November 5-11, 1979

TIME	MONDAY 5th	TUESDAY 6th	WEDNESDAY 7th	THURSDAY 8th	FRIDAY 9th	SATURDAY 10th	SUNDAY 11th
9	GENERAL ORIENTATION *WASHINGTON INTERNATIONAL CENTER*	REGISTRATION AND INDIVIDUAL CONFERENCES *FACULTY*	2.S INTRODUCTION OF PARTICIPANTS AND ORIENTATION *FACULTY*	7.HP ESTABLISHING EFFECTIVE DEMAND *J. CHRISTIAN*	12.HP WORKSHOP I *A. VAN HUYCK*		
10			3.S OPENING WELCOME TALKS *J. KIMM*	8.HP ANALYZING HOUSING SUPPLY *J. CHRISTIAN*		15.S WASHINGTON D.C. TOUR *SPREIREGEN*	
11				9.HP LAND USE ISSUES *M. RIVKIN*			
12			4.S LUNCHEON ADDRESS BY ROBERT NATHAN *R. NATHAN*				
1	WORKSHOP BRIEFING *A. VAN HUYCK*						
2				10.HP ESTABLISHING HOUSING POLICY OBJECTIVES *VAN HUYCK*	13.HP URBAN LAND POLICY *W. DOEBELE*		
3			5.HP DEFINITIONS AND FUNCTIONS OF HOUSING *VAN HUYCK*	11.HP OUTLINE OF THE CONTENT OF A NATIONAL HOUSING POLICY *A. VAN HUYCK*	DISCUSSION GROUP A *VAN HUYCK*		
4			6.HP TARGET GROUP CONCEPTS *A. VAN HUYCK*		DISCUSSION GROUP B *RIVKIN*		
EVENING		1.S RECEPTION AT WIC			14.S INFORMAL PARTY *FACULTY*		

SHELTER SECTOR WORKSHOP: WEEK #2 AT A GLANCE

November 12-18, 1979

TIME	MONDAY 12th	TUESDAY 13th	WEDNESDAY 14th	THURSDAY 15th	FRIDAY 16th	SATURDAY 17th	SUNDAY 18th
9	PARTICIPANTS ORGANIZATIONAL MEETING 16.S *PARTICIPANTS*	MODEL FOR ANALYZING HOUSING DESIGN 19.NHP *J. WRIGHT*	ENVIRONMENTAL IMPACT 23.S *J. BUTTER*	OFFICE OF HOUSING, AID PRESENTATION 27.S *J. KIMM*	FIELD TRIP TO COLUMBIA, MARYLAND 32.S *M. RIVKIN*	WORKSHOP II 33.NHP *VAN HUYCK*	
10	ESTABLISHING AFFORDABILITY 17.NHP *M. RIVKIN*	MODEL WORKSHOP 20.NHP *J. WRIGHT*		ECONOMICS OF HOUSING SUBSIDIES 28.NHP *R. PRATT*			
11	DISCUSSION GROUP A *OAKLEY* DISCUSSION GROUP B *VAN HUYCK*		AERIAL PHOTOGRAPHY INTERPRETATION 24.NHP *D. WAY*				
12							
1							
2	DEFINITION OF TARGET GROUPS 18.NHP *M. RIVKIN*	HOUSING MARKET ANALYSIS 21.NHP *C. BRYANT*	AERIAL PHOTOGRAPHY WORKSHOP --GROUP A 25.NHP *D. WAY*	FORMULATING NATIONAL HOUSING STANDARDS AND THE HOUSING PLAN --GROUP A 29.NHP *VAN HUYCK*		FIELD TRIP TO METRO HEADQUARTERS 34.S *M. RIVKIN*	
3	DISCUSSION GROUP A *OAKLEY* DISCUSSION GROUP B *VAN HUYCK*	DISCUSSION GROUP A *RIVKIN* DISCUSSION GROUP B *CHRISTIAN*	NATIONAL HOUSING FINANCE --GROUP B 26.NHP *J. CHRISTIAN*	SUBSIDY WORKSHOP --GROUP B 30.NHP *R. PRATT*			
4							
EVENING		DINNER ADDRESS BY K.C. SIVARAMAKRISHNAN 22.S		THEATER NIGHT-- KENNEDY CENTER 31.S			

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SHELTER SECTOR WORKSHOP: WEEK #3 AT A GLANCE

November 19-25, 1979

TIME	MONDAY 19th	TUESDAY 20th	WEDNESDAY 21st	THURSDAY 22nd	FRIDAY 23rd	SATURDAY 24th	SUNDAY 25th
9	(A) SITE SELECTION 35.P *M. RIVKIN* SITES AND SERVICES PROJECTS 37.P (B) ALT. FINANCING MECHANISMS 36.P *J. CHRISTIAN* HANDWERGER	FIELD TRIP TO BALTIMORE, MARYLAND 41.S *M. RIVKIN*	UPGRADING PROJECTS 42.P *D. LEIBSON*	THANKSGIVING HOLIDAY 45.S *WASHINGTON INTERNATIONAL CENTER (WIC)*	WORKSHOP III 46.P *A. VAN HUYCK* COUNTRY PRESENTATIONS: MALAWI CAMEROON TANZANIA	FIELD TRIP TO MOUNT VERNON, VIRGINIA 50.S *Optional Trip Arranged by WIC*	
10							
11							
12							
1					WORLD BANK PRESENTATION 47.S *A. CHURCHILL*		
2	SITES AND SERVICES WORKSHOP --GROUP A 38.P *HANDWERGER AND J. HJELT*		SOCIAL AND ECONOMIC COMPONENTS OF SHELTER PROJECTS 43.P *J. HJELT*		TUNIS CASE STUDY 48. TW/SE *E. ROBBINS*		
3	FINANCIAL PLAN PREPARATION --GROUP B 39.P *E. ROBBINS*						
4			COUNTRY PRESENTATION: PHILIPPINES		INTRODUCTION TO WORK/STUDY EXERCISES 49. TW/SE *D. OAKLEY*		
EVENING	FILM NIGHT: PERU, TANZANIA INDONESIA 40.S		MEXICO SLIDE PRESENTATION 44.S				

SHELTER SECTOR WORKSHOP: WEEK #4 AT A GLANCE

November 26-30, 1979

TIME	MONDAY 26th	TUESDAY 27th	WEDNESDAY 28th	THURSDAY 29th	FRIDAY 30th	SATURDAY	SUNDAY
9	WORKSHOP IV *Van Huyck*	SCHEDULING AND CONSTRUCTION MANAGEMENT 54.I *C. DEAN*	PROJECT PERFORMANCE TRACKING NETWORK 52.I *E. ROBBINS*	TEAM EXERCISE PRESENTATIONS 59.TW/SE *D. McGRATH*	WORKSHOP EVALUATION BY PARTICIPANTS 61.S *PARTICIPANTS*		
10	COUNTRY PRESENTATIONS: Thailand Jamacia Barbados Ghana	COMMUNITY PARTICIPATION IN THE MANAGEMENT OF LOW-INCOME PROJECTS 56.I *T. PRIFTIS*			REPORT TO FACULTY OF WORKSHOP EVALUATION 62.S *PARTICIPANTS*		
11			COUNTRY PRESENTATIONS: SOMALIA INDONESIA				
12					CLOSING LUNCHEON ADDRESS 63.S *P. KIMM*		
1							
2	TEAM EXERCISE 53.TW/SE *D. OAKLEY*	MEETING WITH AID OFFICIALS		TEAM EXERCISE EVALUATIONS 60.TW/SE *D. McGRATH*			
3		TEAM EXERCISE 55.TW/SE *D. OAKLEY*	TEAM EXERCISE 57.TW/SE *D. OAKLEY*		DEPARTURES		
4							
EVENING	FILM NIGHT: THAILAND JAMAICA BARBADOS	FCH RECEPTION	YEAR 2000 DINNER 58.S *R. MASON*				

ADMINISTRATIVE NOTES

The following pages outline the basic administrative information for the shelter workshop.

Workshop Office

The administrative office of the workshop will be open from 8:00 a.m. to 8:00 p.m., Monday through Friday and from 8:00 a.m. to 1:00 p.m. on Saturdays. The address and telephone number are:

Shelter Workshop Office
Park Central Hotel
705 18th Street, N.W.
Room 1101

Tel: 347-7148

Refreshments will be available in the office with payments to be made on an "honor" system. Prices will be posted.

Participants are encouraged to use the office as a sitting and reading room as fully as desired.

Secretarial Support

Two administrative secretaries will be working in the office during the day in staggered shifts. They will be available to help the participants with the following services:

Make personal travel arrangements and confirmations.

Take messages and book appointments.

Xerox selected readings.

Type materials required for presentations by the participants.

Provide information on Washington and assist in daily activities.

Library Facility

A library will be established in the office. It will contain selected readings in support of the workshop presentations, other documents provided by the individuals making presentations during the course, plus demonstration copies of current books provided by cooperating publishers, AID, and the World Bank.

Participants are encouraged to visit the library and to read materials which interest them. The library will be open when the office is open: 8:00 a.m. to 8:00 p.m. from Monday to Friday and from 8:00 a.m. to 1:00 p.m. on Saturday.

Participants may check materials out from the library on a two-day loan (arrange with the administrative secretary).

Film Showings

A selection of relevant films have been obtained from the Habitat film library in Vancouver, Canada. These films were produced for the Habitat Conference in 1976. They will be shown on evenings when other special events are not scheduled.

The film showings are an optional activity for participants. Whenever possible, participants from the country of the film will be asked to comment on the film and to lead a discussion about the content shown.

When films are scheduled, they will be shown at 7:30 p.m. in the workhop office.

Participant Responsibilities

Since the participants in this workshop are senior, experienced professionals with major responsibilities for shelter programs in their own countries, it is desirable that ample time be available for sharing of their knowledge. Besides time allocated for participant discussion in each of the working sessions, there will be several sessions allocated for participant presentations. The following schedule has been set:

Workshop I
Friday, November 9 9:00 a.m. - 12:00 p.m.
American Institute of Architects - Board Room

Workshop II
Saturday, November 17 9:00 a.m. - 12:00 p.m.
Park Central Hotel - Room 1104

Workshop III
Friday, November 23 9:00 a.m. - 12:00 p.m.
American Institute of Architects - Board Room

These workshops will provide an opportunity for each of the country groups represented to make a presentation about the shelter policies and programs of their countries.

On Tuesday, November 6, individual conferences will be held between the workshop faculty and the participants. This session will be used to plan the country presentation and to schedule the workshops. In addition, the faculty will want to discuss the content of the program and identify the individual issues which are of the most concern to the participants.

Participant Team Organization

It is proposed to organize the participants into six teams for work on the Team Work/Study Exercises during the last week of the workshop as well as for other special program events.

The teams will combine individuals from various disciplines (architects, economists, planners, finance specialists, and so on) and a distribution by country so that no two persons from the same country are on the same team.

The six teams will be organized by the participants themselves on Monday, November 12 between 9:00 a.m. and 9:45 a.m.

Each team will select a chairperson. The chairpersons will form a committee to work with the faculty on the management of the workshop.

Special Events

The following pages list special presentations and events that have been planned for the participants. A contribution of $55 (the equivalent of one day's per diem) is necessary to finance these activities. The day-time administrative secretary (Ms. Etiopia Liggins) will be in charge of collecting the payments and distributing tickets for the various events.

Special Presentations

Orientation Day, Monday, November 5
Washington International Center
1630 Crescent Place, N.W.

9:00 a.m. to 2:00 p.m.

The Washington International Center (WIC) will host an orientation program for participants which will provide basic information on Washington, D.C. and administrative details with AID.

Mr. Van Huyck, Chairman of the workshop, will provide a briefing for participants at 1:00 p.m. Notebooks will be distributed at that time, and appointments for individual conferences will be made for Tuesday, November 6.

Opening Ceremonies, Wednesday, November 7
American Institute of Architects
1735 New York Avenue, N.W.

10:30 a.m. to 12:00 noon

Mr. Peter Kimm, Director of the AID Office of Housing, and other senior AID officials will open the workshop.

Keynote Address, Wednesday, November 7
Hay-Adams Hotel
800 16th Street, N.W.

12:00 noon to 3:00 p.m.

Mr. Robert Nathan will speak on the world urbanization crisis at a luncheon meeting.

Developing Country Perspective, Tuesday, November 13
Foreign Service Club
2101 E Street, N.W.

12:00 noon to 3:00 p.m.

Mr. Sivaramakrishnan will speak on the objectives and priorities for shelter from the developing country point of view at a dinner meeting.

Office of Housing Presentation, Thursday, November 15
American Institute of Architects
1735 New York Avenue, N.W.

9:00 a.m. to 10:30 a.m.

The staff of the AID Office of Housing will present a summary of their projects and approaches to world shelter issues.

World Bank Presentation, Friday, November 23
American Institute of Architects
1735 New York Avenue, N.W.

1:00 p.m. to 2:30 p.m.

Mr. Anthony Churchill, Director of the World Bank Urban Projects Division, will present a discussion of World Bank programs in the shelter sector and a discussion of a recently prepared paper on basic needs.

Year 2000 Shelter Perspective, Wednesday, November 28
George Washington University Club
800 21st Street, N.W.

6:30 p.m. to 9:00 p.m.

Mr. Roy Mason will show slides and discuss the potential innovations in shelter that are possible over the next 20 years and beyond at a dinner meeting.

Closing Ceremonies, Friday, November 30
International Club
1800 K Street, N.W.

12:00 noon to 3:00 p.m.

Mr. Peter Kimm, Director of the AID Office of Housing, will host the closing ceremonies for the workshop. His Excellency Mr. John P. Mbogua, Ambassador for Kenya to the United States, will present the closing talk at a luncheon meeting.

Special Events

Reception, Tuesday, November 6
Washington Internation Center
1630 Crescent Place, N.W.

6:00 p.m. to 8:00 p.m.

Faculty Party, Friday, November 9
1834 Jefferson Place, N.W.

8:00 p.m. to 12:00 midnight

The faculty of the workshop will host an informal party at the PADCO office building. The theme will be "shelter sector disco."

Washington, D.C. Tour, Saturday, November 10
by chartered bus

10:00 a.m. to 4:00 p.m.

Mr. Paul Spreiregen will serve as the guide on a professional interest tour of Washington, D.C.

Kennedy Center Theatre Night, Thursday, November 15
Opera House

8:30 p.m.

Mr. Max Rudolph will be the guest conductor of the National Symphony Chamber Orchestra.

Field Trip to Columbia, Maryland, Friday, November 16
by chartered bus

9:00 a.m. to 5:00 p.m.

Columbia New Town is world famous as an example of new town development. A day-long field trip has been arranged to visit Columbia and hear a presentation about its planning and development.

Visit to Metro Headquarters, Saturday, November 17
by subway

2:00 p.m. to 5:00 p.m.

A visit will be made to Metro Headquarters in Washington to review the workings of the Metro transportation system.

FCH Reception, Monday, November 19
2101 L Street, N.W.
Suite 409

5:30 p.m. to 7:30 p.m.

The Foundation for Cooperative Housing will host a reception for workshop participants.

Field Trip to Baltimore, Maryland, Tuesday, November 20
by chartered bus

9:00 a.m. to 5:00 p.m.

Baltimore is one of the United States' older cities. It has a number of innovative urban programs. A day-long trip is planned to visit the city and review the programs underway.

Thanksgiving Holiday, Thursday, November 23
WIC to arrange in private homes

The Washington International Center will make arrangements for participants who wish to have Thanksgiving dinner with American families. Thanksgiving is a major holiday in the United States.

Field Trip to Mount Vernon, Saturday, November 24
by chartered bus

9:00 a.m. to 2:00 p.m.

Mount Vernon was the home of George Washington, the first President of the United States. It is one of the major historical landmarks in this country. The Washington International Center will arrange a trip to Mount Vernon for sightseeing purposes.

Participant Workshop Evaluation

All of the participants will be asked to evaluate the workshop sessions. A formal evaluation session has been scheduled for the last day of the workshop (November 30). This session will be divided into two parts.

From 9:00 a.m. to 10:30 a.m., the participants will meet by themselves without outside AID or faculty members. The participants will discuss the workshop and prepare a summary of their major conclusions and suggestions for futuure AID shelter training and workshop activities.

From 10:30 a.m. to 12:00 noon the participants will report their findings and suggestions and discuss them with the faculty and AID officials.

It is hoped that all participants will give their candid opinions of the successes and failures of this initial workshop effort, as it is likely that AID will sponsor similar programs in the future.

PURPOSE OF THE OUTLINE PAPERS

This notebook contains the outline papers for each of the substantive presentations to be made during the workshop.

It is expected that each participant will have read the outline paper before the workshop session is held. The speakers will assume that the paper has been read in advance and will merely introduce the subject and give illustrative material to amplify the main points.

We are undertaking this approach because we realize that the workshop participants are senior professionals who have a basic familiarity with the subjects as well as extensive experience of their own. Rather than spend the majority of time in "lecturing," we hope to make the sessions into seminars with ample time for participant participation in each session.

You are encouraged to write down questions or points which you wish to make in advance of the session, based on the reading of the outline paper. In this way, the discussion can be more focused and worthwhile for everybody.

It is hoped that the outline papers will provide a useful reference for participants in their work in the future and that they can be used by participants to organize discussions with their associates upon returning to their assignments.

Selected readings are provided with some of the outline papers. Other readings are available in the workshop office.

BIOGRAPHICAL DATA

FACULTY

Alfred P. Van Huyck
Chairman

Mr. Van Huyck is President of PADCO (Planning and Development Collaborative International). He has specialized in national housing policy preparation and housing programs for lowest-income people in the developing countries. He has worked on housing programs financed by AID, the World Bank, and the United Nations in 20 countries in Latin America, the Middle East, Africa, and Asia.

Mr. Van Huyck has recently worked in Indonesia as PADCO's team leader for advisory services to PERUMNAS (The National Urban Development Corporation); as advisor to the Kabupaten Provincial Planning and Mangement Training Project; as advisor to the Northern Sumatra Regional Planning Study; and as advisor to the Medan Urban Project.

He was previously PADCO's project director for the African Development Bank's housing feasibility study; the Arusha, Tanzania master plan study; the study to prepare recommendations for the national low-income housing strategy in Tanzania; the Moroccan bidonville study; and for the Jordan Valley settlement planning project.

B.A., sociology, Dartmouth College; M.R.P., University of North Carolina.

James W. Christian

Dr. Christian is Senior Vice President of NSLL (National Savings and Loan League). He has been engaged in Third World housing finance systems in 15 developing countries in Latin America, Asia, Africa, and the Middle East.

He has conducted financial analyses in connection with shelter sector assessments for the Office of Housing, AID in Ecuador, Kenya, Tunisia, and Vietnam. He has been involved with the financial policies and programs of El Salvador, Panama, Peru, Uruguay, Tunisia, Egypt, Jordan, Indonesia, Korea, Pakistan, and Thailand. He participated in the Promoters' Conference to discuss and make recommendations on the housing finance policies and programs of the African Development Bank.

B.A., M.A., and Ph.D., economics, University of Texas.

David Oakley

Mr. Oakley is a Vice President of PADCO and is a British national. He is an urban planner, an architect, and a specialist in low-income housing.

He has worked as PADCO's team leader for the Sri Lanka Reconstruction Project; the Egyptian land policy study; the Dimas, Syria new town study; and was head planner on the metroville portion of the Karchi Development Plan Project.

He was formerly Senior Pro-Director and Deputy Director of the Polytechnic of Central London; head of the Housing Research and Development Unit in Nairobi, Kenya; housing expert to the Government of India; and senior architect to the Department of Housing in Jamaica.

Honours Diploma, The Architectural Association School, London.

Goldie W. Rivkin

Ms. Rivkin is a Principal in Rivkin Associates. She had primary responsibility for the shelter sector assessment study in Swaziland and has been in charge of the firm's contributions to environmental assessment manuals for the Department of Housing and Urban Development and the Appalachian Regional Commission.

She has taught courses in land use planning at the Midele East Technical University, Ankara and in urban planning at the American University. She has been involved in numerous projects within the United States and has served on various associations.

B.A., Radcliffe College; M.C.P., Harvard Graduate School of Design.

Malcolm D. Rivkin

Dr. Rivkin is President of Rivkin Associates. He has worked in housing and urbanization in developing countries, land use policy analysis, institutional planning, environmental management and negotiation of solutions to development problems involving public agencies and the private sector.

He has been involved recently on the following: a policy analysis project on Southern Africa's urban development and shelter issues; a mission to Tunisia concerning monitoring and evaluation of housing programs; and regional planning to the United Nations. He was advisor to the Secretary of State's Sub-Committee on Human Settlement for the 1972 Stockholm Environmental Conference and Co-Director of the World Bank's Economic Development Institute 1975 seminar on urban management for officials from developing countries.

A.B., Harvard College; M.C.P. and Ph.D., Massachusetts Institute of Technology.

Edward H. Robbins

Mr. Robbins is Vice President of Program Development and Research for the National Savings and Loan League (NSLL). He specializes in institutional, financial, and social analyses required in development of Housing Guaranty projects. He is involved in research projects designed to provide more effective implementation of low-cost housing solutions.

He has recently reviewed the demand for low-cost shelter solutions and the capacity of national savings and loan systems to carry out such programs in five Latin American countries: Costa Rica, Honduras, Ecuador, Peru, and El Salvador. He has been involved in Housing Guaranty projects in Bolivia, Paraguay, and Tunisia.

B.A., American history, Yale University; M.A., urban and regional planning, George Washington University.

GUEST SPEAKERS

Jeffory G. Boyer

Mr. Boyer is Senior Environmental Planner of the National Savings and Loan League. He is a regional planner and a transportation-environmental scientist. He has provided technical assistance to Honduras, Panama, Liberia, Jamaica, Bolivia, and Costa Rica. He has worked with AID on preparation of guidelines for an initial environmental examination; on preparation of a methodology for country-wide environmental profiles and their potential contribution to development planning;

and on the formulation of guidelines for programmatic (generic) enviornmental assessment of squatter and community upgrading programs.

B.A., social and political sciences, Shippensburg State University; M.S., city and regional planning, Catholic Universit

Coralie Bryant

Dr. Bryant is a tenured faculty member of the School of Government and Public Administration, the American University. She has been a faculty member for the Development Studies Program of AID and a Fulbright professor of Development Administration at the University of Zambia in Lusaka. Her consultancy assignments have included work on the Southern African Development Analysis Project for AID in Zambia, Malawi, and Swaziland. She was also a consultant to the University of Botswana and Swaziland on the rural-to-urban migration project.

B.A., Barnard College, Columbia University; Ph.D., London School of Economics and Political Science.

Anthony Churchill

Dr. Churchill is Director of the Urban Projects Department of the World Bank and is a Canadian citizen. He has held the following positions at the Bank: Chief of the Transportation and Public Utilities Division of the Economics Department, Chief of the Transportation Research Division, Economic Advisor in the Transportation Department, and Urban Operations Advisor in the Urban Projects Department. Prior to joining the Bank's Public Finance Division, Dr. Churchill taught at the University of Western Ontario.

B.A., University of British Columbia; Ph.D., University of Washington in Seattle.

Charles F. Dean

Mr. Dean is Senior Vice President of the Foundation for Cooperative Housing (FCH). He is also Vice Chairman of the U.S. Cooperative Resources Committee and Treasurer of the Pan American Development Foundation. He is head of FCH

International Programs. He was previously Director of FCH Latin American Programs; head of the FCH program in Panama; and advisor to AID in feasibility studies for housing programs in Latin America, Africa, and Asia.

He has been a consultant on housing reconstruction programs following earthquakes in Peru and Nicaragua and following a hurricane in Honduras. He has conducted studies for AID on refugee housing programs in Vietnam, Cyprus, and Portugal.

B.Arch, University of Washington.

William A. Doebele, Jr.

Dr. Doebele is Professor of Advanced Environmental Studies in the field of implementation at Harvard University. He has recently participated in the organization of a world conference on urban land policies and problems to be held in Massachusetts during 1980 as well as in the organization of an international conference on land consolidation as a means of self-financing urban growth in East and Southeast Asia.

He has been involved in assignments to the following countries: Japan, Cuba, Guatemala, El Salvador, Honduras, Costa Rica, Korea, Cyprus, Mexico, Venezuela, Indonesia, Colombia, Zambia, and Iran.

A.B., Princeton University; LL.B., Harvard Law School, M.C.P., University of California; Regional Studies, University of Pennsylvania.

Joseph Handwerger

Mr. Handwerger is an architect/planner who is involved in consultancy work with international finance institutions. He is also a Visiting Critic at Catholic University and has been a professor and lecturer at the University of New Mexico, Catholic University, and the Washington Technical Institute.

He was previously involved in the evaluation and supervision project on low-cost housing projects in El Salvador and Nicaragua; the campus master planning project for Hasanudden University, Indonesia and for the Seoul National University, Korea; the study to review and critique a program and site plan for community facilities for Shiraz New Town, Iran; and studies to research and report on transportation planning, on indigenous building materials and low-cost housing in Sub-Saharan Africa, and on housing for a new university in Saudi Arabia.

B.S., civil engineering, University of Alabama; M.Arch., Harvard University Graduate School of Design.

John L. (Jack) Hjelt

Mr. Hjelt is Housing Officer for East and Southern Africa with AID. He has had diverse overseas experience with self-help housing and upgrading, project development and evaluation, community development processes, training, and voluntary technical assistance programs.

He worked with the International Cooperative Housing Development Association on the shelter sector assessment of Gambia; on the rural development proposal for Zaire; with the Francistown, Botswana Self-Help Housing Agency; on Zambia's Community Development Training Project; on Zambia's Self-Help Housing Project; on rural and vocational education programs in Ethiopia; and on three rural medical programs in Laos.

B.A., history, University of Oregon; M.S., community development, Southern Illinois University, Carbondale.

Peter M. Kimm

Mr. Kimm is Director of the AID Office of Housing. He has specialized in national housing policy and housing finance in the developing world and has written and spoken widely on these subjects.

He is responsible for administering the housing programs of the U. S. Agency for International Development, including the Housing Investment Guaranty Program. The HIG Program is a major international source of financial and technical assistance for housing activities in Latin America, Africa, Asia, and the Middle East. Mr. Kimm has been responsible for its implementation for the past 12 years.

David Leibson

Mr. Leibson is a Housing Officer with the Office of Housing, AID. He has international experience in architectural design and town planning; low-income housing and slum improvement; project development, finance and management; and program planning.

He has been involved in a major Korean low-income housing program which involved new construction and slum improvement; in a housing project in the Ivory Coast using small African builders; in one of the first housing projects in Zaire; and in designs for several architectural projects in Tunisia. He has worked on numerous AID and World Bank studies in Thailand, the Philippines, Indonesia, Chad, Kenya, Liberia, Cameroon, Gabon, and Morocco.

B.Arch., Carnegie-Mellon University.

Roy E. Mason

Mr. Mason is an architect, designer, and planner. He is the Architectural Editor of the World Future Society's Futurist Magazine and Editor of the Habitats Tomorrow Newsletter. He has completed several articles on the future of architecture and is compiling a feature article on solar and other alternative energy sources for the next 25 years and beyond.

He has designed solar and other energy conscious projects which have explored a variety of approaches, systems, and applications within the framework of originality and uniqueness of design. He was recently involved in the design of low-cost energy-conscious housing in Mexico.

Dorn Charles McGrath, Jr.

Mr. McGrath is Professor of Urban Planning and Chairman of the Department of Urban and Regional Planning, School of Government and Business Administration, George Washington University. He has been active in the following groups: American Institute of Planners, American Society of Planning Officials, Visiting Committee on the Graduate School of Design at Harvard University, and the Urban Land Institute. He has served on numerous committees for the National Academy of Sciences and has been chairman of the Environmental Advisory Board for the Chief of Engineers, U.S. Army Corps of Engineers.

He has been a seminar leader in Venezuela, Peru, Spain, Mexico, Costa Rica, El Salvador, and the Dominican Republic. Mr. McGrath has given lectures on urban renewal, city planning, and metropolitan development at many U.S. universities and has authored numerous publications on a wide range of subjects related to urban and environmental planning.

A.B., Dartmouth College; M.C.P., Harvard University.

Robert R. Nathan

Mr. Nathan is Chairman of Robert R. Nathan Associates. He has been an economic advisor in Burma, Korea, Puerto Rico, Colombia, Afghanistan, El Salvador, Ghana, Iran, Costa Rica, Nigeria, Malaysia, Taiwan, Venezuela, Honduras, Bolivia, Bangladesh, and Thailand.

He has been active in numerous associations, including: the American Economic Association, the American-Korean Foundation, the American Statistical Association, the Asia Society, Council on Foreign Relations, National Academy of Public Administration, National Assembly for Social Policy and Development, the Pan American Development Foundation, the Society for International Development, and the United Nations Association of the USA.

Mr. Nathan has authored articles on economic subjects for many publications and has presented testimony before Congressional committees and in judicial and administrative proceedings on economic matters.

B.S., M.S., University of Pennsylvania; L.LB, Georgetown University.

Richard T. Pratt

Dr. Pratt is President of Richard T. Pratt Associates. He specializes in valuation, securities analysis, financial analysis, and financial management. He has been a consultant to AID's Office of Housing in Egypt, Chile, Portugal, and Korea.

He is Professor of Finance at the University of Utah and has worked extensively with regulated industries. He has provided testimony on several occasions before regulatory, legislative, and judicial bodies including the U.S. Congress on financial matters.

B.S., M.B.A., University of Utah; Ph.D., business administration, Indiana University.

Theodore Priftis

Mr. Priftis is Vice President of the Foundation for Cooperative Housing (FCH). He is Program Director in charge of AID Housing Guaranty Program activities with responsibility for the management and implementation of consulting contracts. He participates in national shelter sector studies, conceptual and detailed program design, loan and program feasibility analyses, program and institutional evaluations, and short-term technical assistance assignments.

He was previously FCH resident advisor to the Director of the Panamian Institute of Housing and Urban Affairs on mortgage portfolio management/financial administration; to FUNDAVICO in Panama on management/administration issues; and to Colombia on housing issues.

B.A., economics, New York University; M.A., finance and development economics, Columbia University.

K.C. Sivaramakrishnan

Mr. Sivaramakrishnan is an Indian national who has been with the World Bank's Economic Development Institute since 1977. He has contributed frequently to journals and has lectured at several universities in India, the U.S., and Canada. He has been a consultant with the EDI, the UN, and the Asian Development Institute.

He previously wrote a book on new towns in India and directed a comparative study on the organizational framework for metropolitan development in Calcutta, Bombay, Madras, and New Delhi.

B.A., economics, Loyola College, Madras University; B.L., Law College.

Paul D. Spreiregen

Mr. Spreiregen is an architect/planner who has been extensively involved in architectural and planning projects in the United States. He has taught or lectured at Catholic University, Ball State University, Harvard University, the University of Tennessee, the University of Pennsylvania, the University of Hawaii, and Yale University.

B. Arch., Massachusetts Institute of Technology.

Douglas S. Way

Mr. Way is Associate Professor and Research Associate in Landscape Architecture, Department of Landscape Architecture, Harvard Graduate School of Design. He has directed short courses on aerial photographic interpretation, remote sensing, and terrain analysis and has been an instructor to many U.S. university groups.

He has authored many articles and has traveled extensively to Tunisia, Indonesia, Singapore, Israel, Hong Kong, the Caribbean, and Europe. In Indonesia he was a consultant to the Pulau Batam Industrial Development Authority in Jakarta and conducted natural resource and terrain analysis of Pulau Batam near Singapore under consideration for a major port development. He applied advanced terrain analysis and remote sensing techniques that culminated in staged conceptual plans.

B. Arch., Harvard University; M.A., geography, Clark University; Ph.D. candidate, applied geomorphology, Clark University.

James O. Wright, Jr.

Mr. Wright is a Senior Economist with PADCO who has specialized in housing finance and project feasibility economics. He is project director for the AID Office of Urban Development's integrated improvement program for the urban poor study (IIPUP) and has been involved in the following projects: Honduras IIPUP project, El Salvador Urban and Regional Development Study, the Indonesian National Urban Development Corporation projects, and the Port-au-Prince, Haiti development plan.

He has worked on housing policy studies, urban sector evaluations, and project planning in Korea, Honduras, Jamaica, Nicaragua, Thailand, the Yemen Arab Republic, Portugal, and a number of other countries.

B.A., economics, University of Michigan; M.A., economics, Georgeton University.

WORKSHOP PARTICIPANTS

African Development Bank

Abdulaziz H.D. Herzi

Mr. Herzi is Senior Architect of the Projects Department of the African Development Bank. Duties: identification, preparation, appraisal and supervision of social projects and participation in working groups on shelter.

Previous positions: Site Engineer and Resident Architect for Saudi Arabia and Libya projects; Managing Director of the Somalia National Housing Agency, and Chief Architect of the Somalia Ministry of Public Works.

Education: Faculty of Architecture, Italy.

Leonard M. Shango

Mr. Shango is Principal Economist for the African Development Bank. Duties: development of the ADB group housing policy; preparation of ADB group manual of operating procedures.

Previous positions: Planning Officer, Manpower, Ministry of Development Planning and Economic Affairs, Tanzania; and Economic Research Officer, Ministry of Agriculture, Tanzania.

Education: B.Sc., economics, Makerene University College (affiliate of London University).

Barbados

Elvin Burgess

Mr. Burgess is Financial Controller of the National Housing Corporation.

Edward Corbin

Mr. Corbin is Senior Field Supervisor, National Housing Corporation.

Botswana

Chapson Jabaru Butale

Mr. Butale is Deputy Town Clerk, Lobatse Town Council, Unified Local Government Service of Botswana. Duties: administrator acting for the town clerk; involved in physical and economic aspects of planning for the general town and for the low-cost, self-help areas in Lobatse.

Previous positions: Planning Officer, Education Secretary, and Teacher for various local governments.

Education: Cert., Teacher Training College, Botswana; Dip., Pan African Institute for Development.

Stanley Mooketsi Motse

Mr. Motse is Town Clerk, Gaborone Town Council, Botswana. Duties: administration of town council and coordination of town council activities.

Previous positions: Secretary of the Northwest District Council, of the Kweneng District Council, and of the Southern District Council.

Education: Institute of Development Management, Gaborone.

Cameroon

David Tata

Mr. Tata is Regional Director for the Northern Province, Ministry of Housing, Cameroon.

Ghana

Patrick Kwaku Adjei

Mr. Adjei is Assistant Economic Planning Officer, Ministry of Economic Planning, Ghana. Duties: schedule officer for the housing sector of the ministry; involved in capital budgeting

for the housing sector, as well as coordinating, monitoring, and reviewing macrolevel activities of the various agencies.

Education: B.A., economics, University of Ghana, Accra.

Daniel K.A. Asante

Mr. Asante is Architect, Ministry of Works and Housing, Ghana. Duties: design of house types, planning of sites and services projects, etc.

Previous positions: Architect, Ministry of Works and Housing.

Education: B.Sc., design, University of Science and Technology; Dip. Arch., University of Science and Technology, Ghana.

Indonesia

B.A.E. Meogiyono

Mr. Moegiyono is Project Delivery Manager for PERUMNAS. Duties: project preparation, site organization, accelerated scheduling, construction management, and construction contracting.

Previous positions: Manager of Logistics, PERUMNAS.

Education: B. Arch. Eng., Technical Academic, Bandung.

Didi Suwandhi

Mr. Suwandhi is Chief of General Program and Planning, PERUMNAS. Duties: data collection, analysis and evaluation; short- and long-term programming; monitoring annual and five-year development plans; liaison with funding agencies; and developing a manual of systems and standards.

Previous positions: Prague Housing Project; Deba-Nuremberg and Housing and Planning in Nuremberg, West Germany.

Education: M.Sc., engineering, CVUT, Prague.

Jamaica

Clive Anthony Laidley

Mr. Laidley is Director of the Sites and Services Division, Ministry of Housing, Jamaica. Duties: advise the Minister of Housing on housing policy and related issues; determine policy guidelines and plan, organize, direct, and control all activities related to the sites and services and upgrading programs of the government; and negotiate with international agencies and financial institutions to procure funding for projects.

Previous positions: Business Coordinator, University of Michigan; Financial Controller, Wherry Wharf.

Education: B.A., Eastern Michigan University.

David Morris Levermore

Mr. Levermore is General Manager of the Jamaica Mortgage Bank. Duties: carry out the policies of the bank as determined by the Board; carry out day-to-day activities; involved in the operating budget, carrying out investments and borrowing powers and matters of general policy.

Previous positions: Economist, Senior Economist, and Manager for Planning and Development of the Jamacia Mortgage Bank; lecturer and teacher of economics at various universities.

Education: B.A. and M.A. in economics, Howard University; M.A. in economics, University of Maryland.

Kenya

Josiah Kiptonui Kirui

Mr. Kirui is the Under Secretary of the Ministry of Local Government, Kenya. Duties: project planning, project appraisal, feasibility studies, preparation of the Ministry's development budget on local authority projects for transportation, water, roads, slaughterhouses, sewerage, and housing.

Previous positions: Administrative Officer, Provincial Administration; teacher.

Gibson Guandaru Maina

Mr. Maina is Deputy Chief Housing Officer for the Housing Department, Ministry of Housing and Social Services, Kenya. Duties: preparation of housing development plans and programs, monitoring and evaluation of housing programs and projects, preparation of housing development and recurrent estimates, and coordination of divisions within the department.

Previous positions: Statistical Officer, Ministry of Economic Planning; Housing Economist, Ministry of Housing; Economic Planner, Ministry of Health; and Program Officer, National Housing Corporation.

Education: B.Sc., economics, University of Khartoum; B. Phil., economics, University of Nairobi.

James K. Ndeti

Mr. Ndeti is Cooperative Officer for the Ministry of Cooperative Development. Duties: project surveys, identification, evaluation and implementation, and planning housing projects.

Previous positions: District Cooperative Officer and Cooperative Project Surveyor, Ministry of Cooperative Development.

Education: B.A., economics, Nairobi University.

Jobson Joshua Ngari

Mr. Ngari is Senior Program Assistant for the AID Regional Housing and Urban Development Office (RHUDO), Nairobi. Duties: research activities on shelter and urban development in Kenya, regular reports on current research activities in the urban field, assisting teams in Kenya, and investigating specific problems on current projects (housing market difficulties, subletting, income profiles of beneficiaries, etc.)

Previous positions: Assistant Physical Planner, Physical Planner, and Senior Physical Planner for the Physical Planning Department of the Ministry of Lands and Settlement, Kenya.

Education: B.A., economics; M.A., planning, Nairobi University.

Pius Joseph Odhiambo

Mr. Odhiambo is National Cooperative Officer for the Central Organization of Trade Unions, Kenya. Duties: organize seminars for trade union leaders, lecture to various seminars organized by Kuscco and trade unions, and coordinate activities of the National Cooperative Housing Union.

Previous positions: Provincial Cooperative Officer, Government of Kenya.

Education: East African School of Cooperation and the Cooperative College of England.

Lesotho

A. Malefetsane Mkhahle

Mr. Mkhahle is Director of Housing, Ministry of Interior.

Malawi

Robert A.B. Chayenda

Mr. Chayenda is Administrative Officer of the Housing Section, Office of the President's Cabinet, Malawi.

Mauritius

Rajendrasing Ramlackhan

Mr. Ramlackhan is the Chief Government Valuer for the Ministry of Housing, Lands, and Town and Country Planning, Mauritius. Duties: advise government on all matters relating to land, including estate management and land development.

Previous positions: Cadet Valuer and Governmet Valuer.

Education: M.Sc., land appraisal, College of Estate Management, University of Reading.

Mexico

Gonzalo Gomez Lara

Mr. Lara is Chief of the Housing Programs Department, Dirreccion General de Equipamiento Urbano y Regional. Duties: responsible for programming the number of housing units that should be built by the public sector, including the types of programs and the financial mechanisms to be used.

Previous positions: Chief Executive of Emergency Programs, of Multistoried Housing; Chief of Department Costs; and Coordinator of the Mexico City Regeneration Study.

Education: B. Arch., UNAM-ENA, Mexico.

Peru

Rodolfo Aurelio Salinas

Mr. Salinas is Urban Development Specialist for AID. Duties: assist AID in programming and implementing assistance to Peru for urban poverty and shelter programs; assist in low-income shelter programs with the Housing Bank and the Ministry of Housing and Construction; assist in program design including self-help housing, social services, improvement programs, and financing.

Previous positions: Advisor to Minister of Housing; General Director for Building Permits; Director of Urban Control; and Director of Urban Renewal.

Education: Eng., National University; Cert. urban and regional planning, Lima Planning Institute; M. Construction, National University for Engineers; P.M.D., business administration, Harvard University.

Philippines

Encarnacion Narciso-Rarolio

Mr. Narciso-Rarolio is Program Director for Human Settlements, Regional Commission.

Previous positions: Project Officer, Development Academy of the Philippines; Urban Planner, Laguna Lake Development Authority.

Education: B. Arch.; M.A., environmental planning.

Teresa R. Sibuco

Ms. Sibuco is Market Analyst, Planning Service, Ministry of Finance.

Previous positons: Loan Examiner, Planning Services, Ministry of Finance.

Education: B.A., economics and finance.

Somalia

Mohamed Essa Abdi

Mr. Abdi is Director of Planning and Design for the Ministry of Public Works. Duties: responsible for staff and office administration; project and construction design; project financing negotiations; contract negotiations; and project planning.

Previous positions: Regional Director, Project Manager, and Construction Site Engineer.

Education: B.Sc., California University Polytechnic.

Abdi Mohamed Jama

Mr. Jama is Director of Construction for the Settlement Development Agency. Duties: supervises all building construction; manages and plans all activities concerning building trade.

Previous positions: Inspector, Ministry of Public Works; Director, Housing Agency; and Director, Fishery Settlement Agency.

Education: Dip., Briston School of Building, England.

Sri Lanka

Lakshman Nihal Abeyesekere

Mr. Abeyesekere is the Acting Construction Manager for the State Engineering Corporation. Duties: responsible for formulation, contractural aspects, planning, programming, cost and staff control; design, requisition of plant and machinery; ordering materials; personnel; etc. of projects handled by the organization.

Previous positions: Civil Engineer for the State Engineering Corporation and Project Manager.

Education: B.Sc., engineering, University of Ceylon.

Lalitharaja Mutukumarana

Mr. Mutukumarana is Architect-in-Charge of the National Capital Development Project, Urban Development Authority. Duties: conceptual design and structure plan of the new city; planning and design of individual townships within the planning area; directing and supervising project staff; coordinating various agencies; and identifying planning and design of new housing, commercial, and administrative complexes.

Previous positions: Assistant Architect, Housing Adviser and Project Manager, and Architect for private groups.

Education: Dip. Arch., Robert Gordons Institute, Aberdeen, England.

Susil Sirivardana

Mr. Sirivardana is the Deputy General Manager for Rural Housing, National Housing Development Authority. Duties: responsible for planning and executing the aided self-help component of the government's housing program.

Previous positions: Project Officer, Youth Settlement for the Ministry of Land, Irrigation, and Power; Agrarian Director, Ministry of Agriculture and Lands.

Education: B.A., Oxford University.

Dias Weerapana

Mr. Weerapana is the Deputy Director for Project Development of the Ministry of Local Government, Housing, and Construction. Duties: sector surveys; preparation of sector plans and medium-term investment programs; development of housing strategies and programs; planning and improvement and upgrading of slums and shanties; planning urbanization and the provision of human settlement infrastructure; and formulation and appraisal of housing and urban infrastructure projects for foreign financing.

Previous positions: Divisional Revenue Officer, Ministry of Home Affairs; Assistant Director, Ministry of Finance; Assistant Director and Director, Ministry of Planning and Economic Affairs.

Education: B.A., economics, University of Ceylon; Dip., statistics, University of Ceylon; Dip., project analysis, Institute of Social Studies, The Hague.

Tanzania

Joram M.L. Mghweno

Mr. Mghweno is Manager of the National Sites and Services Project.

Thailand

Visnu Bhulsuk

Mr. Bhulsuk is Policy and Plan Analyst, Infrastructure Project Division, National Economic and Social Development Board. Duties: planning and appraisal of government and state enterprises' economic and social development projects, including housing and slum upgrading projects and urban development projects such as bridges, transit, and waterworks.

Previous positions: Technician, Social Projects Division and Infrastructure Projects Division.

Education: B.A., financial administration, Chulalongkorn University, Thailand; M.A., economics, University of Hartford, Connecticut.

Krittiga Siriyuvasakdi

Ms. Siriyuvasakdi is Budget Division Head of the Finance Department, National Housing Authority. Duties: supervising three sections; preparation of the annual budget; monitoring expenditures; managing loans, bonds, etc.; estimating sales, rental, and hire-purchase prices; financial planning; and housing subsidy requirements.

Previous positions: Investment Record Section Head, Capital Budget Section Head, Assitant to the Investment Head, and Assistant to the Budget Division Head.

Education: B.A., economics, Thammasat University, Thailand; M.S., management science and finance, West Coast University, California.

SHELTER SECTOR WORKSHOP: WEEK #1 LOGISTIC NOTES
November 5-11, 1979

Day and Date	Time	Code	Program Event	Person Responsible	Location	Notes
Weekend Nov 2-4			Arrivals	Alice Zwerdling (WIC)	Airports to Park Central Hotel 705 18th Street, N.W.	WIC to meet all participants if flight details are received.
Monday Nov 5	9-12		General Orientation	Alice Zwerdling (WIC)	Washington International Center 1630 Crescent Place, N.W.	Metrobus chartered to take participants from hotel to WIC. Pickup at 9:00 a.m.
	1-2		Workshop Briefing	Alfred Van Huyck	Washington International Center (after lunch break in WIC's cafeteria)	Distribute workshop notebooks and schedule individual conferences for November 6.
Tuesday Nov 6	9-5		Registration and Individual Conferences	Faculty	Workshop Office Park Central Hotel Room 1101	Workshop Office Tel: 347-7148
	6-8	1.S	Reception	James Coughlin (WIC) Faculty	Washington International Center	Metrobus chartered to take participants from hotel to WIC. Pickup: 5:30 p.m. Return: 8:00 p.m.
Wednesday Nov 7	9-10:30	2.S	Introduction of Participants and Orientation	Faculty	American Institute of Architects (AIA) 1735 New York Avenue, N.W. Board Room	Participants to walk from hotel to AIA.
	10:30-12	3.S	Opening Welcome Talks	Peter Kimm	AIA Board Room	
	12-3	4.S	Lunch and Opening Address	Robert Nathan	Hay Adams Hotel 800 16th Street, N.W. Hamilton Room	Participants to walk from AIA to Hay Adams.
	3-4	5.HP	Definitions and Functions of Housing	Alfred Van Huyck	AIA Board Room	Participants to walk from Hay Adams to AIA.
	4-5	6.HP	Target Group Concepts	Alfred Van Huyck	AIA Board Room	
Thursday Nov 8	9-10	7.HP	Establishing Effective Demand	James Christian	AIA Board Room	
	10-11	8.HP	Analyzing Housing Supply	James Christian	AIA Board Room	
	11-12	9.HP	Land Use Issues	Malcolm Rivkin	AIA Board Room	
	2-3	10.HP	Establishing Housing Policy Objectives	Alfred Van Huyck	AIA Board Room	
	3-5	11.HP	Outline of the Content of a National Housing Policy	Alfred Van Huyck	AIA Board Room	
Friday Nov 9	9-12	12.HP	WORKSHOP I	Alfred Van Huyck	AIA Board Room	
	2-3:30	13.HP	Urban Land Policy	William Doebele	AIA Board Room	
	3:30-5		Discussion Group A Discussion Group B	Alfred Van Huyck Malcolm Rivkin	AIA Board Room AIA Conference Room #2	
	8 on	14.S	Informal Party: Shelter Sector Disco	Faculty	1834 Jefferson Place, N.W. near 19th & M Streets, N.W.	After dinner.
Saturday Nov 10	10-4	15.S	Washington, D.C. Tour	Paul Spreiregen	Chartered bus	Metrobus chartered; will pick up participants at Park Central Hotel at 10:00 a.m.
Sunday Nov 11	Free Day					

SHELTER TRAINING WORKSHOP

November 5-30, 1979

INTRODUCTION OF PARTICIPANTS AND ORIENTATION

Wednesday, November 7, 1979

9:00-10:30 a.m. Code 2.S

OPENING WELCOME TALKS

Wednesday, November 7, 1979

10:30 a.m. - 12:00 noon Code 3.S

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

LUNCHEON ADDRESS BY ROBERT NATHAN

Wednesday, November 7, 1979

12:00-3:00 p.m. Code 4.S

SHELTER TRAINING WORKSHOP

November 5-30, 1979

DEFINITIONS AND FUNCTIONS OF HOUSING

Wednesday, November 7, 1979

3:00-4:00 p.m. Code 5.HP

TARGET GROUP CONCEPTS

Wednesday, November 7, 1979

4:00-5:00 p.m. Code 6.HP

Presented by:

Alfred P. Van Huyck

SHELTER TRAINING WORKSHOP

November 5-30, 1979

I. DEFINITIONS. . . . . 5.HP -- 1

A. Shelter. . . . . 5.HP -- 3

B. Local Settlement . . . . . 5.HP -- 3

C. Shelter System . . . . . 5.HP -- 4

II. FUNCTIONS OF SHELTER . . . . . 5.HP -- 5

III. TARGET GROUPS. . . . . 5.HP -- 9

IV. BIBLIOGRAPHY . . . . . 5.HP -- 12

FORMULATING NATIONAL SHELTER SECTOR PRIORITIES

- DEFINITIONS AND FUNCTIONS OF HOUSING 5.HP
- TARGET GROUP CONCEPTS AND HOUSING SUBMARKETS 6.HP

I. DEFINITIONS

1. The purpose of the definitions to be suggested here is to describe the scope of the subject matter to be dealt with in the present workshop and, subsequently, if the definitions are found to be useful, in the formulation and implementation of shelter programs.

2. Good definitions will have two complementary characteristics: they will be limited enough to focus on the essential features of shelter, thus helping to keep the workshop discussion and actual programs relevant and manageable; at the same time, they will be comprehensive enough to include all of the important aspects of shelter, thus helping to ensure that programs based on the definitions will be capable of achieving all of the shelter sector's potential purposes.

3. In the approach adopted here, a distinction is made between the basic, or primary, purposes of shelter and its intermediate, or secondary, purposes. The basic purposes all have to do with the well-being of people -- specific groups of households within the national population or the nation's people as a whole. These groups will be called target groups -- the targets on which action in the sector is focused. The development and use of shelter will have impacts on many other things as well -- gross domestic product, the level of savings and investment, returns to capital in the construction industry, land values, and so on; but these impacts are of interest only to the extent that they result in impacts on specific target groups and the importance given to them will depend not only on their magnitude but also on the importance of the target groups they impact. Target groups will be discussed at an introductory level later in this session of the workshop; they will be dealt with in more detail in a subsequent session.

4. The primary purposes of shelter can be grouped usefully in two broad categories: the delivery of immediate benefits to

the target groups it serves and the provision of a foundation for the enjoyment of future benefits. Immediate benefits include such things as the use of shelter for family activities, the rents received for the use of shelter (including rents received by low-income families who build huts for rent or lease out part of their own space) and the incomes earned through residential construction and maintenance. The foundation created for the enjoyment of future benefits includes the physical capital represented by shelter and the human capital developed through skills learned in construction and through the informal education that household members receive as they learn to function as borrowers, as users of urban services, or as property owners. Secondary purposes have to do with such things as the impact of activity in the shelter sector on the local, regional, or national economy, its impact on public revenues, or its environmental impact. Both primary and secondary purposes will be dealt with more fully in the discussion of the functions of shelter.

5. An obvious question which arises in forming appropriate definitions is where to stop. Should "shelter" include only the lot and house (or apartment) used for domestic activities? Should it include the space for shops or workshops so often included under the same roof as a family's living space? Should it include the community facilities, open space, roads, and related facilities and services which are included in many types of settlement? Should it include the credit mechanisms, the construction industry, the land market, and the many other systems of facilities and services through which shelter is financed, produced, and used?

6. The approach taken here is to keep the definition limited in scope, focused on the physical unit needed by an individual household for its domestic and related daily activities (including household manufacturing and commerce -- or on-site agriculture, if the household cultivates animals and/or vegetables on its plot for its own consumption or sale). The facilities and services needed for daily activities off the individual plot -- manufacturing and commerce, formal education, the provision of public health services, and so on -- are not included.

7. This limitation in the definition helps to simplify some steps in the analysis and planning needed for the preparation of a housing program -- for example, in estimating the number of shelter units of a particular type that will be required. However, such a narrow definition should be related to a definition of the system needed for the financing, siting, construction, use, and maintenance of the individual unit of shelter.

8. The definition of shelter and the shelter system both should be related to a definition of the broader settlements

(rural or urban) in which households participate, and upon which they depend, in their daily activities.

9. The following three interrelated definitions are therefore suggested as a basis for the initiation of the discussion in the workshop -- no doubt they will be improved upon as the workshop proceeds:

A. Shelter

1. Shelter is defined to be the land, on-site services, and built space used by a household (rural or urban, renters, owners, or squatters) for its own immediate purposes (which may include household agriculture, manufacturing and commerce, as well as purely residential activities).

This is the basic definition to be used for analyzing existing shelter and projecting the need for individual shelter units of specific types.

B. Local Settlement

1. A local settlement is a group of individual shelter units and the infrastructure and services (roads, water supply, sanitation, drainage, electricity, etc.), community facilities, and services (clinics, schools, community centers, open spaces, etc.) and commercial facilities and services (such as local shops) used daily by the households occupying the shelter units.

(a) The phrase "local settlement" is used here because the more general term "settlement" is used frequently to refer to human settlements at a great variety of scales, from the remote rural village to the megalopolis.

(b) This definition is important because households in most situations depend upon their settlements, as well as their individual shelter units, for the satisfaction of their basic needs. The definition is significant also because investment in a shelter and investment in a settlement often will be important alternatives for the household -- for example, is it preferable to have a large lot with low standards for local infrastructure and community facilities or a smaller lot in a high-status area with good infrastructure and well-developed community facilities and services?

(c) In most cases the relevant unit for analysis and planning in a shelter program will be the settlement, rather than the individual shelter unit -- related, of course, to the larger city, metropolitan, or regional system in which it is located.

C. Shelter System

1. A shelter system consists of all of the people, land, goods, services, activities, entities, and institutional instruments involved in the siting, production, allocation, use, maintenance, management, and transfer of rights in shelter. A typical shelter system will include at least the following components:

(a) The households who are the immediate users of shelter (they may also be its producers).

(b) The members of the labor force participating in the construction, maintenance, or servicing of shelter.

(c) The community groups who are mobilized in cooperative or other forms of joint endeavor for the construction, management, and maintenance of shelter.

(d) The individuals and groups (including but not limited to occupant households) who use shelter as a territorial base for social activities.

(e) Property owners.

(f) Intermediaries in the real estate market.

(g) The construction industry, including architects, developers, construction contractors, the producers and suppliers of building materials, etc. As in a number of the other components of a shelter system, both the formal and informal segments of the construction industry are likely to be important; the informal segment is likely to be producing over 50 percent of the supply of shelter.

(h) The infrastructure and related services through which shelter is supported.

(i) The credit mechanisms, formal and informal, through which shelter and settlements are financed.

(j) The producers and distributors of furniture, household equipment, equipment for households' commercial activities, and other durable or semi-durable goods used in conjunction with shelter.

(k) The private or public landlords and other entities responsible for the management of residential rental space.

(l) The entities, public or private, responsible for the planning, monitoring, and evaluation of shelter programs and projects.

(m) The laws and regulations governing the production, use, disposition, and taxing of shelter and the entities responsible for the enactment and administration of these laws and regulations.

2. Where the settlement, rather than the individual shelter unit, is of concern, the system will include also the people, entities, facilities, services, and legal framework through which health, education, recreation, daily shopping, and other needs are provided for.

3. A careful definition of the shelter system relevant in each situation is important because the successful delivery of appropriate shelter will depend on the proper functioning of that system.

II. FUNCTIONS OF SHELTER 1/

1. The following list develops the functions of shelter:

(a) The provision of a physical base for a households' domestic activities. *SLIDE: diagram of space and time use in residential activities.*

(b) Provision for privacy; for urban households, in particular, the individual household shelter provides one of the few opportunities for real privacy. *SLIDE: interiors of housing at different socio-economic levels.*

1/ The person presenting this session of the workshop may wish to illustrate the discussion of functions with slides and data from specific cases; suggestions for the use of illustrative material are therefore included in the text.

(c) Provision of a status symbol for the household. *SLIDE: conspicuous consumption housing; and an apartamento sign over a meson.*

(d) Provision of a source of creative expression for the household -- through construction, decoration, and maintenance. *SLIDES: indigenous decoration; also modifications to public housing units by individual households (e.g. North Karachi).*

(e) The development of technical skills and the provision of opportunities for informal education: *USE SLIDES FOR EACH CASE.*

The development of skills in construction and related trades;

Experience in obtaining and being responsible for the use of credit;

Experience in obtaining and being responsible for basic urban services;

Experience in the use of legal services.

(f) Provision of a source of power for the household -- as property owner or tenant. *SLIDES: community groups meeting over communal issues.*

(g) Provision of incomes and employment for the occupants of shelter -- through construction, maintenance, and manufacturing of commercial activities carried out in the house or on the lot. 1/

(h) Provision of employment and income for other members of the labor force -- through construction, financing, sales, management, and maintenance. *SLIDES: activity in the formal construction industry. DATA: figures on the direct and indirect employment generated through investment in housing in various countries.*

1/ Some analysts argue also that improvements in shelter tend to increase the productivity of household members. See, for example: B. Khing Tjioe and Leland S. Burns, Housing and Productivity: Causality and Measurement. Paper prepared for presentation at the Annual Meetings of the American Statistical Association, Los Angeles, California, August 15-19, 1966.

(i) The generation of rental income (including rental income for low-income households who rent part of their own shelter to others or construct huts for rent). *SLIDE: "for rent" sign on a unit in a low-income settlement.*

(j) The accumulation of capital -- through initial savings and investment in shelter and through subsequent capital gains associated with increases in property values. In many cases an important part of the increase in property values is the result of public investment in infrastructure and other improvements; investment of this kind can be a significant (and selective) public instrument for affecting the distribution of wealth. For many households shelter is the only substantial form of savings ever achieved. *DATA: annual increases in the market values of residential properties in selected metropolitan centers in developing areas (e.g. San Salvador).*

(k) Provision of a basis for community organization -- for example, where households mobilize to defend their common interests as property owners or tenants, where they participate in mutual aid in the construction of shelter, or where they participate in communal improvements in the local environment. *SLIDES: households installing communal infrastructure or undertaking other environmental improvements. DATA: specific case histories of community mobilization to defend (or obtain) property rights (e.g. the casa blanca colony in San Salvador).*

(l) Contribution to national output: through the contribution of the shelter sector itself to GDP; through induced output in other sectors with which the shelter sector has backward or forward linkages. *DATA: contribution of the shelter and related sector to GDP in selected countries.*

(m) The mobilization of savings in the economy -- through savings and loan associations and other elements of the formal financing system and through a variety of informal mechanisms. *DATA: Funds accumulated for investment in housing in various countries, in relation to other data on bank deposits, etc. Data on rates of return on investment for the stockholders in savings and loan associations, as evidence of the incentives for the creation of mechanisms of this type (e.g. the savings and loan associations of El Salvador).*

(n) The generation of public revenues through user charges for shelter-related services (water supply, etc.).

(o) The generation of public revenues through the property tax. Note that a property tax based on the market value of land, in addition to generating substantial revenue, can help to recover for the public sector some of the capital gains resulting from public investment, curb speculation, and induce efficient land use. *DATA: potential increases in public revenue through improvements in the urban property tax -- specific cases (e.g. Karachi, San Salvador).*

(p) The improvement of local environments. *SLIDES: "before" and "after" stages of low-income settlement upgrading; also "before" and "after" stages of the development of open land, showing drainage and erosion control, planting, and other improvements.*

2. The potential functions of shelter suggest the kinds of basic and secondary objectives that can be established for programs and projects in the sector.

3. The physical form of individual shelter units and entire settlements, the financing of housing programs, the institutional arrangements made for the provision and maintenance of shelter and the legal framework established for encouraging and regulating activity in the sector should be designed with all of the possible functions of shelter in mind in order to make the fullest possible use of its potential.

4. Because shelter is capable of serving so many functions, the design of shelter programs is likely to require that a number of trade-off decisions be made. For example:

(a) What should be the relative emphasis placed on fulfilling the shelter requirements of low-income households and increasing tax revenues through the development of middle- and upper-income housing?

(b) What should be the relative emphasis placed on short-run efficiency for the individual enterprise in the production of shelter, to contribute as fully as possible to GDP, and the generation of low-skilled employment through construction techniques which are less efficient in the short run?

(c) In the design projects, to what extent should provision be made for individual households to express themselves in the design and decoration of their shelter and to what extent should uniformity be sought in order to reduce the initial costs of development and facilitate later transfers of units among households?

(d) To what extent should the training potential of a project be a factor in its design? For example, what should be the relative emphases placed on the training of unskilled workers in the course of the work (possibly involving slower construction schedules and some sacrifices in quality) and the fastest possible delivery of units of the highest possible quality?

5. The task in weighing these and other trade-offs is to arrive at a program which gives to each of the possible functions of shelter an importance that is appropriate to the objectives which have been established in a particular situation and the resource constraints operative in that situation.

III. TARGET GROUPS (6.HP)

1. The selection of target groups in a particular situation will be the subject of a detailed discussion in a later session of the workshop. The comments here are preliminary.

2. Keeping in mind the functions of shelter identified earlier, the following types of target groups are likely to be relevant in most situations:

(a) The national population as a whole -- which can benefit from the various types of investment made possible by the savings induced by activity in the shelter sector and the public investment made possible by revenues from taxes on residential property.

(b) The members of the labor force who obtain employment and/or increase their skills in construction and in related industries.

(c) The community groups who participate through cooperatives or other forms of communal action in the construction and maintenance of individual shelter units and/or community facilities.

(d) The formal and informal social groups who use communal space for social activities such as club meetings, general socializing, recreation, etc.

(e) The households who occupy individual shelter units as owners, renters, or squatters.

3. The priorities and capacities of each of these (and possibly other) target groups should be reflected in the siting, physical design, materials, construction methods, financing, institutional arrangements, and legal framework for each project.

4. Although the households who are the ultimate users of shelter are not the only group that should be of concern, they are obviously one of the most important. Usually, there will be a series of distinct types of user, each with distinct needs, priorities and capabilities. Each one is likely to have to be treated as a distinct target group.

5. To identify specific target groups among the users of shelter in such a way as to help in identifying the types of shelter program appropriate for each one, it may be useful to analyze the following three broad user characteristics:

(a) Their present level of well-being -- measured in terms of such things as the quality of the shelter they now enjoy, the urban services they are able to use, and the opportunities they have to participate in decisions affecting their well-being -- and the extent to which they can be expected to improve their own condition without further governmental intervention.

(b) The extent to which they already control and can be expected to control capital assets that could provide a basis for future improvements in well-being -- including the human capital represented by household members, the physical capital represented by their shelter unit and other property, their other tradeable assets, and their access to credit. It may be useful to distinguish several types of property rights in classifying households in terms of their assets -- for example, households with no secure tenure, relatively secure squatters, tenants, and owners. Several different degrees of access to credit might be recognized similarly -- households without access to credit, households with access only to informal credit, and households with access to formal credit.

(c) Their "territorial orientation" -- that is, the location which they regard as their more or less permanent base for household activities (if they have a permanent base). It may be useful to differentiate three types of territorial orientation: external orientation -- where the members of a target group are in an area primarily in order to generate income for investment elsewhere; transit orientation -- where households are intending to remain in the general area in which they are now located but are using the particular locality merely as a "staging" area until they find (and can afford) something better; and stable orientation -- where households expect to remain for a relatively long period in the locality they are in.

6. Households with different levels of current consumption, amounts of capital and territorial orientations are likely to require quite different types of shelter program. Households which have "stagnated" at a low level of current consumption are likely to require types of support not needed by households which have already discovered how to improve their own condition with little or no government help. The needs of a household with no secure tenure will be different from those of squatters in well-established colonies and different again from those of legal titleholders. Externally-oriented households probably will have no interest in credit programs designed to encourage improvements in existing locations but such credit is likely to be a high priority for stably-oriented households.

Note: This discussion of possible types of target group should be illustrated with specific cases. The Program for the Integrated Improvement of Critical Metropolitan Areas in El Salvador (1978) contains good examples and consists of a series of programs designed specifically for individual target groups.

7. Factors such as employment and income are not suggested here as a basis for identifying target groups because the real concern is with levels of well-being, assets, and territorial orientation; factors such as employment and income are important as contributors to these conditions, not in themselves. However, in situations where information on actual consumption and assets is not available, data on incomes and other variables for which data are available may be used as indirect indicators of well-being. (This is suggested in the Joint Sessions of Component II the workshop.)

8. The importance attached to particular types of present well-being and capital assets is likely to vary from household

to household, from time to time in a household's life cycle and from place to place. Such differences in priorities, as well as differences in levels of well-being, assets and territorial orientation, will mean that different categories of households are likely to be relevant for project selection and design in different situations. It is not useful -- in fact it would be potentially dangerous -- to identify supposedly universal "target groups" (just as dangerous as the past practice of treating "the poor" as a single group). It is tempting to simplify program support by including more or less standardized componenets in programs for "the urban poor" or "the rural poor" but this is not likely to be effective; each program and project should be tailored for specific groups, in specific locations, at specific stages in their development.

Note: This point should be illustrated with cases of markedly different target groups from the same general geographic area (by reference back to the El Salvador case) and from different areas.

9. The identification of the target groups appropriate for a particular situation will be an important element of the task of identifying housing submarkets -- a topic to be taken up in Component II of the Workshop in Group II (Financial/ Economic). Housing submarkets are defined, technically, in terms of the economic substitutability of shelter units. Their substitutability will depend to a large extent on their suitability for specific target groups.

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Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ESTABLISHING EFFECTIVE DEMAND

Thursday, November 8, 1979

9:00-10:00 a.m. Code 7.HP

Presented by:

James W. Christian

ESTABLISHING EFFECTIVE DEMAND FOR IMPROVED SHELTER

Housing need is evident in every major city of the world, more acutely so in the cities of the Third World. The housing problem centers on the means of transforming this need into effective demand and matching that demand with effective supply.

The effective demand for shelter expressed by an individual household is the amount of money the household is willing and able to pay for shelter in a specified period of time.

Income and wealth are the critical determinants of a family's ability to pay. The amount it is willing to pay depends on a much larger number of factors. Among these are individual tastes and preferences, the cultural value placed on shelter and family life, and the priority accorded to housing among all the family's expenditures.

These priorities change through time for the individual family. Marriage, in many cultures, may only mean the addition to the joint family home of a sleeping room for the newlyweds. Children are accommodated along with grandparents, parents, brothers, and unmarried sisters in the in the same house. Common facilities, such as the kitchen, are shared by all.

Joint families are common in rural areas and represent both a community and an institution, with mutual obligations and responsibilities between and among their members. When a new room must be built, the members of the family combine their efforts and resources to build it. Effective demand for shelter is thus embedded in the social fabric of the culture and can be isolated in modern economic terms only with great difficulty.

Rural-to-urban migration, which is such a common phenomenon in the Third World, is substantially changing the functional role of the joint family in providing shelter and changing the cultural milieu in which housing problems must be addressed.

Whole joint families seldom migrate. Members of joint families do, usually the young, either as single individuals or nuclear families. As new arrivals in an urban area, they may initially stay with relatives or friends who have migrated earlier, but the cultural presumption in the city is that they will ultimately establish a household of their own as a nuclear family, separate and apart from that of their relatives.

In the context of this change in the socio-economic structure, the need for individual dwelling units expands rapidly at the same time that the traditional means of shelter supply -- the joint family -- ceases to operate. New communities and new institutions must be built, or existing ones expanded, to accomodate these new circumstances.

One other factor should be noted. The urban economy is largely a money economy whereas the rural economy is a mixture of money economy, barter, and production for the family's own consumption. The urban economy therefore imposes much greater economic discipline on individual families. In this context, the discussion of effective demand for shelter can properly be conducted in modern economic terms.

Income and wealth have been identified earlier as critical determinants of the effective demand for shelter. The family's income represents the flow of earnings that it receives on a periodic basis -- daily, weekly, or monthly. The family adds to its wealth by setting aside some portion of income for the accumulation of assets. For the family, the addition to assets may be considered saving, although in

strict economic terms this may not be so.

The demand for shelter must now be treated on two distinct levels. On the one hand, if a family rents shelter, it does not add to its wealth. It is simply purchasing shelter services in much the same way that it purchases food or clothing. On the other hand, if it is purchasing the dwelling unit, it is acquiring the asset that produces those shelter services. The family's willingness to pay for these two alternative means of acquiring shelter services may be quite different. Therefore, the effective demand for each may be quite different.

In short, the willingness to pay for rented shelter is likely to be much less than the willingness to pay for the opportunity to own the dwelling unit, since homeownership constitutes an addition to wealth as well as a purchase of shelter services.

Household expenditure surveys, which are frequently used in estimating effective demand, usually fail to make this distinction and consequently, underestimate the percentage of income that families are willing and able to pay.

There is another distinction to be made between rental demand and homeownership demand. Rental payments are made on a periodic basis -- weekly or monthly -- that more or less coincides with the receipt of income. For all but a minority of wealthy families, homeownership is possible only by making periodic payments or expenditures correspond to income receipts in the same way that rental payments correspond to income receipts.

There are two basic ways of accomplishing this. The first is for a family to adopt an incremental construction program. This approach is most evident in informal, or "squatter", settlements around the world.

The family uses accumulated savings to build a rudimentary dwelling, usually of impermanent materials. The next stage of construction, which usually involves replacing impermanent with permanent building materials, is undertaken when savings have again reached a level that permits the family to make the expenditure for upgrading their dwelling unit. Construction proceeds in this way over an extended period of time, often years, as the family's ability to save out of income permits.

The alternative to this approach is to borrow the necessary funds to build or purchase a basic dwelling unit. The family acquires the full amount of shelter services in a very short period of time and repays the loan in amounts not substantially different from the amounts they would have had to save to pursue the incremental construction approach and in installments that correspond approximately to the receipt of income.

In each case, an effective demand for shelter is being expressed, but as noted earlier, demand is not only a price and quantity concept, it also has a time dimension. It is clear then that for any given time period, shelter demand will be greater if credit is available than if it is not. Indeed, credit is probably the single most important element in a program of expanding effective demand for shelter.

To illustrate this point, assume that the cost of a basic dwelling unit, with land, sanitary sewerage, and potable water costs US$2,000 today and that its cost rises at 10 percent a year, so that next year, the same house will cost US$2,200, the year after US$2,420, and so on.

Next assume a family with annual income of US$1,000 and savings of US$500, accumulated over a six year period. The family's income is assumed to increase at 10 percent a year. The family spends 10 percent of its income on rent and saves 10 percent for emergencies and for the ultimate goal of owning their own home, which is considered by the family as an addition to its wealth. No housing finance system exists, however, so the family earns no interest on its savings. The data shown in the table below

YEAR	INCOME	SAVINGS	COST OF BASIC HOUSE	WEALTH
1	1,000	500	2,000	500
2	1,100	610	2,200	610
3	1,210	731	2,420	731
4	1,331	864	2,662	864
5	1,464	1,010	2,928	1,010
6	1,610	1,171	3,221	1,171
7	1,771	1,348	3,543	1,348
8	1,948	1,543	3,897	1,543
9	2,143	1,757	4,287	1,757
10	2,357	1,993	4,715	1,993

suggest that the family will never be able to purchase a home, even though it saves a significant percent of its income and its income rises in proportion to the cost of the dwelling unit. In terms of effective demand for shelter, the family demonstrates that it is willing to pay at least 10 percent of its income for shelter (the assumed rent) and perhaps as much as 20 percent (the sum of rent and savings). Yet it is unable to pay the price of a basic dwelling unit. The effective demand for shelter being expressed by this family is, therefore, equal only to the rent it pays -- in year 1, that amounts to US$100, in year 2, $110, and so on. Furthermore, the family's wealth would be equal only to its

savings.

Next consider a family that pursues a self-help, incremental construction program. Assume that it has been able to purchase a plot of land with its savings of $500 and been able to construct a rudimentary dwelling of discarded materials at essentially no cost. The family's income is as before but it no longer pays rent, so that at least 10 percent of its income is available for the purchase of permanent building materials. If the family devotes 5 percent of its savings to this effort also, a total of 15 percent of income can be devoted to the construction of their own home.

Next assume that in year 1, the complete stock of building materials needed to construct the dwelling unit costs $1000 and that its price rises at 10 percent a year. The data in the table below

YEAR	INCOME	SAVINGS	COST OF MATERIALS STILL TO BE PURCHASED	WEALTH
1	1,000	-0-	1,000	500
2	1,100	50	935	
3	1,210	110	847	
4	1,331	176	732	
5	1,464	249	586	
6	1,610	330	403	
7	1,771	418	178	
8	1,948	515	-0-	

suggest that the incremental, self-help construction program would require about 13 years -- 6 years to save the money to buy the land and about 7 years to purchase the materials, unless savings are drawn down between the sixth and seventh years to purchase the final block of materials. The effective

demand for the shelter being expressed by the family under this approach would be approximately the 15 percent of income being devoted to the purchase of building materials -- in the second year, this would amount to US$165. The family's wealth would increase as the value of the home increased.

Suppose now that the family has access to mortgage credit for the purchase of the basic dwelling unit that costs US$2,000 in year 1. With the same income assumptions, assume that credit is available at 10 percent interest for 15 years. The family's US$500 of accumulated savings are used as a downpayment, so that the loan is for US$1,500. Such a loan would require an annual level payment of US$197, or about 18 percent of the family's income in year 2. This percentage falls as the family's income rises, of course, since a constant, level payment has been assumed. In year 3, 16 percent of income would be devoted to the mortgage payment and in year 4, the payment would fall below 15 percent and continue to decline. Moreover, the family's wealth, or net worth would rise as it repaid the loan and as the market value of the house increased.

The effective demand for shelter being expressed by this family would be US$2,000 in year 1 and zero thereafter.

Long-term credit for housing finance therefore increases effective demand, but this example raises at least two questions -- where does the money come from and can effective demand be sustained at this higher level?

Answering these questions also provides the context for a discussion of aggregate housing demand.

In preceding examples, every individual family held its savings separate and apart from the savings of other families since it was assumed that no financial institution was available. This is to say that no institution had developed to perform the function of "pooling" resources previously carried out by the joint family.

Suppose now that 10 families, each with the same income and same amount of savings as the family used in the previous examples, form an association for the purpose of providing housing finance to its members. The terms of the agreement each family enters into in becoming a member of the association are as follows.

Each family will take its accumulated savings from the mattress and turn over these funds to the association. The association will pay 7 percent interest on the money deposited with it. Each year, two families will recieve a loan from the association equal to 75 percent of the cost of the "basic" house described above. They may withdraw their savings from the association in an amount necessary to make up the difference between the price of the house and the proceeds of the loan. The mortgage will be repaid in equal installments over a 15 year term at 10 percent interest. (The difference between the 7 percent rate of interest paid on deposits and the 10 percent charged for loans pays for the cost of administering the association.)

Additionally, the family agrees to deposit with the association as savings the difference between 20 percent of their income and the percentage of income that the morgage payment represents. For example, if the mortgage payment is 15 percent of the family's income, 5 percent of that income will be deposited with the association.

Since each family is assumed to have the same income and the same amount of savings, the mortgage loans are granted by the drawing of lots.

As in the preceding examples, income is assumed to grow at 10 percent a year and price of the "basic" house is assumed to grow at 10 percent a year. All of these assumptions are reflected in the table below, which illustrates numerically how the pooling of financial resources and the extension of long-term mortgage loans can expand the effective demand for housing.

Aggregate effective demand is the sum of the individual demands. In this example, the aggregate real effective demand expressed is for two housing units a year; the nominal (i.e. current prices) effective demand rises from US$4,000 in the first year to US$5,856 in the fifth year.

It should also be noted that, if we assume that each family needed 6 years to save US$500 before the association was formed and that a self-help incremental construction program would have taken another 7 years to complete, every member of the association, even the last two, can have a basic housing unit in less time through the pooling of savings and the extension of long-term mortgage credit.

SAVINGS BALANCES

YEAR

FAMILY	1	2	3	4	5
1	500	645	811	1001	1217
2	500	645	811	1001	1217
3	500	645	811	1001	*389*
4	500	645	811	1001	*389*
5	500	645	811	*249*	*321*
6	500	645	811	*249*	*321*
7	500	645	*126*	*184*	*273*
8	500	645	*126*	*184*	*273*
9	500	*23*	*70*	*144*	*250*
10	500	*23*	*70*	*144*	*250*
TOTAL GROSS SAVINGS:	5,000	5,206	5,258	5,158	4,900
LESS: MORTGAGE CREDIT GRANTED	3,000	3,300	3,630	3,992	4,392
LESS: SAVINGS WITHDRAWN FOR DOWNPAYMENTS	1,000	1,100	1,210	1,332	1,464
PLUS: LOAN REPAYMENTS RECEIVED	0	394	928	1,304	1,828
BALANCE:	1,000	1,200	1,246	1,138	872
EFFECTIVE DEMAND:	4,000	4,400	4,840	5,324	5,826

The fundamental principles of establishing and expanding effective demand have now been presented. These principles must next be extended into the practical affairs and problems of establishing effective demand in Third World countries.

All of those involved in housing in the Third World are acutely aware of the need for shelter. Establishing and expanding both the effective demand for and the effective supply of shelter to meet this need are problems in resource mobilization and management.

To mobilize and manage these resources effectively requires information. Ideally, an analysis of shelter demand should proceed from a data base that includes information on:

- the existing stock of housing,
- population migration patterns,
- family, or household, income levels, growth, and distribution,
- the level and distribution of household expenditures.

Although seldom available on a current, exact, or comprehensive basis, such data serve to establish quantitative estimates of housing need and of the ability to pay for shelter at each level of income.

Unless the survey is explicitly structured as a housing survey, however, matching the willingness and ability to pay with housing need entails a great deal of ingenuity on the part of the analyst.

Household expenditures typically provide estimates of the of the percent of income devoted to shelter at each level of

income and the more comprehensive surveys also include data in the form of tenure -- rental or ownership -- by income class. (Appendix A contains exerpts from a relatively comprehensive household survey.) But these data generally do not contain information on the quality of shelter, i.e. the proportion or number of dwelling units occupied by households in given income classes that meet minimal standards of safety and sanitation. Moreover, household expenditure surveys are notorious for understating income and, hence, saving.

As a practical matter, data drawn from standard statistical sources must be heavily supplemented by less formal surveys of those families who occupy shelter that visibly and obviously fails to meet minimal standards.

This information enables the analyst to adjust the statistical data to compensate for systematic errors in the reporting of income and saving.

Even after making such adjustments, effective housing demand estimates are likely to be very inexact.

Several examples drawn from actual experience support this conclusion. In one case, data drawn from loan applications for a low-cost housing project indicated that the applicants did not have sufficient income to afford the housing units being produced. Serious consideration was given to scaling down the size of the units to reduce the cost, but before this action was taken, a follow-up survey was conducted among the loan applicants to test the quality of the income data. By careful questioning, it was determined that the vast majority

of the applicants had reported only their primary income and had not included the income derived from second and, in some cases, third sources which was usually received on an irregular basis. After including this income, it was determined that the housing being offered was, after all, affordable by most of the original applicants.

In another case, a contract savings program was developed on the basis of income estimates that indicated that median income families would require approximately four years to save an appropriate downpayment. After two years, experience showed that a high percentage of below-median income families had already saved enough to meet their downpayment requirements and satisfy the terms of their savings contracts. These data showed that families apparently received income on an irregular basis and devoted virtually all of this income to saving.

In several other cases, where estimates of saving growth for new housing finance institutions were made on the basis of family income estimates, savings goals were exceeded by substantial margins.

The point of these examples is that survey data are not sufficiently accurate to estimate effective demand for shelter with precision. The best data are drawn from actual experience with pilot programs.

By careful monitoring of savings flows and loan repayments by income class, continuous improvement in the quality of the data needed to estimate effective demand can be obtained to establish the basis for the expansion of shelter programs.

Effective demand is, of course, only one side of the housing market. Housing supply is equally important in the delivery of shelter.

Annex A

รายงาน
การสำรวจภาวะเศรษฐกิจและสังคม พ.ศ. 2514 - 2516
REPORT
SOCIO - ECONOMIC SURVEY 1971 - 1973

สำนักงานสถิติแห่งชาติ
สำนักนายกรัฐมนตรี
NATIONAL STATISTICAL OFFICE

ตาราง ก. รายได้โดยเฉลี่ยต่อปีของครัวเรือน จำแนกตามแหล่งที่มาของรายได้
TABLE A. AVERAGE ANNUAL HOUSEHOLD INCOME BY SOURCE

แหล่งที่มาของรายได้	ปีที่สำรวจและภาค Survey Year and Area					SOURCE OF INCOME
	2514 (1971)	2515 (1972)		2516 (1973)		
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
รายได้ทั้งสิ้น (บาท)	28,633	33,510	22,774	27,164	26,542	Total Income (Baht)
รายได้ที่เป็นตัวเงิน	28,141	33,102	22,246	26,780	26,086	Money Income
ค่าแรงและเงินเดือน	10,790	18,951	8,877	11,470	10,330	Wages and Salaries
กำไรจากการทำธุรกิจส่วนตัว	14,566	11,375	11,976	13,603	14,172	Self-Employment
รายได้จากแหล่งอื่น ๆ	2,785	2,776	1,393	1,707	1,584	Other Sources
รายได้ที่ไม่เป็นตัวเงิน	492	408	528	384	456	Income-in-Kind
รายได้ทั้งสิ้น (อัตราส่วนร้อย)	100.0	100.0	100.0	100.0	100.0	Total Income (Percent)
ค่าแรงและเงินเดือน	37.7	56.6	39.0	42.2	38.9	Wages and Salaries
กำไรจากการทำธุรกิจส่วนตัว	50.9	33.9	52.6	50.1	53.4	Self-Employment
รายได้จากแหล่งอื่น ๆ	9.7	8.3	6.1	6.3	6.0	Other Money Income
รายได้ที่ไม่เป็นตัวเงิน	1.7	1.2	2.3	1.4	1.7	Income-in-Kind
นอกเขตเทศบาล						**Rural Areas**
รายได้ทั้งสิ้น (บาท)	6,890	24,353	11,076	15,816	11,179	Total Income (Baht)
รายได้ที่เป็นตัวเงิน	4,886	23,177	9,360	14,220	9,187	Money Income
ค่าแรงและเงินเดือน	1,327	9,930	1,976	4,702	2,102	Wages and Salaries
กำไรจากการทำธุรกิจส่วนตัว	3,286	12,011	5,912	8,687	6,813	Self-Employment
รายได้จากแหล่งอื่น ๆ	273	1,236	1,472	831	272	Other Sources
รายได้ที่ไม่เป็นตัวเงิน	2,004	1,176	1,716	1,596	1,992	Income-in-Kind
รายได้ทั้งสิ้น (อัตราส่วนร้อย)	100.0	100.0	100.0	100.0	100.0	Total Income (Percent)
ค่าแรงและเงินเดือน	19.2	40.8	17.8	29.7	18.8	Wages and Salaries
กำไรจากการทำธุรกิจส่วนตัว	47.7	49.3	53.4	54.9	61.0	Self-Employment
รายได้จากแหล่งอื่น	4.0	5.1	13.3	5.3	2.4	Other Money Income
รายได้ที่ไม่เป็นตัวเงิน	29.1	4.8	15.5	10.1	17.8	Income-in-Kind

ตาราง ข. การแจกแจงอัตราส่วนร้อยสะสมของครัวเรือน จำแนกตามชั้นของรายได้ที่เป็นตัวเงินของครัวเรื

TABLE B. ACCUMULATIVE PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY MONEY INCOME CLAS

ชั้นของรายได้ที่เป็นตัวเงินต่อปีของครัวเรือน	ปีการสำรวจและภาค Survey Year and Area					ANNUAL MONEY INCOME CLASS
	2514 (1971)	2515 (1972)		2516 (1973)		
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
ต่ำกว่า 3,000 บาท	3.4	0.2	3.1	1.5	0.8	Less than 3,000 Baht
ต่ำกว่า 6,000 บาท	8.3	2.5	11.5	5.4	4.9	Less than 6,000 Baht
ต่ำกว่า 9,000 บาท	18.7	7.1	23.5	13.1	14.6	Less than 9,000 Baht
ต่ำกว่า 12,000 บาท	30.6	15.8	35.1	23.0	27.0	Less than 12,000 Baht
ต่ำกว่า 15,000 บาท	42.0	26.1	48.5	33.7	38.4	Less than 15,000 Baht
ต่ำกว่า 18,000 บาท	48.1	34.3	56.8	42.7	49.0	Less than 18,000 Baht
ต่ำกว่า 24,000 บาท	64.5	50.3	71.6	60.0	63.6	Less than 24,000 Baht
ต่ำกว่า 30,000 บาท	75.9	63.4	81.1	70.6	75.2	Less than 30,000 Baht
ต่ำกว่า 36,000 บาท	81.2	72.4	85.9	78.5	82.5	Less than 36,000 Baht
ต่ำกว่า 48,000 บาท	88.6	83.0	92.1	87.4	90.2	Less than 48,000 Baht
ต่ำกว่า 60,000 บาท	92.5	89.1	95.5	92.8	93.6	Less than 60,000 Baht
ครัวเรือนทั้งสิ้น	100.0	100.0	100.0	100.0	100.0	All households
รายได้มัธยฐาน (บาท)	18,695	23,940	15,542	20,532	18,411	Median Income (Baht)
นอกเขตเทศบาล						**Rural Areas**
ต่ำกว่า 3,000 บาท	45.5	2.5	35.2	13.8	20.1	Less than 3,000 Baht
ต่ำกว่า 4,500 บาท	63.4	3.0	51.2	25.4	35.2	Less than 4,500 Baht
ต่ำกว่า 6,000 บาท	74.7	4.8	63.6	34.9	45.2	Less than 6,000 Baht
ต่ำกว่า 7,500 บาท	82.5	9.2	73.6	44.4	57.9	Less than 7,500 Baht
ต่ำกว่า 9,000 บาท	86.4	14.1	79.0	50.9	65.4	Less than 9,000 Baht
ต่ำกว่า 10,000 บาท	89.5	20.3	83.5	59.9	73.9	Less than 10,000 Baht
ต่ำกว่า 12,000 บาท	92.1	25.3	86.5	64.7	77.5	Less than 12,000 Baht
ต่ำกว่า 15,000 บาท	96.3	35.0	90.3	74.3	84.5	Less than 15,000 Baht
ต่ำกว่า 18,000 บาท	97.1	46.1	92.5	79.5	89.4	Less than 18,000 Baht
ต่ำกว่า 30,000 บาท	99.1	76.4	98.0	93.2	97.2	Less than 30,000 Baht
ครัวเรือนทั้งสิ้น	100.0	100.0	100.0	100.0	100.0	All households
รายได้มัธยฐาน (บาท)	3,377	19,545	4,388	8,792	6,567	Median Income (Baht)

ตาราง ค. การแจกแจงค่าใช้จ่ายในการบริโภคของครัวเรือน จำแนกเป็นหมวดของสินค้าและบริการ

TABLE C. DISTRIBUTION OF HOUSEHOLD CONSUMPTION EXPENDITURES FOR GROUPS OF GOODS AND SERVICES

หมวดของค่าใช้จ่ายที่บริโภค	ปีสำรวจและสถานที่สำรวจ Survey Year and Area					CONSUMPTION EXPENDITURE GROUP
	2514 (1971)	2515 (1972)	2516 (1973)			
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
ใช้จ่ายเฉลี่ยทั้งหมดต่อเดือน (บาท)	2,083.07	2,452.16	1,563,42	2,085.95	1,798.11	Total Consumption Average per Month (Baht)
เปอร์เซ็นต์	100.0	100.0	100.0	100.0	100.0	Percentage
อาหารและเครื่องดื่ม	41.4	46.7	46.2	47.1	45.0	Food and Beverages
(ข้าว)	(6.3)	(4.1)	(6.8)	(8.5)	(8.7)	(Rice)
ใช้จ่ายเกี่ยวกับที่อยู่อาศัย	19.0	15.5	16.5	15.5	19.2	Housing and Furnishing
ใช้จ่ายเกี่ยวกับเสื้อผ้า เครื่องนุ่งห่มและเครื่องแต่งกาย	8.6	8.1	9.2	8.9	7.5	Clothing and Materials
ใช้จ่ายเกี่ยวกับยานพาหนะ และการขนส่ง	10.3	8.5	7.5	7.4	8.5	Transportation
ใช้จ่ายเกี่ยวกับการบันเทิงและการศึกษา	7.5	8.5	7.9	8.3	7.3	Recreation and Education
ใช้จ่ายเกี่ยวกับการตรวจรักษาพยาบาล ภสัชภัณฑ์ และค่าบริการส่วนบุคคล	6.3	5.7	6.2	6.3	6.3	Medical and personal care
ใช้จ่ายเกี่ยวกับยาสูบและเครื่องดื่มที่มีแอลกอฮอล์	5.3	5.4	4.9	5.2	4.3	Tobacco and alcoholic drinks
ใช้จ่ายเบ็ดเตล็ด	1.6	1.6	1.6	1.3	1.9	Miscellaneous
นอกเขตเทศบาล						**Rural Areas**
ใช้จ่ายเฉลี่ยทั้งหมดต่อเดือน (บาท)	602.12	2,138.23	921.36	1,307.40	1,015.33	Total Consumption Average per Month (Baht)
เปอร์เซ็นต์	100.0	100.0	100.0	100.0	100.0	Percentage
อาหารและเครื่องดื่ม	43.0	44.0	43.2	50.3	45.9	Food and Beverages
(ข้าว)	(22.6)	(6.6)	(15.8)	(16.6)	(18.6)	(Rice)
ใช้จ่ายเกี่ยวกับที่อยู่อาศัย	19.5	13.3	14.0	12.2	14.2	Housing and Furnishings
ใช้จ่ายเกี่ยวกับเสื้อผ้า เครื่องนุ่งห่มและเครื่องแต่งกาย	12.1	13.6	13.4	10.2	14.9	Clothing and Materials
ใช้จ่ายเกี่ยวกับยานพาหนะ และการขนส่ง	5.5	7.8	7.5	6.3	7.2	Transportation
ใช้จ่ายเกี่ยวกับการบันเทิงและการศึกษา	3.3	6.9	3.1	4.2	3.7	Recreation and Education
ใช้จ่ายเกี่ยวกับการตรวจรักษาพยาบาล ภสัชภัณฑ์ และค่าบริการส่วนบุคคล	8.0	6.0	8.3	6.8	7.9	Medical and personal care
ใช้จ่ายเกี่ยวกับยาสูบ และเครื่องดื่มที่มีแอลกอฮอล์	5.7	5.2	4.4	5.1	4.4	Tobacco and alcoholic drinks
ใช้จ่ายเบ็ดเตล็ด	2.9	3.2	6.1	4.9	1.8	Miscellaneous

ตาราง ง. ค่าเฉลี่ยและระดับความสำคัญของสินค้าที่ผลิตหรือได้มาโดยไม่ต้องซื้อ

TABLE D. AVERAGE VALUE AND RELATIVE IMPORTANCE OF GOODS HOME-PRODUCED OR RECEIVED FREE

หมวดของค่าใช้จ่าย	ปีสำรวจและสถานที่สำรวจ Survey Year and Area					EXPENDITURE GROUP
	2514 (1971)	2515 (1972)		2516 (1973)		
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
มูลค่าของสินค้าที่ผลิตหรือได้มาโดยไม่ต้องซื้อ						**Value of goods Home-produced or Received free (Baht)**
ยอดรวม	**41.21**	**34.13**	**44.09**	**31.51**	**38.02**	**Total**
อาหารและเครื่องดื่ม	22.70	11.12	14.28	11.05	9.52	Food and Beverages
(ข้าว)	(16.97)	(2.28)	(10.92)	(6.59)	(5.51)	(rice)
สินค้าชนิดอื่น ๆ	18.51	23.01	29.81	20.46	28.50	Other commodities
อัตราร้อยละของสินค้าที่ผลิตหรือได้มาโดยไม่ต้องซื้อดังต่อไปนี้						**Percent Home-produced or Received free, of:**
รวมค่าสินค้าและบริการต่าง ๆ	1.8	1.3	2.7	1.4	2.0	All goods and Services
รวมค่าอาหารและเครื่องดื่ม	2.6	1.0	2.0	1.1	1.2	All food and Beverages
รวมค่าข้าว	13.0	2.3	10.2	3.7	3.5	All rice
รวมค่าสินค้าและบริการชนิดอื่น ๆ	1.3	1.6	3.3	1.6	2.6	All other goods and Services
นอกเขตเทศบาล						**Rural Areas**
มูลค่าของสินค้าที่ผลิตหรือได้มาโดยไม่ต้องซื้อ						**Value of goods Home-produced or Received free (Baht)**
ยอดรวม	**167.30**	**98.26**	**145.46**	**133.02**	**166.10**	**Total**
อาหารและเครื่องดื่ม	131.08	74.72	117.06	114.76	133.10	Food and Beverages
(ข้าว)	(104.73)	(38.39)	(91.94)	(85.11)	(115.34)	(rice)
สินค้าชนิดอื่น ๆ	36.22	23.54	28.40	18.26	33.00	Other commodities
อัตราร้อยละของสินค้าที่ผลิตหรือได้มาโดยไม่ต้องซื้อดังต่อไปนี้						**Percent Home-produced or Received free, of:**
รวมค่าสินค้าและบริการต่าง ๆ	26.4	4.3	15.0	9.5	15.6	All goods and Services
รวมค่าอาหารและเครื่องดื่ม	50.6	7.9	29.4	17.5	28.6	All food and Beverages
รวมค่าข้าว	77.0	27.4	63.1	38.8	61.0	All rice
รวมค่าสินค้าและบริการชนิดอื่น ๆ	9.7	1.7	4.9	2.5	5.5	All other goods and Services

ตาราง จ. งบดุลย์ของครัวเรือน
TABLE E. BALANCE OF HOUSEHOLD ACCOUNTS

รายการ	ปีสำรวจและสถานที่สำรวจ Survey Year and Area					TRANSACTIONS
	2514 (1971)	2515 (1972)		2516 (1973)		
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
รายรับ (+)	3,011	3,213	2,113	2,948	2,490	**Receipts (+)**
รายได้เป็นตัวเงิน	2,345	2,758	1,854	2,232	2,174	Money Income
รายได้ที่ไม่เป็นตัวเงิน	41	34	44	32	38	Income-in-kind
สินทรัพย์ลดลง	282	233	251	508	170	Decrease in Assets
หนี้สินเพิ่มขึ้น	343	188	64	176	108	Increase in Liabilities
รายจ่าย (–)	2,852	3,219	2,022	2,934	2,441	**Disbursement (–)**
ค่าใช้จ่ายทั้งหมด	2,248	2,580	1,638	2,253	1,921	Total Expenditures
สินทรัพย์เพิ่มขึ้น	491	612	360	591	477	Increase in Assets
หนี้สินลดลง	113	27	24	90	43	Decrease in Liabilities
ยอดแตกต่างระหว่างรายรับกับรายจ่าย	+159	–6	+91	+14	+49	**Balancing Difference**
นอกเขตเทศบาล						**Rural Areas**
รายรับ (+)	810	2,611	1,344	1,847	1,339	**Receipts (+)**
รายได้เป็นตัวเงิน	407	1,931	780	1,185	766	Money Income
รายได้ที่ไม่เป็นตัวเงิน	167	98	145	133	166	Income-in-kind
สินทรัพย์ลดลง	130	373	288	339	292	Decrease in Assets
หนี้สินเพิ่มขึ้น	106	209	131	190	115	Increase in Liabilities
รายจ่าย (–)	830	2,796	1,443	1,879	1,434	**Disbursement (–)**
ค่าใช้จ่ายทั้งหมด	632	2,289	973	1,396	1,065	Total Expenditures
สินทรัพย์เพิ่มขึ้น	161	465	226	397	324	Increase in Assets
หนี้สินลดลง	37	42	244	86	45	Decrease in Liabilities
ยอดแตกต่างระหว่างรายรับกับรายจ่าย	–20	–185	–99	–32	–95	**Balancing Difference**

ตาราง ฉ. การแจกแจงของครัวเรือนจำแนกตามขนาดของครัวเรือน
TABLE F. DISTRIBUTION OF HOUSEHOLDS BY SIZE

จำนวนสมาชิกของครัวเรือน	ปีการสำรวจและภาค Survey Year and Area					NUMBER OF HOUSEHOLD MEMBERS
	2514 (1971)	2515 (1972)		2516 (1973)		
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
ครัวเรือนทั้งหมด	100.0	100.0	100.0	100.0	100.0	All Households
1 คน	1.9	3.9	5.1	4.5	4.3	1 Person
2 หรือ 3 คน	12.3	18.6	21.7	22.5	16.8	2 or 3 Persons
4 หรือ 5 คน	30.6	29.1	32.0	30.4	32.9	4 or 5 Persons
6 หรือ 7 คน	27.8	25.6	23.5	22.0	26.2	6 or 7 Persons
8 คนขึ้นไป	27.4	22.8	17.7	20.6	19.8	8 or more persons
จำนวนเฉลี่ยของสมาชิก	6.2	5.9	5.2	5.4	5.5	Average No. of Members
นอกเขตเทศบาล						**Rural Areas**
ครัวเรือนทั้งหมด	100.0	100.0	100.0	100.0	100.0	All Households
1 คน	1.0	—	1.4	4.1	2.1	1 Person
2 หรือ 3 คน	8.6	10.3	17.8	17.9	21.4	2 or 3 Persons
4 หรือ 5 คน	31.2	26.0	33.8	29.5	29.2	4 or 5 Persons
6 หรือ 7 คน	29.4	26.5	27.7	27.5	25.3	6 or 7 Persons
8 คนขึ้นไป	29.8	37.2	19.3	21.0	22.0	8 or more persons
จำนวนเฉลี่ยของสมาชิก	6.3	7.0	5.6	5.6	5.5	Average No. of Members

ตาราง ฉ. ๑ ค่าใช้จ่ายเฉลี่ยต่อคนและต่อเดือน (บาท)
TABLE F. 1 AVERAGE MONTHLY EXPENDITURES PER CAPITA (BAHT)

จำนวนสมาชิกของครัวเรือน	ปีสำรวจและสถานที่สำรวจ Survey Year and Area					NUMBER OF HOUSEHOLD MEMBERS
	2514 (1971)	2515 (1972)		2516 (1973)		
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
ต่อครัวเรือน	2,248	2,580	1,638	2,253	1,921	Per Household
ต่อคน	363	437	315	417	349	Per Capita
นอกเขตเทศบาล						**Rural Areas**
ต่อครัวเรือน	633	2,289	973	1,396	1,065	Per Household
ต่อคน	100	327	174	249	194	Per Capita

ตาราง ฉ. การแจกแจงครัวเรือน จำแนกตามจำนวนผู้รับรายได้

TABLE G. DISTRIBUTION OF HOUSEHOLDS BY NUMBER OF INCOME RECIPIENTS

จำนวนผู้รับรายได้ในครัวเรือน	ปีสำรวจและสถานที่สำรวจ Survey Year and Area					NUMBER OF INCOME RECIPIENTS IN HOUSEHOLD
	2514 (1971)	2515 (1972)		2516 (1973)		
	ภาคตะวันออกเฉียงเหนือ Northeast	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล						**Municipal Areas**
ครัวเรือนทั้งหมด	100.0	100.0	100.0	100.0	100.0	**All Households**
หนึ่งคน	49.9	39.9	45.7	47.6	56.1	One income recipient
สองคน	31.8	34.6	36.1	32.9	29.5	Two income recipients
สามคน	11.3	13.6	10.6	11.8	8.9	Three income recipients
สี่คนหรือมากกว่า	7.0	11.9	6.6	7.7	5.5	Four or more
จำนวนเฉลี่ยของผู้รับรายได้	1.8	2.0	1.8	1.8	1.6	**Average No. of Recipients**
นอกเขตเทศบาล						**Rural Areas**
ครัวเรือนทั้งหมด	100.0	100.0	100.0	100.0	100.0	**All Households**
หนึ่งคน	74.5	37.6	70.2	57.9	66.4	One income recipient
สองคน	18.9	31.1	22.8	26.2	24.3	Two income recipients
สามคน	4.0	18.6	4.1	10.2	5.3	Three income recipients
สี่คนหรือมากกว่า	2.6	12.7	2.9	5.7	4.0	Four or more
จำนวนเฉลี่ยของผู้รับรายได้	1.3	2.1	1.4	1.6	1.5	**Average No. of Recipien**

ตาราง ญ. การแจกแจงครัวเรือนจำแนกตามสถานภาพการครอบครองที่อยู่อาศัย
TABLE J. DISTRIBUTION OF HOUSEHOLDS BY TENURE

การครอบครองที่อยู่อาศัย	ปีสำรวจและสถานที่สำรวจ Survey Year and Area				TENURE OF OCCUPANCY
	2515 (1972)		2516 (1973)		
	กรุงเทพ-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ในเขตเทศบาล					**Municipal Areas**
ครัวเรือนทั้งหมด	100.0	100.0	100.0	100.0	All Households
เป็นเจ้าของบ้านและที่ดิน	17.4	50.9	31.3	28.1	Own House and Land
เป็นเจ้าของบ้านแต่เช่าที่ดิน	26.7	16.2	22.0	8.7	Own house, Rented Land
เช่าทั้งบ้านและที่ดิน	29.4	24.3	22.3	32.2	Rented House
เช่าห้องหนึ่งหรือหลายห้อง	16.1	2.8	6.4	11.3	Rented Room or Rooms
อาศัยอยู่โดยไม่เสียค่าเช่า	10.4	5.8	18.0	19.7	Received Rent Free
นอกเขตเทศบาล					**Rural Areas**
ครัวเรือนทั้งหมด	100.0	100.0	100.0	100.0	All Households
เป็นเจ้าของบ้านและที่ดิน	43.7	90.4	79.8	89.8	Own House and Land
เป็นเจ้าของบ้านแต่เช่าที่ดิน	43.0	2.1	9.1	2.1	Own House, Rented Land
เช่าทั้งบ้านและที่ดิน	4.9	1.3	1.2	1.6	Rented House
เช่าห้องหนึ่งหรือหลายห้อง	1.8	0.1	0.1	0.5	Rented Room or Rooms
อาศัยอยู่โดยไม่เสียค่าเช่า	6.6	6.1	9.8	6.0	Received Rent Free

ตาราง ๑ ร้อยละแห่งครัวเรือนของครัวเรือน ตามขนาดของครัวเรือน จำนวนผู้รับรายได้ และตามชั้นของรายได้ต่อปีของครัวเรือน (ต่อ)

TABLE 1 PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY SIZE, NUMBER OF RECIPIENTS AND ANNUAL MONEY INCOME CLASS (Contd.)

ชั้นของรายได้ต่อปีของครัวเรือน (บาท)	เฉลี่ยต่อครัวเรือน Average per Household: จำนวนสมาชิก Members	เฉลี่ยต่อครัวเรือน Average per Household: ผู้รับเงินได้ Recipients	ครัวเรือนทั้งหมด All households	จำนวนสมาชิกของครัวเรือน Number of household members: 1	2-3	4-5	6-7	8 คนขึ้นไป or more	จำนวนผู้รับรายได้ Number of recipients: 1	2	3	4 คนขึ้นไป or more	Income Class (Baht)
				ในเขตเทศบาล–กรุงเทพ ฯ–ธนบุรี 2515 Municipal Area–Bangkok–Thonburi 1972									
ครัวเรือนทั้งหมด	5.9	2.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	All households
ต่ำกว่า 3,000	3.0	1.2	0.2	4.8	0.2	–	–	–	0.5	0.1	–	–	Lower than 3,000
3,000 – 5,999	3.3	1.2	2.3	19.6	4.9	1.3	0.3	0.7	4.9	0.8	0.3	–	3,000 – 5,999
6,000 – 8,999	3.5	1.2	4.6	26.5	7.8	4.5	2.8	0.6	9.5	2.3	0.3	–	6,000 – 8,999
9,000 – 11,999	4.7	1.3	8.7	20.5	18.8	8.9	4.7	2.6	15.7	6.2	1.1	0.9	9,000 – 11,999
12,000 – 14,999	4.9	1.5	10.3	6.0	13.3	13.6	10.4	4.3	15.4	9.4	5.2	1.6	12,000 – 14,999
15,000 – 17,999	5.5	1.9	8.2	7.8	7.8	10.9	9.6	3.7	8.0	11.6	5.6	2.2	15,000 – 17,999
18,000 – 23,999	5.6	2.0	16.0	3.9	15.9	18.8	16.2	14.3	15.2	20.7	17.0	4.1	18,000 – 23,999
24,000 – 29,999	6.0	2.0	13.1	5.9	10.7	13.2	15.0	13.9	10.9	15.5	15.2	10.6	24,000 – 29,999
30,000 – 35,999	6.2	2.2	9.0	1.0	6.7	8.1	10.1	12.0	6.6	10.0	11.9	10.5	30,000 – 35,999
36,000 – 47,999	6.7	2.6	10.6	1.0	6.7	7.4	13.1	16.5	5.9	10.4	15.9	20.6	36,000 – 47,999
48,000 – 59,999	7.5	2.7	6.1	1.0	1.8	6.0	6.4	10.4	3.1	5.5	10.0	14.0	48,000 – 59,999
60,000 ขึ้นไป	8.0	3.2	10.9	2.0	5.4	7.3	11.4	21.0	4.3	7.5	17.5	35.5	60,000 and over
ครัวเรือนจำแนกตามจำนวนสมาชิก	–	–	–	3.9	18.6	29.1	25.6	22.8	39.9	34.6	13.6	11.9	Households distributed by size
				นอกเขตเทศบาล–กรุงเทพ ฯ–ธนบุรี 2515 Villages–Bangkok–Thonburi 1972									
ครัวเรือนทั้งหมด	7.0	2.2	100.0	–	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	All households
ต่ำกว่า 3,000	3.1	1.2	2.5	–	14.6	3.9	–	–	5.4	1.6	–	–	Lower than 3,000
3,000 – 4,499	4.0	1.3	0.5	–	2.5	–	0.9	–	0.7	–	–	2.0	3,000 – 4,499
4,500 – 5,999	4.8	1.4	1.8	–	–	3.0	0.9	2.0	0.7	1.7	4.0	2.0	4,500 – 5,999
6,000 – 7,499	5.2	1.5	4.4	–	5.3	5.0	3.9	4.2	6.2	6.0	1.4	–	6,000 – 7,499
7,500 – 8,999	5.3	1.5	4.9	–	7.7	3.9	7.7	2.7	5.4	5.7	2.8	4.1	7,500 – 8,999
9,000 – 10,499	5.8	1.5	6.2	–	12.8	7.0	5.8	4.1	10.4	4.9	4.1	–	9,000 – 10,499
10,500 – 11,999	6.5	1.8	5.0	–	7.9	6.0	4.0	4.2	7.0	6.8	1.4	–	10,500 – 11,999
12,000 – 14,999	6.9	1.8	9.7	–	5.3	16.0	9.8	6.4	14.7	5.9	9.5	4.1	12,000 – 14,999
15,000 – 17,999	7.3	2.2	11.1	–	2.6	13.8	14.6	9.1	9.0	12.4	13.8	10.4	15,000 – 17,999
18,000 – 29,999	7.6	2.3	30.3	–	25.8	28.0	26.4	35.9	25.7	34.7	34.5	26.6	18,000 – 29,999
30,000 ขึ้นไป	8.0	2.9	23.6	–	15.5	13.4	26.0	31.4	14.8	20.3	28.5	50.8	30,000 and over
ครัวเรือนจำแนกตามจำนวนสมาชิก	–	–	–	–	10.3	26.0	26.5	37.2	37.6	31.1	18.6	12.7	Households distributed by size

ตาราง ๖ ส่วนเฉลี่ยค่าใช้จ่ายของครัวเรือนเกี่ยวกับสินค้าและบริการต่าง ๆ ในเวลา ๑ เดือน แยกตามภาคต่าง ๆ

TABLE 6 AVERAGE MONTHLY CONSUMPTION EXPENDITURES FOR GOODS AND SERVICES; ALL HOUSEHOLDS

สินค้าและบริการต่าง ๆ	ในเขตเทศบาล Municipal areas					Goods and Services
	1971	1972		1973		
	ภาคตะวันออกเฉียงเหนือ Northeast	พระนคร-ธนบุรี Bangkok-Thonburi	ภาคเหนือ North	ภาคกลาง Central	ภาคใต้ South	
ค่าใช้จ่ายเกี่ยวกับสินค้าและบริการทั้งสิ้น	**2,248.26**	**2,580.34**	**1,638.04**	**2,252.56**	**1,921.20**	**All goods and services**
ค่าอาหารและเครื่องดื่ม	**862.51**	**1,144.56**	**722.37**	**981.76**	**809.43**	**Food and beverages**
ค่าอาหารซื้อและปรุงขึ้นที่บ้าน	689.42	717.59	583.94	734.16	647.83	Food at home
(ค่าข้าว)	(130.28)	(99.35)	(106.66)	(177.92)	(157.17)	(Rice)
ค่าอาหารรับประทานนอกบ้าน	173.09	426.97	138.43	247.60	161.60	Food away from home
ค่าใช้จ่ายเกี่ยวกับที่อยู่อาศัย	**395.62**	**381.04**	**257.45**	**323.99**	**346.08**	**Housing and household operations**
บ้านเช่า	**101.67**	**112.11**	**66.55**	**64.58**	**118.79**	**Rented home**
ค่าเช่าบ้าน	86.58	108.15	63.19	63.68	115.11	House rent
ค่าซ่อมแซมและต่อเติมบ้าน	10.97	1.36	1.29	0.40	2.34	Repairs
ค่าเบี้ยประกันภัย	3.70	2.40	1.76	0.43	1.16	Interest and insurance
ค่าใช้จ่ายอื่น ๆ	0.42	0.20	0.31	0.07	0.18	Other expenses
บ้านของตนเอง	**52.11**	**32.57**	**21.69**	**42.14**	**21.45**	**Own home**
ค่าเช่าที่ดิน	6.76	16.78	5.96	12.04	5.94	Land rent
ค่าซ่อมแซมและต่อเติมบ้าน	25.42	9.95	13.20	20.97	11.00	Repairs
ค่าเบี้ยประกันภัย	8.67	3.88	1.16	1.45	1.00	Interest and insurance
ค่าภาษีโรงเรือน	4.78	0.56	1.22	2.00	2.54	Taxes
ค่าใช้จ่ายอื่น ๆ	6.48	1.40	0.15	5.68	0.97	Others
ค่าไฟฟ้าและแสงสว่าง เชื้อเพลิง น้ำ ฯลฯ	**115.49**	**135.84**	**83.97**	**117.26**	**109.13**	**Household operations**
ค่ากระแสไฟฟ้า	44.88	64.85	31.38	49.98	41.61	Electricity
ถ่าน	27.21	23.21	23.42	26.69	30.67	Charcoal
ฟืน	1.06	0.24	2.88	1.15	3.04	Fire wood
น้ำมันก๊าด	4.11	1.09	2.23	2.36	2.76	Kerosene
แก๊ส	4.12	12.24	3.30	8.43	8.04	Gas
เชื้อเพลิงอื่น ๆ	0.42	0.20	0.17	0.17	0.28	Other fuel
ไม้ขีดไฟ ไฟแช็ค	2.38	1.37	1.92	2.64	2.92	Matches, Lighters
ค่าน้ำ	29.39	16.21	15.44	21.18	13.90	Water charges
ค่าเช่าโทรศัพท์	1.74	16.22	2.74	4.42	5.66	Telephone charges
อื่น ๆ	0.18	0.21	0.49	0.23	0.25	Others

TABLE 4 PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TENURE AND ANNUAL MONEY INCOME CLASS

ชั้นของรายได้ต่อปีของครัวเรือน (บาท)	ยอดรวม Total	ประเภทการครอบครองที่อยู่ Type of Tenure: เป็นเจ้าของบ้านและที่ดิน Owned house and Land	เป็นเจ้าของบ้านแต่เช่าที่ดิน Owned house on rented land	เช่าทั้งบ้านและที่ดิน Rented house	เช่าห้องหนึ่งหรือหลายห้อง Rented room(s)	อาศัยอยู่โดยไม่เสียเงิน Rent free	Household's Annual Income Class (Baht)
	ในเขตเทศบาล–กรุงเทพ ฯ–ธนบุรี 2515 Municipal Area–Bangkok–Thonburi 1972						
ยอดรวม	100.0	100.0	100.0	100.0	100.0	100.0	Total
ต่ำกว่า 3,000	0.2	0.2	0.1	0.1	0.2	0.7	Lower than 3,000
3,000 – 5,999	2.3	1.7	1.8	1.0	2.6	7.3	3,000 – 5,999
6,000 – 8,999	4.6	3.1	2.7	3.9	4.0	15.4	6,000 – 8,999
9,000 – 11,999	8.7	5.2	8.0	7.7	11.6	14.6	9,000 – 11,999
12,000 – 14,999	10.3	7.0	10.3	9.8	13.0	13.2	12,000 – 14,999
15,000 – 17,999	8.2	7.7	8.4	6.6	8.8	12.4	15,000 – 17,999
18,000 – 23,999	16.0	10.5	19.2	17.1	16.9	12.5	18,000 – 23,999
24,000 – 29,999	13.1	7.9	14.6	15.6	14.7	8.0	24,000 – 29,999
30,000 – 35,999	9.0	8.7	9.8	10.3	7.6	5.6	30,000 – 35,999
36,000 – 47,999	10.6	13.3	11.1	12.3	7.8	4.0	36,000 – 47,999
48,000 – 59,999	6.1	10.1	5.9	5.8	5.0	3.0	48,000 – 59,999
60,000 ขึ้นไป	10.9	24.6	8.1	9.8	7.8	3.3	60,000 and over
ครัวเรือนจำแนกตามประเภทการครอบครองที่อยู่	100.0	17.4	26.7	29.4	16.1	10.4	Households distributed by tenure
	นอกเขตเทศบาล–กรุงเทพ ฯ–ธนบุรี 2515 Villages–Bangkok–Thonburi 1972						
ยอดรวม	100.0	100.0	100.0	100.0	100.0	100.0	Total
ต่ำกว่า 3,000	2.5	2.3	2.4	–	–	7.6	Lower than 3,000
3,000 – 4,499	0.5	–	0.6	–	14.0	–	3,000 – 4,499
4,500 – 5,999	1.8	1.7	1.8	–	–	3.8	4,500 – 5,999
6,000 – 7,499	4.4	4.8	4.3	–	–	7.6	6,000 – 7,499
7,500 – 8,999	4.9	4.7	4.7	–	–	11.6	7,500 – 8,999
9,000 – 10,499	6.2	7.8	5.4	5.5	–	3.8	9,000 – 10,499
10,500 – 11,999	5.0	4.2	5.4	–	15.1	8.2	10,500 – 11,999
12,000 – 14,999	9.7	9.6	8.6	10.2	15.1	15.1	12,000 – 14,999
15,000 – 17,999	11.1	11.7	12.2	5.1	–	7.6	15,000 – 17,999
18,000 – 29,999	30.3	31.4	29.1	41.3	14.0	26.5	18,000 – 29,999
30,000 ขึ้นไป	23.6	21.8	25.5	37.9	41.8	8.2	30,000 and over
ครัวเรือนจำแนกตามประเภทการครอบครองที่อยู่	100.0	43.7	43.0	4.9	1.8	6.6	Households distributed by tenure

ตาราง ๕ ค่าเฉลี่ยค่าอาหาร สินค้า และบริการที่ครัวเรือนซื้อและไม่ต้องซื้อ หรือผลิตเองในเวลา ๑ เดือน จำแนกตามชั้นของรายได้ต่อปีของครัวเรือน (ต่อ)

TABLE 5 AVERAGE MONTHLY VALUE OF GOODS AND SERVICES PURCHASED, HOME-PRODUCED OR RECEIVED FREE BY ANNUAL MONEY INCOME CLASS (Contd.)

ชั้นของรายได้ต่อปีของครัวเรือน (บาท)	ยอดรวม All goods & Services	หมวดของค่าใช้จ่ายของครัวเรือน Household expenditure groups: ค่าอาหารและเครื่องดื่ม (ที่ไม่มีแอลกอฮอล์) All food & Beverages (non-alcoholic)	ค่าอาหารที่ปรุงในบ้าน (รวมข้าว) Food prepared at home (Including rice)	ข้าว Rice	ค่าอาหารรับประทานนอกบ้าน Food away from home	ค่าใช้จ่ายเกี่ยวกับที่อยู่อาศัย Housing, furnishing household operations	ค่าใช้จ่ายเกี่ยวกับเสื้อผ้า เครื่องนุ่งห่ม และเครื่องแต่งกาย Clothing and materials	ค่าใช้จ่ายเกี่ยวกับยานพาหนะและค่าขนส่ง Transportation expenses	ค่าใช้จ่ายเกี่ยวกับการบันเทิง Recreation expenses	ค่าใช้จ่ายเกี่ยวกับการศึกษา Education expenses	ค่าใช้จ่ายเกี่ยวกับการอ่าน Reading expenses	ค่าใช้จ่ายเกี่ยวกับการตรวจรักษาพยาบาล เภสัชกรรม และกำบริการส่วนบุคคล Medical and Personal care	ค่าใช้จ่ายเกี่ยวกับยาสูบ และเครื่องดื่มที่มีแอลกอฮอล์ Tobacco and alcoholic expenses	ค่าใช้จ่ายเบ็ดเตล็ด เงินบริจาค ของขวัญ ค่าภาษี และอื่น ๆ Taxes, gifts, contributions and miscellaneous expenses	Income Class (Baht)
	ในเขตเทศบาล–ภาคใต้ 2516								Municipal Area–Southern Region 1973						
ครัวเรือนทั้งหมด	1,921.20	809.43	647.83	157.17	161.60	346.08	133.25	152.80	49.25	68.47	13.71	113.14	78.18	156.89	All households
ต่ำกว่า 3,000	566.73	275.23	222.40	72.48	52.83	113.93	14.01	8.33	9.24	3.29	2.63	63.20	39.91	36.96	Lower than 3,000
3,000 – 5,999	742.87	380.99	336.00	102.39	44.99	127.73	33.47	95.12	12.62	17.73	1.54	39.16	20.35	14.16	3,000 – 5,999
6,000 – 8,999	928.40	481.45	419.16	139.75	62.29	132.94	48.90	53.78	16.49	23.92	1.86	91.29	49.86	27.91	6,000 – 8,999
9,000 – 11,999	1,102.80	559.66	473.55	129.10	86.11	181.62	63.94	51.56	24.08	38.88	6.29	72.77	52.61	51.39	9,000 – 11,999
12,000 – 14,999	1,250.81	637.13	534.43	136.10	102.70	208.31	88.85	46.79	35.38	36.70	8.95	69.60	69.52	49.58	12,000 – 14,999
15,000 – 17,999	1,485.90	683.78	558.32	148.15	125.46	261.61	113.82	73.82	35.85	57.40	11.55	99.06	75.38	73.63	15,000 – 17,999
18,000 – 23,999	1,840.80	852.18	699.98	155.66	152.20	290.85	100.08	103.36	40.76	69.52	9.77	111.62	81.88	180.78	18,000 – 23,999
24,000 – 29,999	2,029.26	912.06	686.79	173.85	225.27	325.88	187.31	96.12	56.54	86.87	12.18	125.27	97.57	122.46	24,000 – 29,999
30,000 – 35,999	2,548.58	1,026.76	786.62	190.83	240.14	541.00	207.42	167.29	63.15	95.34	22.03	118.04	93.81	213.74	30,000 – 35,999
36,000 – 47,999	2,898.86	1,107.93	852.65	195.68	255.28	590.74	186.00	174.56	104.40	115.59	30.64	159.24	113.66	316.10	36,000 – 47,999
48,000 – 59,999	3,962.14	1,207.05	926.42	185.57	280.63	576.69	278.73	783.30	90.25	174.43	27.49	317.94	77.64	428.62	48,000 – 59,999
60,000 ขึ้นไป	4,890.46	1,553.05	1,199.07	210.30	353.98	1,070.22	340.25	717.41	125.97	130.44	42.02	191.89	129.23	589.98	60,000 and over
	นอกเขตเทศบาล–ภาคใต้ 2516								Villages–Southern Region 1973						
ครัวเรือนทั้งหมด	1,065.12	466.09	385.51	189.16	80.58	143.71	151.77	73.20	17.18	19.52	0.99	80.08	44.43	68.15	All households
ต่ำกว่า 3,000	592.21	295.14	271.65	142.59	23.49	71.27	72.56	21.29	5.79	11.96	0.40	50.18	29.77	33.85	Lower than 3,000
3,000 – 4,499	831.72	364.35	318.24	168.75	46.11	103.82	109.65	68.98	11.29	11.35	0.40	77.75	30.68	53.45	3,000 – 4,499
4,500 – 5,999	867.62	398.10	336.32	174.15	61.78	105.08	127.31	45.16	6.18	10.43	0.15	86.45	37.88	50.88	4,500 – 5,999
6,000 – 7,499	880.15	435.64	358.21	194.30	77.43	110.25	108.55	42.98	15.48	20.58	0.56	57.57	40.61	47.93	6,000 – 7,499
7,500 – 8,999	971.00	448.45	380.73	188.54	67.72	125.17	142.52	48.49	9.63	14.28	0.63	58.76	43.59	79.48	7,500 – 8,999
9,000 – 10,499	1,102.65	523.12	426.63	199.19	96.49	130.64	171.53	62.89	19.51	17.06	0.47	64.12	39.37	73.94	9,000 – 10,499
10,500 – 11,999	1,081.55	455.57	370.14	198.85	85.43	143.33	187.61	88.35	17.08	18.94	0.53	72.73	38.34	59.07	10,500 – 11,999
12,000 – 14,999	1,353.92	585.06	469.12	212.79	115.94	185.71	211.45	84.80	22.96	25.32	1.32	102.74	57.46	77.10	12,000 – 14,999
15,000 – 17,999	1,647.79	684.28	537.87	227.46	146.41	186.54	241.22	129.45	38.78	32.92	1.38	119.66	60.47	153.09	15,000 – 17,999
18,000 – 29,999	1,936.24	784.86	598.12	260.76	186.74	284.51	285.64	116.78	39.37	51.38	4.99	137.22	88.55	142.94	18,000 – 29,999
30,000 ขึ้นไป	3,232.41	949.26	708.81	298.47	240.45	691.84	474.07	537.81	77.36	41.03	4.03	218.14	107.36	131.51	30,000 and over

* ค่าอาหารและเครื่องดื่ม (ที่ไม่มีแอลกอฮอล์) = ค่าอาหารที่ปรุงในบ้าน (รวมข้าว) + ค่าอาหารรับประทานนอกบ้าน

All food and Beverages (non-alcoholic) = Food prepared at home (including rice) + Food away from home

ตาราง ๕ ส่วนเฉลี่ยค่าอาหาร สินค้า และบริการที่ครัวเรือนซื้อและไม่ต้องซื้อ หรือผลิตเองในเวลา ๑ เดือน จำแนกตามชั้นของรายได้ต่อปีของครัวเรือน (ต่อ)

TABLE 5 AVERAGE MONTHLY VALUE OF GOODS AND SERVICES PURCHASED, HOME-PRODUCED OR RECEIVED FREE BY ANNUAL MONEY INCOME CLASS (Contd.)

ชั้นของรายได้ต่อปีของครัวเรือน (บาท)	ยอดรวม All goods & Services	หมวดของค่าใช้จ่ายของครัวเรือน Household expenditure groups: ค่าอาหารและเครื่องดื่ม (ที่ไม่มีแอลกอฮอล์) All food & Beverages (non-alcoholic)	ค่าอาหารที่ปรุงในบ้าน (รวมข้าว) Food prepared at home (Including rice)	ค่าข้าว Rice	ค่าอาหารรับประทานนอกบ้าน Food away from home	ค่าใช้จ่ายเกี่ยวกับที่อยู่อาศัย Housing, furnishing household operations	ค่าใช้จ่ายเกี่ยวกับเสื้อผ้าเครื่องนุ่งห่มและเครื่องแต่งกาย Clothing and materials	ค่าใช้จ่ายเกี่ยวกับยานพาหนะและค่าขนส่ง Transportation expenses	ค่าใช้จ่ายเกี่ยวกับการบันเทิง Recreation expenses	ค่าใช้จ่ายเกี่ยวกับการศึกษา Education expenses	ค่าใช้จ่ายเกี่ยวกับการอ่าน Reading expenses	ค่าใช้จ่ายเกี่ยวกับการตรวจรักษาพยาบาลเภสัชกรรมและค่าบริการส่วนบุคคล Medical and Personal care	ค่าใช้จ่ายเกี่ยวกับยาสูบและเครื่องดื่มแอลกอฮอล์ Tobacco and alcoholic expenses	ค่าใช้จ่ายเบ็ดเตล็ดเงินบริจาคของขวัญค่าภาษีและอื่น ๆ Taxes, gifts, contributions and miscellaneous expenses	Income Class (Baht)
	ในเขตเทศบาล–กรุงเทพ ฯ–ธนบุรี 2515 Municipal Area–Bangkok–Thonburi 1972														
ครัวเรือนทั้งหมด	2,580.34	1,144.55	717.59	99.35	426.97	381.04	198.56	209.11	71.49	117.11	18.48	140.25	133.12	166.62	All households
ต่ำกว่า 3,000	251.41	177.92	108.46	25.12	69.46	49.52	1.15	4.92	—	—	—	5.60	6.32	5.98	Lower than 3,000
3,000 – 5,999	774.60	367.52	266.55	48.42	100.97	115.79	41.24	28.65	9.36	22.51	2.41	120.11	29.94	37.07	3,000 – 5,999
6,000 – 8,999	898.59	464.31	356.27	60.32	108.04	147.40	40.58	38.29	13.05	26.12	2.54	45.82	52.04	68.44	6,000 – 8,999
9,000 – 11,999	1,104.71	573.83	438.59	69.49	135.24	165.91	52.72	61.92	30.01	41.26	3.34	56.23	67.53	51.96	9,000 – 11,999
12,000 – 14,999	1,401.55	706.33	516.63	83.26	189.70	216.05	84.85	74.26	33.20	53.62	5.09	79.21	85.43	63.51	12,000 – 14,999
15,000 – 17,999	1,517.02	806.83	550.23	82.54	256.60	209.06	88.95	88.33	34.17	60.53	8.06	79.93	93.22	47.94	15,000 – 17,999
18,000 – 23,999	1,906.54	955.42	643.00	95.52	312.42	280.09	114.40	94.21	47.88	86.48	11.11	111.43	119.27	86.25	18,000 – 23,999
24,000 – 29,999	2,300.09	1,138.90	734.80	100.67	404.10	348.36	175.35	123.62	58.96	100.33	15.06	116.74	126.13	96.64	24,000 – 29,999
30,000 – 35,999	2,722.97	1,240.09	790.63	108.24	449.46	356.79	232.76	174.07	76.98	171.72	20.51	132.31	140.04	177.70	30,000 – 35,999
36,000 – 47,999	3,289.15	1,445.66	872.11	118.84	573.55	458.17	309.68	234.26	95.35	180.70	29.18	190.10	162.87	183.18	36,000 – 47,999
48,000 – 59,999	4,051.94	1,685.75	925.79	117.84	759.96	554.13	322.05	411.17	132.51	196.37	36.08	219.02	194.20	300.66	48,000 – 59,999
60,000 ขึ้นไป	6,488.65	2,343.19	1,275.22	146.81	1,067.97	1,032.27	553.64	819.24	195.18	254.47	54.34	341.12	278.35	616.85	60,000 and over

* ค่าอาหารและเครื่องดื่ม (ที่ไม่มีแอลกอฮอล์) = ค่าอาหารที่ปรุงในบ้าน (รวมข้าว) + ค่าอาหารรับประทานนอกบ้าน

All food and Beverages (non-alcoholic) = Food prepared at home (including rice) + Food away from home

ตาราง ๗ รายได้โดยเฉลี่ยต่อปีของครัวเรือน จำแนกตามแหล่งที่มาของรายได้ และตามชั้นของรายได้ต่อปีของครัวเรือน (ต่อ)

TABLE 7 AVERAGE HOUSEHOLD ANNUAL MONEY INCOME BY SOURCE AND INCOME CLASS (Contd.)

ชั้นของรายได้ต่อปีของครัวเรือน (บาท)	ยอดรวม Total	แหล่งที่มาของรายได้ของครัวเรือน Sources of household's Income: ค่าแรง, เงินเดือน, ค่าล่วงเวลา, ค่านายหน้า และโบนัส Wages, salaries, overtime, commission and bonus	กำไรสุทธิจากการทำธุรกิจส่วนตัว Net profit from self-employment	รายได้จากแหล่งอื่น ๆ Other sources	Household's Annual Income Class (Baht)
		ในเขตเทศบาล – กรุงเทพ ฯ – ธนบุรี 2515 Municipal Area–Bangkok–Thonburi 1972			
ผลเฉลี่ย	33,102.03	18,950.69	11,374.97	2,776.37	**Average**
ต่ำกว่า 3,000	1,951.80	510.89	393.88	1,047.03	Lower than 3,000
3,000 – 5,999	4,466.79	1,663.51	1,281.47	1,521.81	3,000 – 5,999
6,000 – 8,999	7,474.82	4,204.98	2,084.50	1,185.34	6,000 – 8,999
9,000 – 11,999	10,256.48	6,140.66	3,531.49	584.33	9,000 – 11,999
12,000 – 14,999	13,454.57	8,434.56	3,985.09	1,034.92	12,000 – 14,999
15,000 – 17,999	16,226.75	11,097.62	4,350.65	778.48	15,000 – 17,999
18,000 – 23,999	20,180.86	11,966.94	7,089.66	1,124.26	18,000 – 23,999
24,000 – 29,999	26,223.64	14,015.22	10,360.48	1,847.94	24,000 – 29,999
30,000 – 35,999	32,063.47	18,777.66	10,620.92	2,664.89	30,000 – 35,999
36,000 – 47,999	40,298.94	23,959.52	13,615.89	2,723.53	36,000 – 47,999
48,000 – 59,999	52,813.03	32,264.51	17,490.84	3,057.68	48,000 – 59,999
60,000 ขึ้นไป	109,887.00	59,117.19	38,622.99	12,146.82	60,000 and over
		นอกเขตเทศบาล–กรุงเทพฯ–ธนบุรี 2515 Villages–Bangkok–Thonburi 1972			
ผลเฉลี่ย	23,177.10	9,930.15	12,011.10	1,235.85	**Average**
ต่ำกว่า 3,000	1,895.44	852.04	753.78	289.62	Lower than 3,000
3,000 – 4,499	3,500.00	2,000.00	1,500.00	–	3,000 – 4,499
4,500 – 5,999	5,116.68	3,934.39	1,182.29	–	4,500 – 5,999
6,000 – 7,499	6,615.60	2,554.56	3,692.36	368.68	6,000 – 7,499
7,500 – 8,999	7,981.27	3,465.04	4,393.57	122.66	7,500 – 8,999
9,000 – 10,499	9,502.53	3,474.59	6,027.94	–	9,000 – 10,499
10,500 – 11,999	11,058.47	5,875.13	5,145.44	37.90	10,500 – 11,999
12,000 – 14,999	13,104.75	5,608.24	6,872.59	6[illegible]2	12,000 – 14,999
15,000 – 17,999	16,115.35	8,482.11	7,176.62	456.62	15,000 – 17,999
18,000 – 29,999	22,458.78	9,772.09	11,856.88	829.81	18,000 – 29,999
30,000 ขึ้นไป	48,010.46	19,482.38	24,962.52	3,565.56	30,000 and over

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ANALYZING HOUSING SUPPLY

SHELTER SUPPLY AND THE SHELTER DELIVERY SYSTEM

Thursday, November 8, 1979

10:00-11:00 a.m. Code 8.HP

Presented by:

James W. Christian

SHELTER SUPPLY
AND
THE SHELTER DELIVERY SYSTEM

From a purely economic point of view, the aggregate effective supply of shelter can be defined as the willingness and ability of the construction industry to produce a certain number of dwelling units at a given price during a particular period of time. The ability to produce shelter depends significantly on the availability of construction labor and management, necessary capital equipment, building materials, suitable land, the construction technology employed, and construction financing. In this context, the willingness to produce shelter is largely dependent on the existence of sufficient effective demand to assure an adequate profit to the builder.

With some effort, this definition can be expanded to accomodate self-help construction, where the homeowner provides his own construction management and labor and determines his "profit" mainly in terms of opportunity cost and the flow of shelter services he receives over time from the dwelling unit.

Dealing with shelter supply in this context passes over a number of practical considerations, which will be discussed later. For the moment, this framework will facilitate an elaboration of key principles.

Cost is a central element in effective supply--cost of land, cost of materials, cost of labor, cost of financing. These, and other costs, make up the price of the dwelling unit that is sufficient to return a profit to the builder. Shelter is in fact delivered if there is sufficient effective demand at this price; if there is excess effective demand, shelter prices rise and/or shelter supply increases, depending on whether or not additional land, building materials, labor, etc., can be obtained at the same price or only at higher prices.

Supply and demand interact in a most critical way to determine the volume of shelter actually delivered in a given time period. Lowering construction cost, for example, can increase the number of families who can express an effective demand, thereby broadening the market. Cost reduction can be achieved in a variety of ways, through innovative design and site layout, modular construction technology, use of local building materials, technologies that make heavy use of local building materials, efficient construction scheduling, and so on.

In a sense, most self-help shelter construction employs at least two of these approaches--the use of local building materials and unskilled labor.

There are, however, a number of cost saving techniques and a number of other factors in the delivery of shelter that self-help techniques, particularly in squatter settlements, cannot accomplish.

Site layout for an entire community or project cannot

be done by the individual family. In squatter settlements, therefore, optimal use of the land cannot be achieved. Similarly, the economies of scale realized from concentrated construction of a large number of units in a single project cannot be achieved through independent action by individual families.

Although cost is a major feature for the economic concepts of supply and demand, quality considerations are also important, even in the purely economic context. A dwelling unit of 60 square meters that is supplied with sanitary sewerage facilities and potable water is clearly a product that is qualitatively different from a dwelling unit of the same size that is not supplied with sanitary sewerage and potable water. Sanitary sewerage and potable water add to both the value and the cost of the unit.

Other factors, usually not mentioned in general economic discussions of supply, but which are especially relevant to shelter supply involve the role of government procedures and approvals. These factors, which include building standards, codes, and permits, title transfer procedures, mortgage recordation, building inspections, and so on, can add significantly to costs and can even restrain other techniques of cost reduction for market expansion if they are not handled efficiently and expeditiously. Moreover, government's role in installing and maintaining off-site infrastructure (sanitary sewerage, water treatment plants, etc.) can have significant effects on the cost and delivery of shelter.

These factors make it useful to discuss the supply of shelter in a broader context than that of general economics. This broader context is known as the shelter delivery system.

Some kind of shelter delivery system exists in all countries and in all localities. Its basic supply elements involve:

- project planning,
- land acquisition,
- mobilization of labor and management,
- dwelling unit design, site layout, and site preparation,
- acquisition of materials,
- construction, including provision of infrastructure, and
- allocation (by sale or lease) of completed units to qualified occupants.

Whether or not government becomes directly involved in the provision of shelter, it can play an important facilitating and coordinating role in making the shelter delivery system work more efficiently and effectively by formulating and implementing a national housing policy.

Properly construed, a national housing policy is not simply a statement of good intentions, but a detailed strategy for dealing with the delivery of shelter services. At one level, the formulation of a national housing policy brings together the principal public and private sector entities involved in the planning, production, and financing of shelter

and related infrastructure, as well as those agencies engaged in providing health services, education, transportation, and so forth. A central function of formulating a national housing policy is to identify the constraints operating in the shelter delivery system--budgetary constraints, constraints arising from a lack of trained personnel, lack of suitable land, etc.--and to devise strategies for dealing with these problems.

For example, one constraint that could be identified in this process might be building materials capacity. Additional investment might be required in the national economic development plan to finance the construction of a new cement plant, additional brick kilns, or sawmills. This decision would require coordination with the Ministry of Plan and the Ministry of Finance.

Alternatively, it might be determined that the building codes were far too stringent or inspection procedures too cumbersome for the low-income market. Such problems might be dealt with very quickly by changes in administrative procedures.

Once a detailed strategy has been developed, succesful implementation of the national housing policy then involves a continuing relationship between these agencies to assure full coordination of their activities.

This process is a very large management function, entailing lang-range planning. When the process breaks down, however, the results can be very embarrassing. More than one large shelter project has reached completion of the

dwelling units more than a year ahead of the completion of the off-site infrastructure due to a lack of coordination between the developer and the municipality or the Ministry of Public Works.

The long-range planning aspect of shelter delivery, or effective supply, draws heavily on the data base discussed in the chapter on effective demand. Projecting demand, largely on the basis of demographic information, can play a key role in lowering shelter costs and expanding the effective supply of shelter.

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

LAND USE ISSUES

THE SIGNIFICANCE OF LAND TO AFFORDABLE HOUSING

Thursday, November 8, 1979

11:00 a.m. - 12:00 noon Code 9.HP

Presented by:

Malcolm D. Rivkin

SHELTER TRAINING WORKSHOP

November 5-30, 1979

The Locus of Concern. . . . . 9.HP -- 1

Reasons for Concern . . . . . 9.HP -- 1

1. Competition . . . . . 9.HP -- 2

2. Monetary Significance . . . . . 9.HP -- 3

3. Institutional Inadequacy. . . . . 9.HP -- 3

Affordable Housing. . . . . 9.HP -- 4

The Three Problems. . . . . 9.HP -- 5

1. Public Health . . . . . 9.HP -- 5

2. Blockage to Orderly Development . . . 9.HP -- 5

3. Tenure Invariably Clouded or Uncertain 9.HP -- 5

Traditional Approaches. . . . . 9.HP -- 5

A Perspective on Land and Shelter . . . . . 9.HP -- 6

Impact Control. . . . . 9.HP -- 6

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THE SIGNIFICANCE OF LAND TO AFFORDABLE HOUSING*

Land, its availability at reasonable cost, in reasonable amounts, at the proper time, is basic to affordable housing. How land is planned and controlled will, to a great degree, determine its availability and cost.

In this first topic session o affordable standards, it is appropriate that we deal with land. While the resolution of land issues must be highly specific to individual countries and communities, the issues themselves have a certain universality throughout the developing world. Certain countries' approaches to resolution may have wider applicability. Therefore, this presentation will be something of an international travelogue where I will illustrate key points with examples drawn from 15 countries. Three of these are from Africa and the others from Asia, Latin America, the Middle East and Eastern Europe.

The Locus of Concern

Land cost and availability are not especially difficult issues in rural areas at the scale of a village or a communal settlement whose population and economic activity have stabilized. At this level, traditions, and communal guidelines function quite effectively in allocating sites for shelter and other human needs. A kind of social contract operates at a village level that permits land to be allocated in a generally harmonious fashion. (Slides - rural settlement in Turkey and Swaziland)

Land does become a cause for concern at the city scale--especially when cities undergo the explosive growth characteristic of the main centers of the developing world (Slides - central areas in Rio, Caracas, Panama City, Kuala Lumpur, and Nairobi)

Along with the principal cities, yet a new locus for concern has emerged--the secondary cities and smaller centers. As a result of national policies to spread economic development and migration to areas outside the main centers, intermediate cities have begun to grow in size and complexity. Many are starting to experience similar kinds of land issues and conflicts. (Slides - Monastir, Tunisia)

Reasons for Concern

Land availability and land cost are issues of extreme urgency at the city scale for three main reasons.

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*Commentary will be added during the presentation of individual slides.

1. Competition. Although raw land is abundant throughout the world, urban land with utilities and services is in extremely short supply. Land with services or with the potential for services is in heavy demand to support the functions of a growing city. The functions must be accommodated. The functions must be arrayed in a manner accessible to each other. With little serviced land, however, the functions compete against each other for favorable locations, even in societies where land ownership rests with government.

Let us look for a moment at the functions of a city to identify the competitors in this contest. (Slide - Jamaica functions) We must recognize, however, that ideally there should be no "winners" or "losers" because all are essential to contemporary urban economic and cultural existence.

a. Industry (slide - Mersin, Turkey oil refinery, Kuala Lumpur Industrial Park)

b. Offices (slide - Rio De Janeiro complex)

c. Government (slide - Istanbul city hall)

d. Housing at various densities, formal and informal sector (slides - Jakarta medium density, Singapore high density, Singapore mid-rise, informal sector in Asia and Africa)

e. Commercial activities

   1. The traditional kind (slides - Istanbul Bazaar, Kuala Lumpur shopping streets)

   2. Contemporary shopping (slide - Kuala Lumpur center)

f. Education (slide - Singapore school, Brasilia day care center)

g. Cultural facilities (slide - Rumania cultural center)

h. Open space and recreation (slides - Singapore park, Brasilia sports center)

i. Religious facilities (slides - Singapore Hindu temple, Kuala Lumpur mosque)

j. Burial grounds (slide - Istanbul cemetery)

In the cities of the developing world, there also must be land for the informal sector to ply its trades (slides - Ankara shoe shiners, Mbabane market, Gaziantep yarn dyers, Brasilia orange sellers).

Of equal importance to the functions of the city are the transportation links which bind them together. These links provide accessibility between functions and are themselves consumers of land (slides - Bogota bike and bus, Singapore bus stop, Kuala Lumpur motorcycle park, Jakarta major road.) Land availability and land cost become serious issues indeed as these urban functions and their transportation links jostle each other to find appropriate accommodation.

2. Monetary Significance. In urban areas, land and the buildings upon it have tremendous monetary significance. A great measure of a country's fiscal resources is concentrated in the commercial, office, industrial and residential structures of urban areas. Land and structure, perhaps more even than in developed countries with broader opportunities for investment, have further symbolic value as security. Thus, decisions regarding the disposition of land become extremely sensitive and complex because of their fiscal and symbolic importance. Land disposition has significant impact on economic growth.

3. Institutional Inadequacy. The competition for land does not actually take place in a vacuum. All countries have established institutional mechanisms whose mission is to guide, control, and rationalize urban land--and to provide basic utilities and services. Issues arise because of weaknesses in these institutional mechanisms. Government has generally been unable to handle the growth demands in principal cities.

a. Growth occurs faster than government's ability to provide utilities and services.

b. Master plans have frequently become outmoded as guidance and control devices soon after preparation.

c. Master planning is frequently performed by agencies or expatriate consultants well down the line from the real decision-making processes of government and the private sector.

d. The building and zoning codes which regulate such matters as the location of uses, their density and the quality of construction are frequently:

1) adopted from other countries and not suited to local conditions;

2) not enforced because of the shortcomings or unavailability of enforcement personnel;

3) misunderstood as to their purpose. Codes are protective devices, not the final authorities on development.

An additional institutional problem emerges in several African countries where the ownership of urban land--especially at the edge of development--is vested in the tribal or traditional sector. The ownership pattern has not been well adapted to the requirements of a contemporary urban economy or to dealing with requirements for individual tenure.

Thus, when these issues are taken together, the normal competition between functions for specific parcels of land is intensified, along with price rises of the land itself.

Affordable Housing

Land availability and land costs are particularly serious problems in providing shelter for the urban poor. These groups lack the financial resources and the institutional influence to compete successfully against other interests demanding sites and accessibility.

Because of the disadvantage, shelter types and locations for the urban poor, along with many at even higher income levels, have generally been of two kinds.

1. Concentration in the city center at extremely high densities.

   a. One locus for concentration, especially in northern Africa, has been the original central areas where additional people have crowded into shelter built sometimes generations before to respond to entirely different standards of sanitation and accessibility (slides - Tunis Medina, Ankara old city).

   b. A second is "leftover" pieces of land that are difficult or undesirable to use for other purposes. These parcels are seized upon by migrants and become squatter areas within the city itself (slides - Rio Favelas on hillside, Kuala Lumpur housing by the railroad, Jakarta housing under the bridge, Tunis Mellassine housing on salt flats).

   Bad though conditions are, these areas have an enormous advantage of accessibility to work places by foot or public transportation.

2. Invasion of land at the city edge that may be owned by government, by tribes, or by the private sector. Here squatters capture land in the path of urban expansion. The shelter built is often in the same form and of the same materials as dwellings in the rural areas left behind. Densities are invariably low, and accessibility to employment areas poor, expensive, and time consuming (slides - squatter shelter at the fringe of Ankara, several showing the evolution of squatter settlement in Swaziland).

These people respond to the lack of formal sector shelter by commandeering land and devoting their own energies to constructing habitation. The actions demonstrate the enormous reservoir of energy and skill available from the people themselves for shelter building.

The Three Problems

These solutions to the land availability and land cost issues share, however, three serious problems.

1. Public health. Informal sector housing areas tend to have few utilities and services, posing serious public health issues, both in the city core and on the fringe. While such issues are probably at their most extreme in South Asia, the situations illustrated below are indicative of those in Africa and Latin America (slides - sanitation in Jakarta and Manila).

2. Blockage to orderly development. It is extremely difficult to install roads and utility lines after an area has been built upon with no concern to placement of these "life support systems. By usurping strategic locations at the urban fringe, squatter settlements can impede efficient extension of water lines and other services (slide - Mbabane squatter area at edge).

The high visibility of some of these settlements often serves to damage a city's orderly self image (slide - Kampong at Kuala Lumpur).

3. Tenure is invariably clouded or uncertain. Sites seized for informal settlement belong to government or private parties. The individual can be readily displaced if authorities choose. Security is non-existent. Individuals with security of tenure--either through lease or fee simple ownership--will devote resources to improving their dwellings as income improves over time. Without secure tenure, however, this commitment of energies and resources is not likely to occur.

Traditional Approaches

Traditional actions towards such settlements have tended to be simplistic and self defeating:

1. Clearance of core area slums and squatter areas--displaces the problem elsewhere (slides - squatter clearance in Manila and Rio).

2. Formal displacement of the poor to areas even more remote and more inaccessible to employment and services (slides - Rio land cost cheap at fringe, Manila squatter relocation, Swaziland housing corporation scheme).

3. Construction in core areas of extremely high density, heavily subsidized dwellings which may or may not meet the lifestyle of the poor and are seriously inadequate in number and replicability (slides - Singapore high rise, Bangkok walk-up flat).

A Perspective on Land and Shelter

These shortcomings in approaches to land for shelter must be seen in some perspective. They are a function of a larger institutional inability to respond rapidly and effectively to the challenges of urbanization. The shortcomings in shelter allocation are part and parcel of this larger problem of institutional adaptation. For example: many cities have been unable to maintain existing sound and stable areas in the face of growth pressures. Pressures are enormous to intensify already dense central core districts. Without effective controls, valuable, livable precincts are sacrificed. (Slides - Bogota densification of center, Ankara replacement of single story with multi-story units with the same level of services.)

Impact Control

The loss of stable areas often stems from inability of some urban governments to understand, to plan for and to channel the land use impacts of major public works decisions. Major public works such as roads, bridges, water systems, can totally alter the accessibility of land. They can also result in a build-up of demand, leading to displacement of the poor from sites which, because of public action, suddenly become high in value.

These slides of Jakarta, Indonesia show a major highway that was punched through the city center to connect the government district with outlying suburbs (slides - Jakarta road). Land values intensified along its edge. It became the setting for high-rise hotels and offices--not concentrated in an efficient manner--but strung out at intervals along its length, wasteful of services and utilities. The impact on the urban poor and their housing has been considerable (slide - Jakarta displacement) as the road and the development it engendered led to displacement of low income residents.

Speculation

Land control institutions have often been unable to restrain speculation. In countries where few safe investment options exist, land speculation is a primary source of quick wealth and a principal mechanism for driving up land values--making the site costs of affordable housing prohibitive. In search of speculative gain, private owners often hold out of development strategic parcels, forcing urban growth into costly inefficient patterns (slides - Bogata, Jakarta).

But, as land availability has become an issue of increasing concern during the 1970's, countries have begun to take bold steps towards control of speculation.

Zambia, for example, has nationalized urban land and is attempting to eliminate the speculation factor. Malaysia, and more recently Brazil, have enacted heavy taxes on speculative profits, a process which serves both to return resources to the public and to force timely development of strategic vacant parcels. While property taxation itself has not been an effective technique of land use control, taxation of speculative gain promises to be a powerful tool. Even in the area of affordable housing, nations are beginning to act: Botswana and Malawi, for example, require that plot recipients in sites and services projects begin to construct shelter within a stipulated period of time--an attempt to prevent speculative activity and ensure that growth will occur in an orderly fashion.

Solutions

It is not possible to say that any country has "solved" its urban land problems. Competition among uses continues, along with the social and political tension which such competition produces. It is possible to demonstrate, however, that many nations in Africa, and elsewhere, have begun to give appropriate controls over urban land, its cost, and availability a high priority for attention and for institutional reform. On the specific matter of housing for low income urban residents, the concern has induced changes of profound significance. The "land for housing" problem is clearly too enormous for conventional solutions. Formerly rigid standards and guidelines have been modified in the process of adopting new approaches. These include:

1. Upgrading. The upgrading approach recognizes that displacement of squatters and elimination of informal sector neighborhoods is a "no-win" situation. Displacement merely shifts the shelter burden to other areas. Upgrading accepts the present occupancy, but attempts to produce--at minimal cost--such vital services and facilities as potable water supply, electricity, sewage and solid waste disposal. The objective is twofold: to bring these areas up to minimal public health standards and to provide the infrastructure base that will permit the residents themselves to reconstruct neighborhoods over time. Long-term planning efforts now accept many of these existing settlements as givens and restorable (slides - examples of road and storm drainage improvements in Jakarta Kampongs, example of solid waste disposal in Swaziland squatter area).

2. Granting of Tenure. Governments have discovered that security of tenure is a key ingredient in self improvement of informal sector areas. With a long-term secure interest in the shelter unit and its site, people will begin to upgrade their living environments. Many approaches to tenure are being tried, from outright grants of ownership to various forms of long-term leases on the land or shelter unit allowing ultimate ownership to remain with the government. Such leasehold arrangements also permit the opportunity for eventual re-development of such neighborhoods if the prospects for more conventional shelter solutions improve over time (Slide - Mellassine in Tunis where tenure is being granted as part of upgrading).

3. Various forms of sites and services and self-help solutions on the urban edge. Governments increasingly recognize that upgrading can help present urban residents, but further, bolder, and more non-conventional solutions are essential to accommodate new housing demand. The response has been to assemble land in newly developing sections of the city, to divide the land into regularized plots, to provide basic infrastructure, and to grant tenure through ownership or leasehold arrangements. Forms of actual shelter construction on these sites range from completely self-built units almost rural in character, to more urban kinds of dwellings involving both contractor and family labor. Often these plot allocations have been combined with special long-term financing arrangements for the shelter unit or for building materials (Slides - Bangkok sites and services, Lusaka sites and services, Swaziland self-help housing scheme).

4. Provision of transportation linkages. Accessibility to jobs and services for the urban poor is increasingly regarded as a public responsibility. Thus, where land or shelter programs are not available, some governments are extending low cost transport to outlying informal settlements to improve their accessibility and to provide physical linkages to the urban centers (slides - Swaziland transport system). In this case (Swaziland), major employers help underwrite the cost of transportation to compensate in part for unavailable housing.

5. Priority location for low income shelter. In even bolder ways governments have begun to place priorities for low income housing on sites immediately accessible to employment and services. This has, for some governments, represented a complete reversal in land use concepts which relegated low income settlement to the least desirable, most remote land (slides - Singapore central city housing, Tunis Bach Hamba core houses near employment).

6. A shift to large scale, mixed use, mixed density projects. Aware of the costs of such accessible sites, governments have tried to combine low income settlement with larger undertakings. In these more complex projects, industry and higher income housing have been

able to bear proportionally larger costs for land and essential services. This is the cross-subsidy approach, easing the reimbursement burden for low income families. Once such infrastructure as roads and water systems is installed to service major employment for example, the incremental cost for lower income housing can be considerably smaller than if separate systems were installed. And, in the process, the poor can have accessibility to jobs, transportation and services comparable with the well-to-do (slides - Bach Hamba and other areas in Tunis).

Equally important social benefits come from this approach. Economic integration--in contrast to physical isolation--can now be achieved for those of lower income.

New Institutional Initiatives

Many different approaches to land availability and cost for shelter are being attempted. Although they vary from country to country and continent to continent, the most successful share two common characteristics.

1. They represent institutional change. Traditional legislative and administrative structures cannot cope effectively with the land problem. The challenge posed has been met by providing existing institutions--ministries, parastatal organizations--with new responsibilities or by creating new institutions whose missions are targeted to groups at a severe disadvantage in the normal competition for land.

2. They provide crucial linkages between land, the provision of infrastructure to service that land, and the actual development of buildings and uses on the site. The most effective new institutional initiatives encompass land as a component of the development process, intimately tied with other components of urbanization. They do not treat land in isolation.

In Latin America, for example, the powerful National Bank of Brazil began as a housing finance agency but has become a full service development institution financing and directing the provision of roads, sewers, low income housing, commercial facilities and even new communities. In one case of a major industrial complex, the Bank threatened to withhold financing unless the private corporations allocated sites for low income workers' housing adjoining the industrial area.

In Malaysia, the national and state urban development corporations are complete town building agencies with the power to acquire land, build or finance housing sites for a range of income levels, and

create industrial and commercial enterprise as well. The development corporations' responsibilities extend to training workers for industry and commerce on the developed sites and financing the establishment of new business enterprises.

Africa is beginning to generate model approaches as well, and the Tunisian experience is an excellent example. Tunisia has a network of land acquisition, development, and construction agencies responsible to the Ministry of Equipment. The Ministry provides general guidance through its preparation of city and regional land use plans. To carry out strategic elements of these plans, a parastatal organization, the AFH (Agence Fonicere D'Habitation) has been created with land acquisition and development authority.

These slides illustrate some of the key features of AFH's role--and underscore the relevance of this model approach for other countries on the continent.

First of all, AFH identifies undeveloped areas of strategic importance to planned residential extensions of the city (slides showing projects in Tunis and elsewhere). It negotiates acquisition of the land, often from several owners. The agency then prepares a plan of disposition--often involving a broad range of land uses and housing for a variety of income levels--a technique which permits the allocation of land and infrastructure costs on a cross-subsidy basis. Next AFH proceeds to install the primary infrastructure; roads, water lines, sewers; and prepares the land for its ultimate users. Finally, AFH disposes of the land to private and public developers including the national agency who builds for lower income families.

A major consequence of this comprehensive approach to development is its control of impact. The comprehensive site programs of AFH capture for the nation itself benefit of values created by public efforts to prepare land and install critical infrastructure.

The particular institutions which guide the Tunisian process may not be transferrable to other countries and other political and social systems. But, the process itself can well be an example for other African countries committed both to affordable housing and the orderly expansion of cities.

It is important, however, to place these new and promising institutional initiatives from Africa, Latin America, and Asia in perspective. For thus far they have failed to come to grips with the magnitude of the shelter problem. None has yet established a working alliance or a partnership with the informal sector which continues to provide the bulk of urban shelter. None has yet undertaken to channel the shelter-building activity of the people themselves to land assembled as part of comprehensive development schemes. The task remains to

link the activities of comprehensive development institutions with upgrading and sites and services efforts. It is a task which requires considerable skill and sensitivity but needs to be performed if the comprehensive development approach is to fulfill its promise.

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LAND USE

Slides for Use to Illustrate Points
of Presentation, Derived from 16 Countries.

Credits: Malcolm D. Rivkin, John Taylor, Jack Hjelt, Charles Boyce, L. Alan Feinberg.

1. Turkey, Rural Village
2. Swaziland, Rural Homestead

3. Rio De Janeiro, Downtown
4. Caracas, Downtown
5. Panama City, Downtown
6. Kuala Lumpur, Downtown
7. Nairobi, Downtown

8. Mbabane, View
9. Monastir, View
10. Monastir, View

11. Jamaica, Functions of the City
12. Mersin, Turkey, Oil Refinery
13. Kuala Lumpur, Industrial Park
14. Rio De Janeiro, Office Building
15. Istanbul, City Hall

16. Jakarta, Medium Density Housing
17. Singapore, High Rise Housing
18. Singapore, Mid-Rise Housing
19. Mbabane, Informal Housing

20. Istanbul, Bazaar
21. Kuala Lumpur, Shopping Street
22. Kuala Lumpur, Shopping Center

23. Singapore, School
24. Brasilia, Day Care Center
25. Onest, Romania, Cultural Center
26. Singapore, Park
27. Brasilia, Day Care Center
28. Singapore, Hindu Temple
29. Kuala Lumpur, Mosque
30. Istanbul, Cemetery

31. Ankara, Shoe Shiners
32. Mbabane, Swaziland, Market
33. Gaziantep, Turkey, Yarn Dyers
34. Brasilia, Orange Sellers
35. Bogota, Bike and Bus
36. Singapore, Bus Stop
37. Kuala Lumpur, Motorcycle Park
38. Jakarta, Major Road

39. Singapore, Raffles Place

40. Tunis, Medina Housing
41. Ankara, Central City Squatters
42. Rio De Janeiro, Favelas
43. Kuala Lumpur, Railroad Area Housi
44. Jakarta, Bridge Housing
45. Tunis, Mellassine Squatters
46. Nairobi, Mathare Valley
47. Ankara, Fringe Area Squatters
48. Mbabane, Fringe Area Squatters
49. Mbabane, Squatter Housing Construction
50. Mbabane, Squatter Housing Construction
51. Mbabane, Squatter Housing Construction
52. Mbabane, Squatter Housing Construction
53. Mbabane, Squatter Housing Construction.

54. Manila, Squatter Area Sanitation Problems
55. Manila, Squatter Area Sanitation Problems
56. Mbabane, Fringe Area Squatters
57. Kuala Lumpur, Kampongs Near Hotel

58. Manila, Squatter Removal
59. Manila, Squatter Removal
60. Rio De Janeiro, Fringe Public Housing
61. Manila, Fringe Site for Squatter Replacement
63. Singapore, High Rise Public Housing
64. Bangkok, High Density Public Housing
65. Bangkok, High Density Public Housing

66. Bogota, Conflicts in Land Use
67. Ankara, High Density Replacement of Low Density Area
68. Jakarta, Highway Impact
69. Jakarta, Highway Impact
70. Jakarta, Highway Impact on the Urban Poor

71. Bogota, Land Speculation
72. Bogota, Land Speculation
73. Jakarta, Land Speculation

74. Jakarta, Kampong Upgrading
75. Jakarta, Kampong Upgrading
76. Mbabane, Squatter Upgrading

77. Tunis, Mellassine Tenure Experiment

78. Bangkok, Sites and Services
79. Bangkok, Sites and Services
80. Lusaka, Sites and Services and Self-Help
81. " " " " "
82. " " " " "
83. " " " " "
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89. " " " " "
90. " " " " "
91. Mbabane, Selp-Help Housing
92. Mbabane, Self-Help Housing
93. Mbabane, Self-Help Housing

94. Mbabane, Squatter Area Bus Transport
95. Mbabane, Squatter Area Bus Transport
96. Singapore, New Housing in Core City
97. Tunis, Housing and Employment Center

98. Tunis, Mixed Income, Mixed Density
99. " " " "
100. " " " "
101. Tunis, Built in Expansion
102. " " "
103. " " "

104. Kuala Lumpur, New Commercial Center by Development Authority
105. Kuala Lumpur, New Town by Development Authority

106. Tunis, Extensions of Housing and Infrastructure by Devel. Authority
107. " " " " " " "
108. " " " " " " "
109. Tunis, Vertical Extensions of Housing
110. Tunis, Vertical Extensions of Housing
111. Tunis, Space for Room Addition
112. Singapore, Problem Solving Symbol

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ESTABLISHING HOUSING POLICY OBJECTIVES

Thursday, November 8, 1979

2:00-3:00 p.m. Code 10.HP

Presented by:

Alfred P. Van Huyck

SHELTER TRAINING WORKSHOP

November 5-30, 1979

I. PURPOSES OF A NATIONAL HOUSING POLICY. . 10.HP -- 1

II. EXISTING NATIONAL HOUSING POLICIES . . . 10.HP -- 5

III. EXAMPLES OF HOUSING POLICY OBJECTIVES. . 10.HP -- 8

ESTABLISHING NATIONAL HOUSING POLICY OBJECTIVES

10.HP

I. PURPOSES OF A NATIONAL HOUSING POLICY

The need for a national housing policy is just now being recognized as an urgent issue among countries throughout the world. A national housing policy is essential to the achievement of the following objectives.

A. Understanding Dimensions and Implications of the Housing Sector Problem

1. All of the many groups involved in various aspects of housing should understand the basic issues involved, the linkages between housing and national economic development and between housing and urban development.

2. There should be a common set of data, projections, and estimates which all parties involved should be using as background for their individual work. The formulation of a national housing policy brings together all relevant material, data, and projections that are required for many parts of the government and private sector.

B. Establishing a Unity of Purpose and a Basis for Decision Making

1. The housing policy should develop a unity of purpose among all groups involved in housing or affected by it. It should ensure that the interests of all groups, including low-income groups, are reflected in the actions proposed.

2. It should establish a basis for decision making for the public and private groups responsible for various aspects of housing development. In this sense the national housing policy acts as catalyst for achieving better coordination among many groups.

3. There are a great many actors involved in the housing delivery system, including users of housing, land developers, housing agencies, housing finance agencies, land development agencies, land use control and planning agencies, and local government and private financing groups.

4. The housing policy should be goal-oriented: it should not only respond to current problems but also set goals and standards for future achievement. The housing goals should

provide guidelines for the future definition of target groups, space, services and construction standards, levels of investment financing, and the roles of those involved in the housing delivery system.

5. If unity of purpose is achieved and the special interests of all involved are represented, the policy will, if it makes adequate allowances for administrative slippages and economic bottlenecks, be implemented. If there is no unity of purpose, it will not.

C. The Basic Complexity of Implementation

1. Policies are enforced through a variety of more or less obvious mechanisms such as budget controls, administrative procedures, or taxation measures dealing with the various actors (public and private).

2. Budgets affecting public sector actors may be used as an inducement, a constraint, a threat, or a punishment in different situations.

3. Taxation affecting private users is an especially effective tool for discouraging any activity which inhibits or delays the achievement of desired ends.

(a) Taxation of unearned increments from speculative land dealings may capture private profits for public use.

(b) Similarly, heavy taxation of unused or underutilized urban land may increase the amount of land available for immediate development.

4. Housing policies often attempt to set minimum and sometimes maximum standards. These standards are always extremely difficult to enforce.

(a) For instance, standards restricting consumption of scarce materials by placing a maximum size limitation on a house are little attempted and often unenforced.

(b) Minimum standards, below which housing will be termed illegal, are often attempted. When these minimum standards are set above the financial ability of low-income people to comply, they are either unenforceable or create severe hardship upon the household through government demolition or harassment. In addition, by undermining the initiative of the low-income group who cannot hope to meet the minimum standards, such practices effectively force people to live in worse conditions. This accomplishes the exact opposite of the seemingly good intention of setting a minimum standard in the first place.

5. The housing policy should establish a basis for decision making at all levels of government and within the private sector. It is through day-to-day decision making in government and the private sector that policy is carried out. The housing policy is necessary to establish guidelines for day-to-day decision making to ensure that action does not degenerate into "fire fighting" and that it results in continued progress toward established goals.

D. Establishing the Place of Housing in National Development Priorities

1. Housing has tended to be considered by macroeconomists as a consumption good and low-priority investment item, and it has been relegated to a relatively low priority in national development priorities for that reason. This trend seems to be reversing as some well-known economists are beginning to think of housing as a potential leading sector of the urban economy.

2. A national housing policy establishes priorities for housing investment within the national development process.

(a) Each country will resolve housing priority issues depending on its own situation and needs. What is important is that housing be addressed explicitly and policy decisions be made within a recognizable decision framework.

(b) All too often the housing sector has been left as an afterthought or residue item in the national economic planning process. This in turn leaves all of the many housing groups within the public and private sector without policy direction. The resulting program initiatives are ad hoc, often poorly conceived and unevenly implemented.

(c) The net result is waste of managerial skill and financial resources and a lower output of housing units than would otherwise be possible.

E. Defining the Respective Roles of the Public and Private Sectors in Housing

1. The role of each sector should be related to the three basic functions: to build, to finance, and to facilitate. There is a broad range of policy options in assigning functions to build and to finance. Because there is a broad range of options, it is important that the relative roles of the two sectors be defined.

2. Most housing plans will specify in varying degrees of detail what the public sector expects to do in the housing field. The difference between this level of effort and the estimate of housing needs is then usually left as a single quantified figure labeled "private sector."

(a) This simplistic approach is detrimental to housing because it does not give clear guidelines to the private sector as to how it is to respond.

(b) Nor does it provide a convincing case demonstrating that the private sector can meet the targets set with the resources available.

In most situations, the private sector will play an important role, and the quality and adequacy of housing constructed will be directly related to the capability of firms in the private sector.

3. In order for the private sector to enter the housing field, it is necessary that it have reasonable expectations of freedom of operation (with only as much regulation as necessary to protect the public interest), that it be given access to credit and to land, and that it be allowed an acceptable rate of return on capital.

4. Conversely, it is important that the role of the public sector be firmly established so that it is able to regulate the provision of adequate financing and to perform those functions that are not the responsibility of the private sector.

F. Relating Public and Private Sector Housing Programs to the Real Need of All Income Groups

1. The national housing policy should be designed so that it clearly responds to the real needs of all income groups.

2. The lower income groups of society have sometimes been left out of housing policies on the grounds that they are a part of the informal sector and, therefore, outside the area of concern of housing policy. This fails to recognize the importance of achieving better living conditions for lower income groups as well as the contribution they can make to national economic development.

G. Identifying and Eliminating Bottlenecks

1. Housing policy should identify specific problems or bottlenecks in the housing process and make recommendations to overcome them. For instance, in some developing countries just beginning to experience large-scale urban development, virtually no key institutions and legislation may be in place.

2. The legislative base in many countries has a direct link back to the days of former colonial power.

(a) The laws then were designed to ensure high standards of housing for Europeans. Building codes, subdivision procedures, zoning laws, taxation laws, and laws governing landlord-tenant relationships may be constraints on the construction of new housing and the operation of the rental market.

(b) The housing policy should call for legislation to create laws suited to the needs of the developing country. These will often be quite different from laws developed during the days of colonial power.

3. In many countries there has been a tendency to create agencies at all levels of government in response to narrowly defined housing needs and as a method of overcoming the failure of agencies already in existence. In many there is a lack of key agencies. As a result, it is almost impossible to ensure smooth administration of housing policy. The national housing policy should recommend administrative changes necessary for better implementation of housing policy.

4. There may be a complete lack of housing and construction finance agencies or the programs of existing agencies may be limited to high income groups and modern housing and not suitable for a comprehensive housing program. The housing policy must lead to the creation and smooth operation of adequate agencies for financing both housing construction and housing purchase.

5. There is a need in most countries for partial public land ownership and development, if not housing construction, in order to ensure that land is efficiently developed and that land is available for low income groups in suitable locations. Land management and development agencies should be recommended as part of the housing policy if they are necessary in the specific situation of a country.

II. EXISTING NATIONAL HOUSING POLICIES

More and more countries are recognizing the need for a national housing policy. To date many of these efforts are incomplete in many aspects, but the concept is becoming well established.

A. The United Nations published World Housing Survey, 1974 which contains the first attempt to compile an overall listing of those countries which had a national housing policy in some form as of the date of the survey. The degree of completeness and the practical value of the individual housing policies is not

known as no evaluation of the data was undertaken; nonetheless, certain important trends can be seen.

1. Out of the 128 countries, all but 30 have at least a partial housing policy. This means that 77 percent of the countries have some formal recognition of housing policy.

2. Latin American and Asian countries lead with an 82 percent and an 81 percent coverage respectively, while Africa has a 63 percent coverage.

3. In total, 57 countries have urban housing policy statements: 50 have rural policies, and 21 recognize special housing groups (usually civil servants, veterans, industrial workers, etc.).

4. Public housing for low income groups is recognized specifically in 28 countries, while 11 countries recognize sites and services projects specifically. The latter number is probably increasing as at least 25 countries are either undertaking sites and services projects or discussing them with international agencies such as the World Bank and AID.

B. It can be said, therefore, that most countries have housing policies in one form or another. A review of national housing policies showed that housing policies are frequently included as part of the national economic plan. The place within the economic plan varies.

1. A number of economic development plans still place housing under "social overheads" or even "welfare expenses," with little recognition of housing as other than a program for low income groups.

2. However, most countries do not have a fully worked-out housing policy which covers all of the various components.

C. The most frequent deficiencies noted are discussed below.

1. <u>Lack of Implementation Strategy</u>

(a) Some housing policies and plans simply do not include an implementation strategy. One housing plan recognizes a majority of the population as low income people "who are unable to pay for housing without heavy subsidies." The plan, however, calls for an increase in construction over several years from the current rate of two houses per 1,000 population per annum to 12 houses per 1,000. The increased percent of national income required for this enormous task is not stated nor is the division between private and public sector construction targets. It remains unclear how this target is to be achieved.

(b) The relationship between policy statements, plan targets and budget allocations is rarely sufficiently clear to allow tracing of a particular program through the system in order to see that all elements are consistent according to priorities.

2. Lack of Political Support

(a) By far the most significant reason for failure of of major housing policies to have an impact is the lack of true political support. All too often housing policy is prepared at the technical level of government and not at the political level, with the result that there is no real political or legislative date for the policy.

(b) If top level commitment to clearly understood objectives exists (major emphasis on self-help schemes, for example), ranks will not radically deviate from agreed policy. When they do, remedial pressures can be readily applied. If policies are "slipped past" high level politicians, eliciting only warm or neutral reactions, implementation will be difficult. Just this situation occurred in 1969 when expatriate advisors on the national plan of a developing country wrote a housing policy committing the government to the sites and services concept (the plan target was for 25,000 serviced plots in __ years). Little or nothing was accomplished except for a pilot project of a few hundred plots which languished in the absence of significant international technical assistance. Then in 1972 the president made a major speech endorsing the sites and services concept. Immediately planning for the program commenced and a major program was soon initiated.

3. The Conflict Between Individual Household and National Housing Objectives

(a) The housing policy is both national in character and personal in its benefits and achievements. Policies designated to guide this process must recognize and deal with both levels of aspirations. Unfortunately, the housing policies of some governments, which are formulated to guide the collective expression of individual aspirations, often take forms which create serious obstacles to the majority of their people. This occurs when individual household actions come into conflict with a government's interpretation of the public interest.

(b) Governments all too often view housing policy mainly from the point of view of national or collective aspirations. This is seen in typical goal statements related to "minimum standards of decent housing" which are to to be achieved for every family. Projects directed toward this end often become matters of national prestige whether

or not there exist sufficient resources to make them significant on a national scale.

(c) Individually, the less affluent are less likely to be concerned with the quality of their shelter than higher income groups who are in a better position to both articulate and pay for what they want.

(d) Policy statements stressing the importance of achieving high minimum standards for low income families often make their own assumptions regarding the priorities of that sector and are likely to find their position either unenforceable or counter-productive over the long run.

(e) What is important is freedom for households to manage their own resources, however meager, in order to achieve the best possible standard of living in the long run according to their own needs and priorities.

III. EXAMPLES OF HOUSING POLICY OBJECTIVES

A. The central objective of housing policies and programs should be to achieve the maximum addition to the net housing stock of the nation. The fundamental emphasis must be on reducing the housing deficit and achieving levels of production which can keep up with new household formation. Given the enormous numbers of total dwelling units to be provided, each nation must concentrate its limited resources in the most efficient way. This will often require substantial revision of current policies and procedures.

B. In most cases achievement of this central objective will mean orientation of the public sector's role in housing to establish nationwide programs focused on meeting the needs of lowest income people who cannot afford to participate in regular public, semi-public, and formal private sector housing programs.

C. From recent experiences certain general criteria for programmatic response are beginning to emerge:

1. Housing programs for low income people must be capable of massive application on a sustained basis.

2. They must have acceptable low per capita operating and capital costs, with potential for cost recovery from the urban poor.

3. They must provide substantial opportunity for self-help and participation from the urban poor themselves.

4. They must have acceptable low levels of administrative requirements.

5. They must be flexible and capable of change in response to the changing needs of the urban poor.

The current emphasis on settlement upgrading and sites and services projects meets these criteria very well and offers a logical response to the requirements of the urban poor.

D. A need and an opportunity also exist to reduce the average cost per unit of formal sector housing units built in the public sector in order to build more units with the same level of capital investment. This will be possible by reducing the average size of dwelling units built, lowering the infrastructure standards, improving the site planning and architectural design, and improving the building technologies used.

E. In spite of a well-organized approach to housing in both the public and private sectors, it is unlikely that most countries will be able to meet the needs of all their low income groups. Developing countries must recognize the potential contribution of the informal sector and encourage self-help housing.

1. The first requirement needs to be the cessation of those actions (such as demolition of squatter settlement housing) which are inherently counter-productive to the central objective of ensuring the maximum net addition to housing stock.

2. In addition, the informal sector should be recognized as a legitimate supplier of housing in the nation, and appropriate areas should be provided within cities for self-built houses (with or without government provided sites and services projects).

F. The importance of housing in the national development strategy should be recognized clearly as being a contributing factor toward national economic development.

G. Allocating housing resource priorities should favor urban over rural housing, although rural <u>development</u> may well be chosen over urban <u>development</u> in the overall allocation of total capital investment resources.

1. This conclusion is based on the fact that housing problems are most acute in urban areas, and rural housing needs can be met more efficiently through self-help.

2. Among urban areas the distribution of housing resources should seek to reinforce national strategies for population dis-

tribution; however, capital cities and large urban centers should be encouraged to maintain their housing stock through upgrading programs and to allow expansion at the rate of population increase through minimum standard sites and services projects which will not in themselves invite additional migration.

H. The highest priority for allocating public housing resources must be given to the low and lowest income groups.

1. Nonetheless, there may be severe housing shortages among all income groups and governments should take appropriate steps to facilitate private sector response to the greatest extent possible for all of the nations' citizens so long as the cost is borne by the beneficiary.

2. As a general rule, programs for special target groups should be discouraged, particularly if the programs are to be heavily subsidized by public funds.

I. The mobilization of housing finance is the cornerstone of a meaningful long-range housing program. It is appropriate to utilize public funds in support of housing objectives, but that only through mobilization of private savings is there hope of overcoming the basic housing problems in most developing countries. Highest priority therefore should be given to improving the private sector housing finance system.

J. The general use of large subsidies within housing programs should be discouraged. In most cases the use of subsidies by governments acts to the detriment of the overall housing sector because it tends to limit the amount of housing which can be built over time by the public sector, and it drives the private sector away from meeting the needs of middle and low income groups because they cannot compete with the subsidized pricing policies.

1. It may not be possible for a country to terminate all subsidies abruptly, particularly in situations in which a large amount of subsidized housing has already been introduced in the market. The objective should be to phase out general subsidies over a reasonable period of time in order to establish viable, self-financing public sector housing institutions.

2. The first step is initiating adequate cost accounting of the subsidies provided and moving away from interest rate subsidies (which require annual subsidy contributions during the life of the mortgage) toward once-only write-down subsidies.

3. Specialized modest subsidies, which have a national purpose, might be appropriate for clearly defined situations.

K. There is a major role for the public sector in meeting overall housing needs. The priority among the three public sector roles (to build, to finance, and to facilitate) should be:

1. To Build. The public sector's primary responsibility is to ensure that an adequate amount of urbanized land is available for residential development.

(a) The priority therefore should be on development of sites and services projects with core house units.

(b) Secondly, the existing housing stock should be conserved, and therefore settlement upgrading projects should be given major emphasis on a citywide basis.

(c) The public sector should build complete housing units only if a special objective is to be achieved, or if the private sector cannot be induced to take the risk or does not have the capacity.

2. To Finance. The public sector has a major responsibility to ensure an adequate housing finance system is working throughout the country. The government should be encouraged to provide sufficient equity and "seed capital" to assist housing finance institutions, but the ultimate burden must be on mobilizing private savings.

3. To Facilitate. The public sector has both the responsibility and the opportunity to make a major contribution to housing through its ability to facilitate actions by the private and popular sectors. It can do this by ensuring that there is an appropriate legislative base, an effective government housing administrative system oriented to encourage the private and popular sectors to achieve their role in the overall housing delivery system.

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

OUTLINE OF THE CONTENT OF A NATIONAL HOUSING POLICY

Thursday, November 8, 1979

3:00-5:00 p.m. Code 11.HP

Presented by:

Alfred P. Van Huyck

SHELTER TRAINING WORKSHOP

November 5-30, 1979

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OUTLINE OF THE CONTENT OF A NATIONAL HOUSING POLICY

11.HP

I. INTRODUCTION

A. The content of national housing policies will be different for each country because of very wide differences in social, economic, cultural, and political factors which must be considered. Therefore, it would be of little value to attempt to discuss the specific content of a national housing policy. However, key concepts and broad areas of substance can be stressed within which specific policy should be developed.

B. The fundamental objective of a national housing policy should be the universality of its coverage of the housing sector. A review of current housing policies indicates that rarely is the policy explicit in covering all aspects of housing. This is a major shortcoming because it gives rise to the problem between housing policy and housing plans and between "stated policy" and "real policy."

1. "Real policy" is derived from the actual operating sequence of decisions regarding how and where and by whom housing will be built and used. It includes budget decisions at various times and levels and both purposeful and unintentional or uncoordinated actions taken or not taken by the government, commercial sector, and users of housing. The levels of actual decision making overlap to varying extents and are rarely in total harmony. Budget allocations and actual expenditures are a fairly realistic indication of actual policy decisions.

2. The review of existing housing policies reinforces the impression that "real policy" does not necessarily correspond to "stated policy."

(a) Policy deviations may occur at the point of their translation from statement to plan, and again as the plan approaches implementation levels through misunderstanding, miscommunication, lack of coordination, or declining levels of political conviction.

(b) Aggregate policies (collections of unrelated agency statements and plans) may never even consciously realize the existing conflicts between different sections since they contain no rational comprehensive statement of direction to be measured against.

(c) Other policies are formulated by default, frequently constituting a government's entire position regarding

the popular sector's housing efforts. The resulting conflict, loss, and delay can rarely be afforded in developing economies.

3. An Example of "Real Policy"

The demolition of nearly 8,000 family units in a capital city during 1971 (four or five times the amount built by the city during the same period) was carried out in the face of a policy statement that "since the overall shortage is so acute, available finance will largely be used to expand the total stock of houses, rather than to clear slums . . . Replacement of large areas of dilapidated urban housing . . . will, for the most part, have to be postponed."

The phrase "for the most part" provided a sufficient gap for a division of the City Council's Health Department to override the spirit of a policy statement issued at the ministerial level.

C. Housing policy should provide the overall goals, program context, strategy of the housing delivery system, and procedures for evaluation. It would serve as a background for the national housing plan which details goals into specific objectives, targets, and budgets within a time horizon.

II. THE BASIC CRITERIA

A comprehensive housing policy should recognize three basic criteria in its formulation:

A. It should develop explicitly how all housing is to be supplied from both the public and private sectors and how the housing demand from all income groups and special groups is to be met in principle.

B. It should cover both rural housing demand and urban housing demand recognizing different housing requirements reflected by city size considerations (capital city, provincial cities, and market towns).

C. Most important, the housing policy must be internally consistent so that the relationship between individual policy objectives and specific implementation measures can be established and verified.

In meeting these criteria each country may elect to proceed differently. There is no one correct approach or precise way to

formulate a national housing policy. Nonetheless, to illustrate the kinds of information which should be communicated in the housing policy the following outline is offered.

III. THE BACKGROUND SITUATION

In preparing a national housing policy and subsequently national housing plans, a major effort should be made to gather background information on the housing sector and to establish an adequate data base. This need not be done all at once, and indeed it is best for housing data collection to be the continuing function of an appropriate agency. This data need only be summarized in the housing policy document itself in order to provide a frame of reference by which to understand the policy recommendations which follow. Among the specific items of information which might be included in the housing policy are the following:

A. Housing within Economic Development

The historic relationship between the housing sector and the overall national economic development effort can be expressed by such indicators as the proportion of residential investment to overall capital formation and the percentage of the gross national product represented by housing.

B. Housing Problem

Information on the dimensions of the current housing problem and projections of the future housing requirements should recognize both rural and urban housing and cover the demographic factors related to housing: employment and household income distribution, household expenditure patterns, and typical levels of household income allocated to housing. It should include an analysis of the existing housing stock and estimate current and projected demands (by location and income group). It should include an analysis of urban land demands and related problems as well as an analysis of construction costs and building materials problems and related issues.

C. Public and Private Sector Roles

An historical review of public and private sector responses to the housing issues using quantified data in numbers of units constructed and capital invested should be presented. This information should establish the scale of the response to housing needs to date as well as the likely trends under existing policies in the future. The analysis should establish the adequacy of this level of response given dimensions of the problem identified in Item B above.

D. Delivery System

The current housing delivery system should be described for the public, private, and informal sectors along the following lines:

1. The public sector delivery system should identify existing organizations responsible for house building and give the nature of their programs, the scale of their operations, and the types of housing being constructed. It should identify housing finance organizations by organization, the types of housing financed, the terms and conditions of loans, and an identification of the subsidy elements.

2. The private sector delivery system should identify house building activities and capacity of the private contractors, the private sector sources of housing finance and the terms and conditions of loans, and the capacity and content of the building materials industry.

3. The informal sector delivery system should be described including a quantified analysis of the number and distribution of individual self-built dwelling units, the methods of construction and finance being utilized, and a discussion of the quality and characteristics of the dwelling units being built.

IV. HOUSING POLICY OBJECTIVES

The objectives of the housing policy are perhaps the most important part of the document. The objectives statement will become the criteria whereby specific actions or lack of actions can be evaluated within the housing plan and during implementation. In the housing policy document the objectives statement should be specific as to direction and implications, but need not be quantified. Quantification should occur while preparing the housing plan. Each country must determine its objectives for its own situation. Specific objectives should be developed in at least the following general areas.

A. Housing in Development Strategy

The importance of housing within the overall national development strategy at a particular point in time will vary within a country's overall development situation.

B. Urban and Rural Priorities

The relative priority in allocating housing resources between urban areas (by city size) and rural areas is usually a complex political choice.

C. Target Groups for Housing Resources

1. The relative priority for housing resources by source (public sector, private sector, and informal sector) should be related to target groups within the population. The population to be provided housing should be divided into target groups that reflect income groups of the general public and special groups.

2. In this paper the terms public, private, and informal sectors refer to suppliers of housing while users of housing are indicated by the terms lowest, low, middle, and upper income groups.

3. In addition to target groups by income classification, most countries designate special target groups for whom housing programs are developed; for example, civil servants, military officers, veterans, industrial workers, and refugees may have special priorities for housing resources. These groups, if they are to have special programs, should be recognized in the objectives statement.

D. Mobilizing Housing Finance

A series of objectives on mobilizing housing finance should be identified. The source of finance from public sector revenues, the mobilization of private savings for housing, and the allocation of funds from private sector financial sources need to be identified in the objectives statement with an indication of the priority to be assigned to each source.

E. Use of Housing Finance Resources

1. Objectives covering the use of housing finance resources should be identified, particularly with regard to the role of subsidies in public sector housing.

2. Will homeowners be required to pay for all costs related to housing production? What types of subsidies, if any, will be made available for what target groups? Different types of subsidies (direct capital subsidies, interest subsidies, land provision, rental subsidies, etc.) have different aspects which should be considered for specific situations. However, all of them place a burden of some sort on limited government resources. Few developing countries possess the requisite subsidy resources to alone make a significant impact on housing problems.

F. Public Sector Role

1. There should also be a set of objectives outlining the public sector role in the housing delivery system. Government

has several role options:

(a) to build: construction of completed housing (shelter, utilities and services).

(b) to finance: provision of lines of credit for construction and purchase financing by private/popular sectors.

(c) to facilitate: incentives for regulation of and construction by private/popular sectors which finance their own housing.

2. Of these roles, the first (building) generally requires the greatest investment and produces the fewest completed houses since government is playing all roles -- general contractor, manager, initiator, architect and planner, financier, and overall facilitator. In addition, this type of project often generates a non-involved user who may become a further burden, increasing the risk of decapitalizing government programs.

3. The second role option (financing) eliminates the management, initiator, and general contractor roles and mobilizes scarce resources from public and private sources to produce a larger number of houses, but usually at fairly high standards.

Some schemes (such as housing loans for sites and services) do benefit lower income groups. Successful housing finance programs can mobilize large amounts of private capital for housing investment and free scarce government resources for less direct roles.

V. DEFINITION OF THE HOUSING DELIVERY SYSTEM

It is, of course, necessary to establish within a country a housing delivery system which reflects the overall objectives to be achieved and provides a relevant procedure for implementation. The housing policy should seek to define the housing delivery system which is desired while leaving specific detailed recommendations for implementation to the housing plan. Among the items to be considered are the following:

A. Legislative Base

1. The legislative base is frequently ignored in setting housing policy; yet it frequently works counter-productively to achievement of housing objectives. Building codes, subdivision procedures, and zoning laws may all be real constraints on the housing process relevant to the given level of resources. Taxation laws and laws governing the landlord-tenant relationship may inhibit development of a rental housing market.

2. Legislation also defines the housing finance system. Besides establishing finance institutions and defining their authority, legislation affects land tenure, mortgageability, title registration, and other legal considerations.

3. In framing a housing policy, careful review of the legislative framework affecting housing is imperative, and decisions must be taken as to whether or not the existing legislative base is conducive to achieving housing policy goals.

B. Administrative Framework

1. The government's administrative framework presents some fundamental questions to be resolved between centralized or decentralized administration. Many developing countries have found over the years that a chaotic administrative situation has developed through the ever expanding number of agencies and actors involved in the housing process.

2. There has been a tendency to create agencies at all levels of government in response to narrowly defined housing needs and as a method of overcoming the failures of agencies already in existence. As a result, it is almost impossible to ensure the smooth administration of a housing policy no matter how coherent it may be.

3. The coordination of housing activities often is referred to in housing policy. Policy issues regarding the degree of centralization in housing administration deal with this first aspect of coordination. The Philippine housing plan describes programming for not less than nine separate agencies but makes no reference to how they are to be coordinated. Housing-related services in some other countries are even more diversified (for example, Chile had 23 to 25 different agencies in the mid-1960s and Kenya had four ministries and another five government-related institutions).

4. It is conceivable that (as the definition of housing becomes more environment-oriented to take in aspects of public utilities, community services, and employment) this problem will become even worse.

5. Specifically, housing policy should seek to define responsibilities of the various agencies and organizations involved in housing at each level of government and to ensure that there is an agency charged with each kind of function and responsibility. For example:

(a) Housing policy and planning functions might involve responsibilities at the national level for the Ministry of Housing (or Public Works), the Ministry of Economic Development, and the Ministry of Finance. The housing policy should define the responsibilities of

each and how they are to interact and coordinate.

(b) Housing administration and controls might involve the Ministry of Housing at the national level and various local governments. The responsibilities of each need to be identified.

(c) House building capacity might be established in various government organizations, each with a different program perspective. For example, there may be house building programs in a National Housing Corporation, a Ministry of Housing, Ministry of Agriculture (rural housing), other ministries (for their own civil servants), other autonomous agencies (for their workers), and provincial and local governments. The housing policy should define the area of building responsibility of each organization, target groups for which housing is constructed, sources of finance, and the terms and conditions of cost recovery if any. The purpose of the housing policy is to reduce overlaps between agencies, avoid redundancy of programs, unify terms and conditions for cost recovery, and insure that public resources are utilized according to housing policy objectives.

(d) Housing finance capacity might come from a variety of sources which should be clearly identified, and related to specific housing programs and target groups of housing users. For each of the public sector housing suppliers identified in Item 3 above, there should be a specific source of finance. The available sources of finance to be considered include:

- Direct government budget support through annual cash grant contributions in the form of equity capital to an institution or the direct construction or purchase of housing stock.

- Government loans with prescribed terms and conditions of repayment.

- Government guarantees for loans from the private sector or international sources.

- Reinvestment of cost recoveries from previously built public sector housing which has been sold, leased, or rented to households.

- Government encouragement of private savings.

C. Role of Government

The role of government in facilitating the private sector housing delivery system should be described. If the private sector is to be called upon to play a significant role in housing, as is almost certainly going to be the case in most housing policies, then it is important to identify how this can be achieved. In describing the private sector role in the national housing delivery system, attention should be given to the following:

1. The capacity of the private sector should be increased to achieve the necessary levels of construction desired for appropriate target groups. Government should consider methods for providing incentives to the private sector to achieve its desired role in the housing delivery system.

(a) Incentives to be considered for inclusion in the housing policy might include, depending on individual local circumstances, various tax benefits; assistance by government in land assembly; simplified procedures for government licenses, permissions, and approvals of appropriate housing projects; training to insure an adequate supply of managers, foremen, and skilled workers; priorities for importation of essential equipment and materials not available locally; and priority allocation of building materials to ensure consistent supply at job sites.

(b) Consideration should also be given to appropriate means to encourage establishment and development of small contractors and to ensure that sufficient construction capacity is distributed throughout the country to meet overall national housing objectives.

2. The supply and quality of building materials and the development of a domestic building materials industry should be improved. The government should consider the ways in which the building materials industry can be facilitated in achieving national housing objectives.

(a) Among the methods to be considered are providing access to credit for building materials suppliers, giving priority for importation of essential equipment, encouraging standardization of housing components, maximizing the utilization of local materials, and training for managers and foremen.

(b) In addition, training for architects and engineers should be encouraged in order to achieve more efficiency in housing design and building material conservation.

3. The supply of capital to support private sector housing construction should be increased. The mobilization of capital for

housing construction is essential, and the greatest potential in most countries rests in channeling private savings into housing.

(a) The government can facilitate mobilization of private savings through encouraging private housing finance mechanisms such as savings and loan associations, credit unions, cooperatives, etc. Savings mobilized for housing through such organizations are frequently captured outside existing savings institutions and therefore are a net increase in available investment capital rather than merely a redistribution of already mobilized capital.

(b) However, government (depending on the priority of housing) may wish to augment capital availability by requiring an allocation to housing investment from commercial banks or other financial institutions which presently are not making housing loans.

(c) The housing policy document should describe the forms of private financial institutions which should participate, define their responsibilities, and suggest in principle the terms and conditions of their participation in housing finance.

D. Government and the Informal Sector

The position of government toward the informal sector should also be specified in the housing policy. In most countries it will be necessary to recognize the fact that the public and private sectors will not, at least in the near term, be able to meet the full housing demands of the population. Therefore, the informal sector will have a continuing and vital role to play in meeting shelter requirements of people. Measures government is prepared to take to facilitate the development of informal sector housing should be specified. This might include procedures for securing land tenure, access to minimal credit for house construction or improvement, exemption from building codes and other regulations appropriate only to higher standard housing.

VI. DESCRIPTION OF THE BASIC HOUSING PROGRAMS

A. The housing policy document should include a general description of the housing types and kinds of projects which are to be encouraged in the public and private sectors. The description in the housing policy document should only set broad parameters for the housing programs in order to allow ample flexibility for design of individual projects.

B. The housing types which should be identified would depend on local circumstances within the country in particular urban and rural centers. In general, however, consideration should be given to the following general categories of housing types:

1. Complete Housing Units

Complete housing units are composed of the following types: high-rise apartments; walk-up apartments; row houses; duplex houses; and single-family houses.

2. Sites and Services or Core Houses

The term sites and services projects is given to a wide variety of physical solutions to settlement needs of the urban poor. The common characteristic of all sites and services projects is that a complete house unit is not provided as part of the project itself. The household must either complete a partial house or build its own house from the start.

3. Settlement Upgrading

Settlement upgrading programs are designed to respond to needs of the urban poor where they currently live. The philosophy of this type of project is based on the assumption that most developing countries cannot keep up with new growth housing requirements and that it is therefore essential to conserve and improve existing housing stock, even if at a substandard condition.

This approach is justified because for the most part the quality of the physical residential environment is more important than the actual quality of the house structure itself. Therefore, substantial benefits can be gained by the urban poor if environmental improvements are made to the neighborhood (such as improved water supply, sanitation, drainage, electricity, and roads and footpaths). In addition, settlement upgrading programs usually provide some means of transfering secure land tenure to the residents.

4. Rural Housing

Types of rural housing to be supported might include complete farm house units, rural settlements based on sites and services and core house concepts, and rural house improvement for existing units.

VII. ADDITIONAL PROVISIONS

The housing policy should include additional provisions regarding economic impact of the proposed housing policy and the process for evaluating the housing policy.

A. Economic Impact

1. Analysis of the economic impact of the proposed housing policy should be undertaken. Housing policy should be related to other sectors of the national economy and to aggregate economic planning as a whole. Housing policy planners should, therefore, study the economic impacts of proposed housing investments so that economic planners can consider their overall complementarity with national economic planning objectives.

2. The role of the construction industry is often overlooked in the formulation of housing policy. For the national economy the construction sector includes all aspects of construction, including residential, and frequently the inherent conflict between residential and non-residential construction is not dealt with directly. Obviously, there are finite limits on the construction sector at any time, and therefore the distribution of resources between residential and non-residential construction can become a policy issue of major importance. All too often housing construction has been postponed because of the diversion of materials and labor to other projects of a higher priority. On the other hand, the demands of the housing sector are important for maintaining and developing skills in the construction industry. Guidelines for priorities in the construction industry should be established by housing policy.

3. Policy statements occasionally mention employment effects of housing on the construction industry. Decisions regarding appropriate construction technology will determine the extent to which people will share in the benefits of housing expenditures. Technological decisions will affect low income people in two ways:

(a) Maximizing the labor content (especially of the unskilled) in the production of construction materials will contribute to greater income and/or wider distribution of income. The effect it has on income will depend on whether labor is centrally employed (by government or commercial builders) or is allowed to produce required goods and services on an independent supply basis, perhaps to specified standards. The latter would appear to offer greater possibilities for a broader distribution of profit and employment.

(b) Technologies employed in actual house construction will determine labor needs. Through the expansion of various self-help labor schemes, a great opportunity exists for turning the idle hours of those who are both unemployed and underemployed into a negotiable asset, since most homes built will have individual resale value.

4. Housing policies can also have important implications for a country's capital and money markets. The extent to which capital mobilization for housing is institutionalized and the system for regulating housing credit can both affect interest rates and the

provision of credit for housing. Priorities for housing credit must be considered along with other priorities for monetary and credit policy.

5. Housing investment can affect a country's international payments and debt position. Housing investments, as mentioned above, can require significant imports of materials which must be considered with a country's other import priorities and total foreign exchange earnings. The impact of foreign borrowing used in housing investment on a country's present and future de debt position should also be considered in the context of national economic planning.

B. Evaluation of Housing Policy

The housing policy should make explicit the importance and need for evaluation and feedback between the national housing policy and the national housing plan.

Effective use of housing policy depends on its relevance to ongoing housing activities and can be maintained only through constant feedback. In principle, a well-formulated policy statement should require only periodic review and revision. However in a practical context revision of existing policy where necessary is likely to be an incremental process as the nature of housing is better comprehended at administrative and political levels. Therefore, a dynamic relationship must be maintained between formulation, evaluation, and reformulation.

SHELTER TRAINING WORKSHOP

November 5-30, 1979

WORKSHOP I
COUNTRY PRESENTATIONS

Friday, November 9, 1979

9:00 a.m. - 12:00 noon Code 12.HP

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ESTABLISHING A NATIONAL URBAN LAND POLICY

Friday, November 9, 1979

2:00-3:00 p.m. Code 13.HP

Presented by:

William A. Doebele

SHELTER TRAINING WORKSHOP

November 5-30, 1979

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II. THE OBJECTIVES OF NATIONAL URBAN LAND POLICY . . . . . 13.HP -- 2

III. SOME BASIC CONCEPTS OF URBAN LAND ECONOMICS. . . . . 13.HP -- 3

A. The Process by Which Value is Created in Urban Land . . . . . 13.HP -- 3

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IV. SOME DIFFERENT VIEWS OF LAND IN DIFFERENT CULTURES. . . . . 13.HP -- 7

V. ALTERNATIVE STRATEGIES FOR A NATIONAL URBAN LAND POLICY . . . . . 13.HP -- 7

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ESTABLISHING A NATIONAL URBAN LAND POLICY
13.HP

I. IMPORTANCE OF A NATIONAL URBAN LAND POLICY

A. Relation to Economic Development

Cities are the heart of industrial growth in all countries. Urban growth, in turn, is dependent on the availability of land at the right places at the right times: land for industry, commericial, major institutions, and (the greatest land user of all) residential purposes. Urban development without land policy creates enormous problems of congestion, resulting in heavy losses in national wealth in the form of wasted human time and productivity, fuels and other natural resources.

B. Required Participation of Public Sector

Many other economic sectors can be handled by the private sector, with minimal public intervention. Urban land, however, always must be tied to major public infratratures--water, sewer, roads, electricity, etc.--and to major public services--fire, health, education, police, etc. No government can avoid being involved in urban land service activities.

C. Economic Importance

1. In almost all countries, the price of urban land has been rising significantly faster than that of other commodities (except fuel). The burden on the poor is especially great, but high urban land costs, and congestion resulting from faulty urban land policy, all add costs to production which cause higher prices for goods and services for everyone.

2. Urban land tenure policy (a part of urban land policy) can have a major effect on national rates of savings and investment. Specifically, when poor families are given secure tenure, they are frequrently able to mobilize amazing amounts of capital ("brick-by-brick" capitalization) which would never be put into savings accounts, or otherwise enter the process of economic development. Self-help housing mobilizes savings and creates new capital in a way no other institution does; and self-help housing is closely related to urban land policy concerning tenure.

D. Inherent Problems in Developing a National Land Policy

Few countries have a clear urban land policy (Holland and Sweden are among the leaders). This is because responsibilities for urban land controls and urban services are almost always split among many government agencies: The Ministry of Public Works (or Construction); the Ministry of Home Affairs (or Local Government); the Ministry of Agrarian Reform (with respect to conversion of agriculature to urban land at the periphery of cities); the

National Planning Board (which reviews all investments); autonomous public enterprises for electricity or water; etc. All these have vested interests in pieces of the urban land question. Organization of a coherent and unified policy therefore requires the resolution of conflicting interests and a high level of interministerial cooperation, which is both time-comsuming and difficult. The problems of this type of voluntary cooperation have led many countries in recent years to Urban Development Corporations or Housing and Land Corporations (the new Land Develeopment Corporation in South Korea, INFOVAVIT in Mexico, the National Housing Bank in Brazil, to name only a few). These are often autonomous semi-public corporations, with broad powers to expropriate land, develop infrastructure and buildings, or even engage in land and building financing operations. Their creation has, not, however, completely solved the problem of not "stepping on the toes" of other ministries. However, they do have a much greater capacity for effective action than interministerial cooperation committees.

E. Difference Between National Land Policy and National Policy on Human Settlements

A National Policy on Human Settlements is related to the distribution of population over the whole national space; the optimum hierarchy of cities; the transportation to connect them, etc. Most countries need such a policy, but it is beyond the scope of this presentation.

National Urban Land Policy (as used in this paper), has to do with the narrower issue of government policies toward land in its major cities.

II. THE OBJECTIVES OF NATIONAL URBAN LAND POLICY

A. Efficiency

1. Insuring the maximum productivity of all parcels (including organization of functional relationships for efficient transportation and minimization of congestion).

2. Responsiveness to rapid increases in demand: particularly the ability of the policy to accommodate a high flow of low-income migrants.

B. Equity

Provision of access to all groups (particularly those of low-income) to land for residence, commerce, industry and institutions in a way that is socially just and responsive to the differences in income and power of those affected.

C. Compatibility

Is land policy compatible with national economic planning, national human settlements policy, the national system of federal, provincial and local governments, the institutions of taxation and public finance, etc?

D. Continuity

Does the policy avoid, to the extent possible, abrupt "breaks" with the cultural and political systems which are dominant or emerging in the country?

III. SOME BASIC CONCEPTS OF URBAN LAND ECONOMICS

A. The Process by Which Value is Created in Urban Land

1. Urbanization is a wealth-creating process. In simplified terms, the mechanism is as follows: Improved health care results in larger rural families, which cannot survive on traditional farming plots. Young adults are pushed to seek urban occupations. The amount of land available in cities (particularly land with urban services) is limited. Thus, an enormous demand pushes upon a very limited supply, forcing dramatic increases in prices.

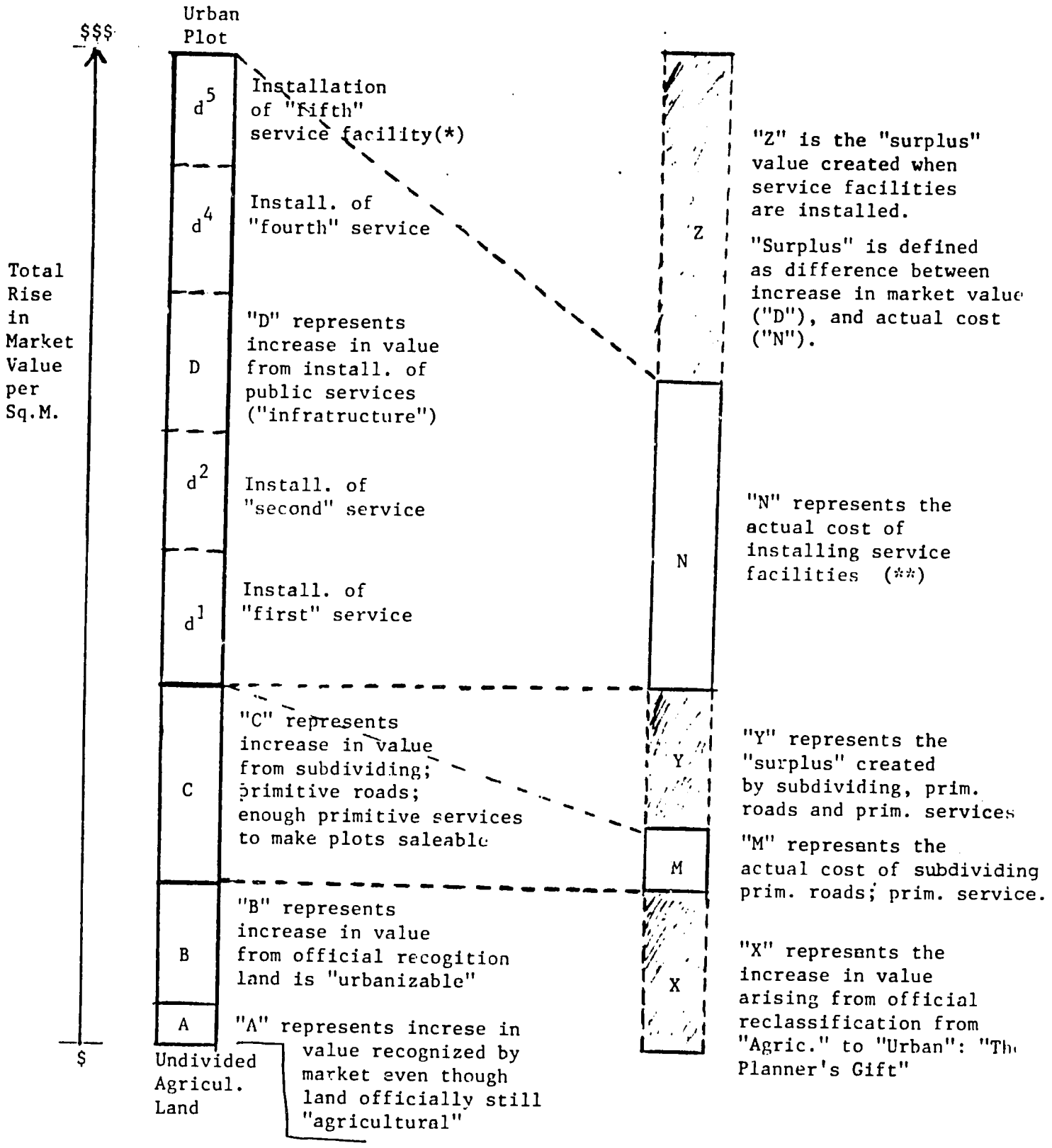
2. Increasing the supply of urban land by extending transportation lines, and servicing new areas with water, sewage, electricity, etc. is costly and slow. In almost all countries, governements have not been able to increase the supply of urban land at a rate equivalent to the demand created by migration. Thus, supply has always lagged behind, and have continued to increase much more rapidly than the costs of most other goods.

3. We will examine this process in more detail, following the diagram on the next page:

Moving from left to right:

$ - $ arrow on the left:	increases in value of one sq. meter of land as it moves from agricultural use (bottom) to a fully-serviced urban lot, ready for construction.
(A) :	increase in value when land owners and buyers begin to realize that the urban area is moving in their direction, and eventual urbanization is inevitable.
(B) :	increase in value when land is designated officially (on a zoning map or master plan) as suitable for future urbanization.
(C) :	increase in value when owner makes a road path, surveys, and physically divides the large agricultural parcels into lots suitable for single buildings. [Note that this act of subdivision, even though it involves a very small investment in actual services (basic road grading and perhaps a very primitive water system), results in a substantial increase in per meter value.]

SCHEMATIC DIAGRAM OF THE INCREASE IN THE VALUE OF LAND (PER SQUARE METER) AS IT PROCEEDS FROM LARGE, UNDIVIDED, UNSERVICED PARCELS OF AGRICULTURAL LAND (base line) TO SMALL, SUBDIVIDED, SERVICED PLOTS READY FOR URBAN CONSTRUCTION (top line). [Actual proportions of all items will vary greatly in different countries, different cities, and different projects.]



(*) In this diagram, we assume five services. An actual project may have many more (or less).

(**) Like "D", "N" and "Z" may occur in steps, with each service. (Each step not shown, as in the case of the "five" steps represented in "D".

(D)	:	increases in value due to installation of various partial or full services: paved roads, individual water service, sewerage, individual electricity, streetlights, storm water drainage, etc.
(M)	:	costs to owner (or developer) of preliminary bulldozing for road system, surveying and staking-out of lots, possibly primitive collective water system. (It will be noted that the cost of doing this work will almost always be much less than the value created: (C) is larger than (M), resulting in a surplus here labelled as (Y).
(N)	:	costs to owner (or developer, or public body) of installing various public services mentioned in (D) above. (Note again that the cost per sq. meter of installing these services will almost always be less than the increases in value they produce: (D) is greater than (N), resulting in a surplus labelled (Z).

Notes:

(i) In a perfect market system, supply will respond immediately and fully to new demand, and increases in the values of goods will be the costs of producing those goods, plus a reasonable profit for the entreprenurial work of the developer.

(ii) Urban land markets are very imperfect: Demand is very high and continuous (see discussion above), and subdivision [(C) and (M)] falls far behind demand, due to (a) the scale of the problem;(b) speculative withholding of land in the expectation of even higher prices in the future; and (c) inadequacy of public authorities to grant permits at the necessary rate. In some cases, clouded titles and outmoded recording systems also constrict supply.

(iii) The demand-supply discrepancy between demand and land subdivided into lots is great. But the discrepancy between the demand for serviced urban lots, which require the actions of many public agencies as well as the developer, is even greater. Virtually no major city in any developing country has been able to supply serviced lots at the rate needed by urban population increases. Thus, while the cost of installing services (especially sewer systems) is high [(N) on diagram], the resulting increase in market value is almost always much higher, causing surplus (Z).

(iv) Surplus (X) is the increase in land which occurs,(a) when urban growth causes people to perceive the possibilities of future urbanization, and hence are willing to pay more for the land; and (b) when this fact is legitimatized by an action of the appropriate public land control agency, designating, on a zoning map, or official master plan, that this particular area is now legally eligible for urban uses.

It should be noted that both of these factors occur without any cost or investment by the owner, even though the financial benefits may be

quite substantial.

In France, this increase is known as "the planner's gift," because it confers a surplus or profit to the owner (or developer) without any outlay on his part.

4. Conclusions: Urbanization in all countries with high migration rates to cities produces "surpluses" (capital gains, or profits) for the owners land in urban areas and their peripheries. Because of the rate of population increase in cities, and lags in providing new supply, the values produced by urban pressures are almost always much greater than the costs to the owner or developer to prepare the land for urban use.

Specificially, we have identified three types of surpluses or profits, described above, and shown on the diagram as (X), (Y) and (Z). While the sizes of each element of this diagram will vary with each situation, in general, the more rapid the growth of the city, the greater will be the values of (X), (Y) and (Z), and hence the profits potentially available to the land owner or land developer.

Also note that if (N), the cost of installing public services is borne by public agencies, with no mechanisms for recovering these expenses from the land that is benefitted by them, surplus (Z) (or profit to the owner or developer) is correspondingly greater.

B. Policy Implications

Because the process of urbanization produces wealth (often great wealth), a number of policy arise, the most important of which is:

Who gets the "surpluses" or "profits from this process? In many countries it is the person who is the owner or developer of the land at each stage. Frequently, ministries of public works, municipalities, etc. see new urban migration as a cause for alarm, because it will impose heavy new burdens on public agencies to provide services for the new citizens of the city. Every effort is therefore made to discourage urban migration.

On the other hand, urban migration undoubtedly produces wealth in the form of increased land values. More important, as argued above, it generally produces more increases in value than the costs it creates.

The real issue, therefore, is: How are these increases in land values to to allocated, as between private owners/developers and public bodies?

It would appear that in most cases, public agencies could recover their full costs (if they had the proper institutions for doing so), while still leaving a reasonble profit to the owner/developer. Or, from a different point-of-view, it could be argued that since the increase in urban populations is a social phenomenon, all or virtually all of the "surpluses" mentioned should be recovered by public bodies, leaving only minimal profits to the owner/developer. In the following sections we will (a) look at some of the differing philosophies on this point, and (b) examine some of the institutions available for greater public recovery of the (X), (Y) and (Z) surpluses.

IV. SOME DIFFERENT VIEWS OF LAND IN DIFFERENT CULTURES

A. All Cultures Recognize the Dual Nature of Property in Land

Virtually all societies have recognized that land is both a public and a private good. It has a public nature in that:

1. It is permanent. No generation can consume it, and each generation has a moral duty to use it with a view to those who follow.

2. It is one of the three classic elements of production (capital, labor and land). In agricultural societies it is the most important source of goods. In urbanized societies the relationship is more complex, but productivity (and control of congestion) are still dependent on sufficient locations for all urban activities in proper relation to each other.

3. Its value, as we have seen above, is dependent, to a considerable degree, on large-scale conditions arising from the whole society (larger families, migration, economic prosperity or decline), and not on the actions of individuals.

On the other hand, all societies must deal with the fact that land also has a particularly private nature:

1. There are deep psychological needs for the security that has traditionally been associated with the ownership of land and a house.

2. The complexity of urban land markets is so great that even the most centralized states, such as the Soviet Union and the People's Republic of China, have delegated certain areas of decision about land policy to local and individual levels.

3. In developing countries (as mentioned above), security of ownership in has been able to evoke capital investments in housing ("brick-by-brick")--creating economic resources that could not be moibilized in any other way.

Various cultures and politicial ideologies have reached different conclusions as to how to balance these dual claims, however, rather than discuss these in the abstract, it will be more efficient to move directly to specific examples.

V. ALTERNATIVE STRATEGIES FOR A NATIONAL URBAN LAND POLICY

A. Relation to Comprehensive Master Plans

As noted above, a National Urban Land Policy, is related to, but different from, a National Policy on Human Settlements. Similarly, it is closely related to the preparation of a comprehensive Master Plan for each urban area. Briefly defined, a Master Plan is a statement of policies, principles, standards and guidelines for the future development of a particular urban area.

It may itself designate specific areas for specific activies, or the geographic details of regulaton may occur in a separate zoning ordinance. It should, however, always be related to a Capital Budgetting process which defines future patterns of expenditures, their priorities, and the means by which they will be funded.

National Urban Land Policy is concerned with policies and institutions which will carry out the objectives described in Part II above, and normally be used by all municipalities in the country--or at least those experiencing rapid growth.

The Alternatives

(We shall first define each alterative, then evaluate it according to the criteria established in Part II, above.

1. Complete State Ownership: All land may be nationalizaled and owned by the State. In this case, all of the processes of land development would be carried out by the State, and all the "surpluses" described above be returned to its treasury. Perhaps the clearest example is the Soviet Union, and those countries which follow its system.

(a) Efficiency (productivity of all parcels): The national administration of land poses the same problems as the operations of any nationalized industry, and works best when backed by a highly qualified bureaucracy. However, land is a commodity particularly difficult to administer centrally, because each parcel is unique, and the functional relations among various urban land uses highly complex. Land cannot be moved. Thus, if a commitment (major building, for example) is made, it is very difficult to reverse the decision.

Full public ownership permits comprehensive planning, eases the acquisition of open space and sites for public uses, but because it is bureacratically administered, is open to favoritism, political manipulation, and lack of sensitivity to individual situations. These are factors of considerable importance in developing countries, where well-staffed bureaucracies are still in the process of creation.

Efficiency (responsiveness to high demand): All bureaucracies, even in the best-administered countries, tend to be slower in response than the private market.

(b) Equity: Complete state ownership permits distribution of the right to use urban land according to the priorities established by the State, rather than the private market, and thus can facilitate access to lower income groups if this is the priority given. Actual experience appears to indicate that some such states have given higher priority to other aspects of development, and that land and housing may subject to political criteria rather than need, or allocated first to bureaucrats themselves. A very high degree of equity is therefore possible, but its achievement depends on the philosophy, priorities, and bureaucratic capability of the government concerned.

(c) Compatibility: It is, of course, theoretically easier to coordinate the uses and values of urban land with other economic development policies, local government policies, and public finance when land is completely owned. Once again, the key point is the bureaucratic capability to utilize this advantage.

(d) Continuity: Whether complete public land ownership will involve considerable breaks with the cultural and political system dominant or emerging in a country depends on individual circumstances.

2. Large-scale state acquisition and land banking: This system, most notably practice in Sweden, provides national technical and financing support for municipalities to acquire all land needed for urban development for 10 years in advance, As land is disposed of each year, additional land is acquired, so that the 10-year "backlog" is maintained.

(a) Efficiency (productivity of all parcels): In the Swedish system, the publically acquired land is either leased or sold to private develpers for construction. Such land is normally fully subdivided and serviced, so that the "(X)(Y)(Z) surpluses" come back to the municipal treasury. Productivity of development is determined by the actions of the developer, who must conform to the Master Plan for the area, and meet other requirements. Thus, productivity is the result of public-private interaction.

When lands are given on long-term leases, the municipality may reclaim the land and change its use to something more productive at that time. In practice, however, this has not happened on a large-scale.

Efficiency (responsiveness to high demand): Land banking in Sweden began at a time when prices were low. Even more important, Swedish land use controls and taxation policies have made speculation in land unattractive there, so that its land prices are lower than the rest of Western Europe. In countries without these advantages, the initial costs of establishing a 10-year land bank, given current land prices, would be enormous, as well as very cumbersome because of the complexity of expropriation laws. For these reasons, it would be very difficult for most developing countries to carry out advance land acquisition ("land banking") on a scale necessary to meet demand in high-growth cities.

(b) Equity: There is no doubt that the Swedish (and similar Dutch) system has lowered urban land costs in these countries, and increased social equity. These are, however, exceptionally well-administered countries, and actual equity in countries with less strong administrations might have the same problems mentioned under Complete Public Ownership, above.

(c) Compatibility: Even though there is more interaction with the private market, land banking permits a high degree of integration of all policies concerned with national economic development, planning, and finance.

(d) Continuity: Must be judged on country-by-country basis.

3. Strategic Acquisition in Advance of Need: In this system, the ministry, municipality, or a public development corporation will acquire land on a large scale. Parcels will be selected on the basis of their special impact on future metropolitan form: the sites of "New Towns" (or "New Towns-in-Town" major highway interchanges; major housing projects; major regional parks; areas for major water collection and storage: flood control areas; major industrial parks; etc. It has been used in one form or another in many

developing countries, particularly those with active urban development corporations, of which have had had major programs for industrial parks (such as South Korea), or new capitals. (Cuidad Guayana in Venezuela is an important example.

(a) Efficiency (productivity of parcels): Perhaps the most important objective of strategic purchase is to assure that land areas special planning, ecological, or historical imporatance can be saved for their most essential use, rather than falling into lesser uses which might otherwise occur. Actual efficiency will depend on the skill and competance of the executing agency.

Efficiency (responsiveness to high demand): This device has been used by some countries (such as Brazil, Egypt, Singapore and Hong Kong) to create very large housing estates to help relieve pressures of high demand due to the growth of major cities. Such projects have had a a mixed success. South Korea has used this type of land policy to create more than a dozen major industrial parks, which have been an important part of Korean economic success (although not all parks have been equallly successful). On the other hand, proposals in the early 1970's for "New Cities within Cities" in Colombia encountered severe difficulties due to the high costs of land acquistion.

(b) Equity: In theory, strategic acquisitions, particularly when they involve major housing components and labor-intensive industries, can be very helpful in improving housing and employment opportunities for low-income families. However, unless the acquiring agency works well in advance of the market, and with great secrecy (which is difficult for a governmental agency), costs will be high, making it difficult to serve the lowest income population.

(c) Compatibility: As noted, these can be important adjuncts to economic planning, the implementation of metropolitan development strategies, and public finance. While in theory they should recover "surpluses (X), (Y) and (Z), in practice, landowners often hear of future plans, so that (X) surplus is lost. (South Korea and other countries have systems of advance"freezing" of land prices to prevent this from taking place.)

(d) Continuity: Depends on country, but advance strategic buying, particularly through independent development authorities, is consistent with the cultural and political traditions of more countries than the devices listed previously. (Such independent bodies, particularly if they have their own financing, do, however, create problems of more complex governmental structure, and jurisdictional overlaps with the functional ministries

4. Installation of Public Services (Infrastructure) as Incentives: Governments follow two philosphies of installing public services: (a) follow the need, or (b) use service installation as a tool actively to guid growth in desired directions. Attitude (b) is obviously an indirect way to carry out land policy, compared to ordinary land use controls such as zoning, but it can be quite effective.

(a) Efficiency (productivity of parcels): Selective public service installation can be effective in promoting productive use of land when combined with suitable land use controls, and even individual negotiations with developers. Since services are a scarce resource in major cities in developing countries

a promise to provide them can be a powerful bargaining tool.

In the other hand, where dozens of areas in an urban area are short of services, there may be political difficulties in serving new areas before meeting old deficits. At this point, political pressures are created which will result in the politically most powerful getting services. These may or may not be for the most productive lands.

Efficiency (responsiveness to high demand): For reasons noted above, most governments have been unable to keep up with need for services, and have seldom used it as an incentive to guide growth in desired directions, with the exception of some highway programs.

(b) Equity: Installation of services has been very ueven in most cities, with richer areas being favored with more investment than middle and lower income areas, although so-called "upgrading" projects in some countries are now attempting to remedy this.

(c) Compatibility: In theory, a strategic use of public service installation can be an important implementing tool for economic development planning, and metropolitan development plans. In practice, existing deficits in services and political pressures generally prevent it from being used in this way.

(d) Continuity: Public services systems used as incentives to development are compatible with most cultural and political traditions.

5. Land Readjusment: "Land Readjustment" is a system practiced in Japan, South Korea, Taiwan, and Australia, which permits public bodies to designate areas for new urban development; to subdivide and install services on the land; and then to return a remainder to the original owners. The cost of installing public services is met by the public body retaining some of the serviced lots and selling them when development is completed. On the other hand, the remainder returned to the owners almost always has a value much higher than the total value of their land before the project. Though this system new urban development can be "self-financing," that is, done without cost to the public, since all public investment is recovered by the sale of a certain percentage of the project's lots by the body doing the development. On the other hand, owners need not suffer, since the land returned to them, while smaller in area, will be much higher in value. [In Japan, the system was so attractive to owners that in the 1960's much of the new urbanization in that country was done by private associations providing their own services to land in this manner. -- In the 1970's the system has become less popular because of market conditions and price controls.]

(a) Efficiency (productivity of parcels): Because Land Readjustment projects can be linked very closely with metropolitan master plans, and deal with the planning and servicing of individual lots, they can be very efficient in assuring that all lots are supplied in the proper proportion and with the proper services.

Efficiency (responsiveness to high demand): Although Land Readjustment projects have been very extensive in Japan, South Korea, and certain cities in Taiwan, they have not succeeded in keeping up with the increases in urban populations. It is possible, however, that they have added to the stock of serviced lots and housing much more rapidly

than would have otherwise occurred. By making urban expansion "costless" to public bodies, the system has facilitated the production of serviced lots.

(b) Equity: One important disadvantage of Land Readjustment is that does nothing to lower the cost of serviced land for lower-income families. It is, however, possible that certain modifications of the system could make this possible. It is also arguable that any system that increases the total supply will tend to make prices lower than otherwise.

(c) Compatibility: As noted above, where Land Readjustment is done by public bodies, it can be closely tied to other types of economic and physical planning.

(d) Continuity: Land Readjustment exchanges land for land, and does not raise the administrative and political problems of expropriation and resale such as occur in land banking and other types of public ownership discussed above. Moreover, if done by private associations, it raises few problems of continuity with customs and political traditions. On the other hand, when projects are forced on owners by public bodies, new legislation and attitudes toward land development will be necessary. Note, however, that it is easily possible to guarantee that no owner will suffer financial loss from the system, although farmers may suffer dislocation problems as their land is converted to urban purposes. (This, however, occurs whenever cities grow and farms are converted into urban subdivisions.)

6. Land Price Regulation: Japan and Sweden, among other countries, give the government direct power to intervene if land prices appear to be unusually high. As a result of this, and other land use control measures, land speculation (dealing in land purely to make a quick profit) has become very much less attractive in these countries. (This is particularly impressive in Japan, which once had a very rapid increase in land prices due to speculative activity.)

(a) Efficiency (productivity of parcels): It can be argued that if price controls keep prices artifically low, land will be "wasted," that is, used for less than most productive use. The Swedish and Japanese systems attempt to avoid this by intervening only in special situations, and not in "normal" market situations. In South Korea, where the government exercises "price freezes" over large areas, it has been argued that distortions in uses have occurred, and speculation actually increased in areas not under the "freeze" (so-called "standard price" system).

Efficiency (responsiveness to high demand): Some economists argue that land speculation is beneficial, since in the long run it helps "even-out" supply and demand. Price control will therefore hurt the supply, However, the land market is very different (as discussed above) from other markets, and it is not clear that the normal economic rules apply, nor that price ontrols in extreme cases have interfered with supply in Sweden or Japan. As noted, the South Korean system is more controversial on this point.

(b) Equity: Land price control may be of some help to the poor in keeping some rein on an uncontrolled spiral of land costs. On the other hand, serviced urban land is inherently costly, and unless the public has some means of recovering the "surpluses" discussed above, merely controlling prices at the extremes will not solve the problem of greater accessability to all classes.

(c) Compatibility: Price controls on land can be tied to general economic and physical planning, but obviously requires careful attention, since land is such a major commodity and user of capital.

(d) Continuity: Depends very much on the country. In many countries, wealth in land is closely associated with political power, and any controls on prices will encounter strong political resistance. (In Japan, controls became possible only after major political scandals.)

7. Land Use Regulation: Use of zoning, subdivision, building codes, and other means to regulate the use and dimensions of buildings on land.

(a) Efficiency (productivity): In theory, one of the main purposes of land use controls is to assure that land is put to its best use according to some over-all, general ("master") plan for the metropolitan area or city. In practice, land use controls in many rapidly growing cities in developing countries have fallen far behind actual growth, and hence become unrealistic. This is particularly true because few zoning ordinances, subdivision controls, and building codes recognize so-called "squatter areas," or, "areas of self-help housing." Thus, they automatically make 30-40-50-60% of their urban areas illegal. This illegality can discourage investment by owners, and in fact, be counter-productive of improved housing and best use of land.

Efficiency (responsiveness to demand): As just noted, land use control systems which do not provide for self-help housing, and other modes of contruction most appropriate to low-income families are not responsive to the most urgent demands.

(b) Equity: As noted, many existing land use control systems recognize only "conventional" construction, affordable only by middle and upper-income families. There is, however, a movement in many countries to revise ordinances, and to provide areas for low-income housing, with appropriate standards and controls for this type of construction. (Bogotá, for example, was at one time very active in this field. Almost all "sites and services" projects and "upgrading" projects involve the revision of land use controls to make their operation possible.

(c) Compatibility: Land use controls should obviously be tied to economic and physical planning, but the neglect of legitimate areas for low-income settlement have often caused serious transportation problems for the poor, and consequent distortion in distribution of the benefits economic growth.

(d) Continuity: Land use controls are accepted in almost all countries. Special, lower standards for low-income areas have, however, been resisted on the grounds that standards of construction imply standards of health, sanitation, etc. which should be the same for all. It is gradually being recognized that unrealistically high standards can result in less legitimate structures, and worsen, rather than improve, the living conditions of lower income families.

8. Taxes on Land and Improvements: The imposition of taxes proportioned according to value, on all land and improvements (basically buildings). While these taxes are the foundation of municipal financing in the United Kingdom and United States, their application in developing countries is minimal. Even in countries where the system exists, the rates are often so low that the tax is insignificant.

(a) Efficiency (productivity): It has been argued that a heavy tax on land and improvements will discourage improvements, and result in well-located land not being developed to its full potential immediately, or developed with small buildings called "taxpayers" until value rises to higher levels. A counterargument has been that this tendency is useful, since it means that even in high activity locations, some land will be avialable for future uses as the needs of the city change. It is hard to evaluate, from available studies, which of these points-of-view is correct, and, in any case, the most appropriate policy might differ from city to city. Jamaica has recently changed to "Site Value" taxtion, that is, not taxing improvements, but only the value of land. It is claimed that this system stimulates the most productive use of land by giving an incentive to owners to build on good locations (which will have a high tax, and need income to pay it), and makes less attractive the holding of land vacant, in the hope of higher prices later. It also is claimed to be easier to administer than a tax on land and buildings.

Efficiency (responsiveness to demand): A tax either on land and improvemen or land alone should discourage speculators from holding large amounts of land off the market, making it less responsive to demand. This would be particularly true of the Site Value system.

(b) Equity: A tax on land and improvements is equitable in that there is a high coorelation between personal wealth and the value of land and buildings occupied. (In some systems, such as the Republic of Cyprus and Korea, there is surcharge for "luxury residences.) More important, by giving more financial independence to municipalities, it is often possible to have policies more closely fitted to the needs of all classes in each city than when housing and land policies are controlled entirely by central ministries.

(c) Compatibility: Movement to an effective land/improvement or site value property taxation system does involve changing the power realtionships between central ministries (which now furnish most municipal finances in most developing countries), and the local municipal units. Many experts believe that although centralized financing may be necessary in the early years of independence, it is healthier in the long run, both financially and politically, to permit local bodies to have some independence of decision-making, which in turn depends on their having independent sources of some funds -- normally the property tax.

(d) Continuity: As just indicated, the tradition of most developing countries is centralization of power, even over municipal affairs. A strong system of property taxation will involve change, and often the opposition of persons holding large financial interests in urban real estate.

). "Betterment" Charges: This is a special tax, imposed on surrounding properties ıen a public service has increased their value, It can be used for streets (or street ıidenings); installing water lines; sewer systems; public parking; or even historic

preservation projects. The theory is that if public money has been spent in a way that "(D)" values are created (see diagram on p. 4), the public agency should have a right to recover this "betterment" given to landowners at public expense. In practice, however, existing betterment recovery programs do not attempt to recover all of "(N)" and "(Z)," but only "(N)," that is, enough to permit the public agency to recover its own costs in building the project, but not all the new value created. [In other words, the attempt is to recover "(N)" but leave "(Z)" to the fortunate land owners affected by the project.]

While the mechanics of determining the "area of influence" of a project, and proportioning costs among the land parcels in that area, are difficult, the administration of system has been worked out in Colombia and is transferable to other countries.

(a) Efficiency (productivity): In cities in developing countries, land often cannot be given its highest productivity ("best use") because it lacks public services, which the owner himself cannot provide for a whole area. Betterment charges will permit the municipality to extend public services much more rapidly, because they would be "self-financing." Thus, for example, much of the arterial street system, and the whole sewage system of Bogotá has been achieved though this system.

Efficiency (responsiveness to demand): As indicated, the basic demand is for serviced lots. Any system which expedites the construction of public services (by making them self-financing), will make the land market more responsive to demand.

(b) Equity: Betterment charges can be used in either areas inhabited by the rich or poor. However, it is more difficult to administer in areas of low-income because even though a public service may increase land values, low-income families lack the available funds to pay, unless the land or land and building are sold. On the other hand, such programs as "Pavimiento Local," which permits local neighborhoods to organize their own neighborhood programs of betterment charges (including contributions through work), has been quite successful in Bogotá, and improved many low-income areas by providing paved streets.

(c) Compatibility: It is easy to tie "the betterment charge system of creating improvements to other forms of economic and physical planning. Indeed, the self-financing aspect makes coordinated planning and capital improvement much easier to achieve than is the case when every capital improvement project must come out of the budget, and hence taken away from something el

(d) Continuity: In countries where people have a strong attitude that the government should do everything itself in the area of public services, introducing betterment charges may not be popular. Note, however, that since the attempt is only to recover element (N), leaving (Z) to the owners, it is possible to show people that a project with some charges but also economic benefits to every owner is better than no project at all. The administration of a betterment collection system is complex, but not beyond the capability of some civil services, if properly trained, and full use is made of existing experience in other countries.

10. Deferred "Betterment" Charges: Professor Donald Shoup has recently suggested that the "Betterment Charges" system could be greatly improved by providing that charges need not be paid immediately, but simply recorded against the property. The amount due would be increased each year according to an interest rate that would guarantee the public body constructing the public work a complete return of capital even if payment were delayed for many years. However, payment would always be required upon the sale of the property. Thus, owners would not have to incur charges until the increased value created by the public work was in a "liquid" state (that is, when this value was reflected in the higher selling price). It is, of course, at this moment that the seller has readily available assets to pay.

While this system might have some problems, such as concealed sales, it has many interesting advantages: It would presumably reduce political objection to the basic betterment collection idea, since payments would be more "painless." Equally important, it would facilitate the use of the betterment recovery system possible in lower-income areas. As noted above, these areas are exactly where "self-financing" of improved public services are most needed, but the current betterment systems most difficult to apply, because families have no assets with which to pay immediate charges. If payment was required only at the moment of sale, even low-income families could pay, since the increased value produced by the project should be more than reflected in the price received.

However, since this idea is still untested in the field, further comment is not appropriate.

VI. CONCLUSION

This paper has attempted to give a very rapid and general overview of some of the essential objectives of a national Urban Land Policy; the problems likely to be encountered in developing it; its relation to the basic economic of urban land; and evaluations of approaches attempted in various countries.

It is important for the reader to understand that each one of the points surveyed here could be the subject of a much longer discussion. In particular, the Alternative Strategies (Part V) all involve many strengths and "pitfalls" which could not be covered here.

The paper is therefore a guide for general thinking about Urban Land Policy but no specific Strategy should be legislated or implemented without doing further reasearch, and, possibly, seeking expert advice from countries where the strategy has been in operation, or through international technical assistance agencies.

VII. BIBLIOGRAPHY

For those wishing to read more, the three most useful general sources are:

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Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

FIELD TRIP
WASHINGTON, D.C. TOUR

Saturday, November 10, 1979

10:00 a.m. - 4:00 p.m. Code 15.S

Presented by:

Paul Spreiregen

SHELTER TRAINING WORKSHOP: WEEK #2
November 12-18, 1979

Day and Date	Time	Code	Program Event	Person Responsible	Location	Notes
Monday Nov 12	9-9:45	16.S	Participants Organizational Meeting	Participants	AIA Board Room	Participants organize into six teams
	9:45-10:45	17.NHP	Establishing Affordability	Malcolm Rivkin	AIA Board Room	
	10:45-12:00		Discussion Group A	David Oakley	AIA Board Room	
			Discussion Group B	Alfred Van Huyck	AIA Conference Room #2	
	2:00-3:30	18.NHP	Definition of Target Groups	Malcolm Rivkin	AIA Board Room	
	3:30-5:00		Discussion Group A	David Oakley	AIA Board Room	
			Discussion Group B	Alfred Van Huyck	AIA Conference Room #2	
Tuesday Nov 13	9:00-10:30	19.NHP	Model for Analyzing Housing Design	James Wright	AIA Board Room	
	10:30-12:00	20.NHP	Model Workshop	James Wright	AIA Board Room	
	2:00-3:30	21.NHP	Housing Market Analysis	Coralie Bryant	AIA Board Room	
	3:30-5:00		Discussion Group A	Malcolm Rivkin	AIA Board Room	
			Discussion Group B	James Christian	AIA Conference Room #2	
	6:30-9:00	22.S	Developing Country Perspective	Sivaramahrishnan	Foreign Service Club 2101 E Street, N.W.	Out hotel to left, right on G Street, left on 21st Street, on the corner of 21st and E
Wednesday Nov 14	9-11	23.NHP	Environmental Impact	Jeffory Boyer	AIA Board Room	
	11-12	24.NHP	Aerial Photography Interpretation	Douglas Way	AIA Board Room	
	2-5	25.NHP	Aerial Photography Workshop	Douglas Way	AIA Board Room	Physical Interest Group
		26.NHP	National Housing Finance	James Christian	AIA Conference Room #2	Finance Interest Group
Thursday Nov 15	9:00-10:30	27.S	Office of Housing Presentation	Peter Kimm	AIA Board Room	
	10:30-12:00	28.NHP	Economics of Housing Subsidies	Richard Pratt	AIA Board Room	
	2-5	29.NHP	Formulating National Housing Standards and the Housing Plan	Alfred Van Huyck	AIA Board Room	Physical Interest Group
		30.NHP	Subsidy Workshop	Richard Pratt	AIA Conference Room #2	Finance Interest Group
	8:30	31.S	Kennedy Center	National Symphony	Chamber Orchestra	Sign up with Ethiopia
Friday Nov 16	9-5	32.S	Field Trip to Columbia, Maryland	Malcolm Rivkin	Chartered bus	Trailways bus to pick up at hotel 9:30 a.m.
Saturday Nov 17	9-12	33.NHP	WORKSHOP II Comprehensive Approaches	Alfred Van Huyck	Park Central Hotel Room 1104	Kenya and Sri Lanka presentations
	2-5	34.S	Field Trip to Metro Headquarters	Malcolm Rivkin	Subway to metro headquarters	Assemble in hotel lobby 1:45

SHELTER TRAINING WORKSHOP

November 5-30, 1979

PARTICIPANTS ORGANIZATIONAL MEETING

Monday, November 12, 1979

9:00-9:45 a.m. Code 16.S

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ESTABLISHING AFFORDABILITY:

AFFORDABLE STANDARDS OVERVIEW

Monday, November 12, 1979

10:45 a.m. - 12:00 noon Code 17.NHP

Presented by:

Malcolm D. Rivkin

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

PROBLEM SET. . . . . 17.NHP -- 1

I. Components of Affordability . . . . . 17.NHP -- 1

II. Physical Standards. . . . . 17.NHP -- 2

III. Limitations of New Housing Production . 17.NHP -- 3

TOWARD AFFORDABLE HOUSING: THE ROLE OF PHYSICAL STANDARDS

The Context. . . . . 17.NHP -- 4

Income for Shelter . . . . . 17.NHP -- 5

Importance of Tenure . . . . . 17.NHP -- 5

Affordable Standards . . . . . 17.NHP -- 6

Costs and Subsidies. . . . . 17.NHP -- 6

Urban Quality. . . . . 17.NHP -- 7

Compatible Objectives. . . . . 17.NHP -- 8

The Nature of Standards. . . . . 17.NHP -- 8

Some Principles. . . . . 17.NHP -- 9

A. Location . . . . . 17.NHP -- 9

B. Infrastructure and Services. . . . . 17.NHP -- 12

C. Shelter Plot . . . . . 17.NHP -- 14

C. The Shelter Unit . . . . . 17.NHP -- 15

Some Concluding Comments . . . . . 17.NHP -- 16

AFFORDABLE HOUSING

Problem Se'

The question of affordability is fundamental to any national housing program and to the design of any individual shelter project. Methods of achieving affordable housing represent a principal focus of the Shelter Institute. In this session, some of the basic issues concerning affordable housing will be raised and information exchanged to provide a common ground for further exploration during the course.

Each participant is expected to read and digest carefully in advance of the session the attached paper which was presented at the Sixth Africa Housing Conference in October, 1979. The session will begin with a summary of the paper. The remaining period will be devoted to discussion between the participants and the faculty of the following matters:

I. Components of Affordability

The paper establishes three components of affordability: financing mechanisms, tenure arrangements, physical standards.

A. Do you believe that these are the main components to be considered? Are there any others?

B. Country by country each of the participants is asked to address:

1. Is the question of affordability significant in your country today? Is your country (or agency) giving priority in its housing efforts to shelter programs whose costs are to be paid exclusively or primarily by those who live in the dwelling units?

2. If so, what basic steps have been taken, or will be taken, in the areas of housing finance, tenure arrangements, physical design or other areas of concern to encourage affordable shelter?

3. For what income groups are these programs designed?

4. Where are they located (e.g. major city, secondary cities, rural areas)?

5. What scale of production is occurring?

6. What issues or obstacles exist in your country (e.g. legal, political, administrative, etc.) to establishing a policy of affordable shelter? To implementing policies where they exist?

The faculty is addressing these questions to each country group and will expect representatives from each country to comment during the course of the discussion.

II. Physical Standards

If time permits, following this exchange of information on affordability, the participants will also be asked to address the specific subject of affordable physical standards as applied to their country experience.

The paper establishes four aspects of physical standards that can be manipulated to minimize shelter costs. These are:

1. The selection of sites.
2. The scale and mix of infrastructure to be installed.
3. The shelter plot or parcel.
4. Construction of the shelter unit.

Participants are asked to consider their own country experience and to identify actual examples where one or more of these factors were actually addressed in attempting lower cost solutions? Participants are also asked to identify the obstacles (e.g. legal, political, administrative, etc.) to establishing such design solutions.

In the event that time does not permit a full discussion during this session, participants are advised that they will be expected to present this information during subsequent sessions of the program.

III. Limitations of New Housing Production

In addressing the above questions, participants should be aware that the paper deals primarily with standards and arrangements for new housing production. Production of new housing can only meet a portion of a nation's shelter requirements. You should consider how applicable are the principles discussed to matters of upgrading, amelioration of existing shelter conditions, or other strategies directed towards people who cannot readily be served by production of new units. These will be matters for discussion later in the course.

TOWARD AFFORDABLE HOUSING: THE ROLE OF PHYSICAL STANDARDS

The Context

The issue which draws all of us to this conference is how to ensure adequate shelter for millions of people in cities and other urbanizing areas of Africa. The gap between shelter need and formal sector housing production is widening. To fill that gap, the people themselves are creating their own shelter at a scale and rate of speed almost beyond comprehension. Despite the dangers to public health and serious obstruction to efficient, orderly expansion of infrastructure and economic development, this process of spontaneous, informal settlement represents extraordinary human resourcefulness. It will be the primary mode of shelter-building in many if not most African cities over the remainder of this century. It must be recognized and accepted as an element in any rational, realistic national shelter policy. The challenge before government and other formal sector institutions is to guide the process, rather than lag behind. The challenge is to conceive and apply the technical and financial support--and the compassion--which can turn the process of informal settlement to a force for social and economic well being.

This issue of adequate shelter is everywhere in Africa. And, in many years of grappling with its magnitude, experts and governments alike may have learned more about approaches which do not succeed than the proper strategies to employ.

We have learned, for example, that removal of squatters and the clearance of squatter settlements is a largely unproductive approach. For whatever cosmetic relief is gained, removal does nothing to increase the supply of adequate shelter. To the contrary, it can destroy what people have been able to invest of funds and labor and can fuel social discontent. Unless combined with massive efforts to produce new communities, it merely displaces the housing problem to other locations.

We have also learned that national priorities for rural development can become a two-edged sword. These policies and programs are critical to improving conditions of rural life and economy, but they affect the cities as well. When successful, they often contribute to releasing more labor from the land, to stimulating the flow of migrants to cities and to intensifying the demand for urban employment and shelter. Sensing this outcome, some countries have moved boldly to divert the flow of rural-urban migration to secondary cities and market towns--relieving to a great degree the shelter/employment pressure on the principal centers. Yet even in these small cities shelter supply is a problem, requiring skillful governmental intervention to create physically adequate, livable communities.

Other important lessons have been learned in this process of wrestling with issues of urbanization and shelter. Two carry considerable promise for new initiatives.

Income for Shelter

One lesson concerns the economic functions and characteristics of cities. Cities are now being understood as the prime settings for new enterprise, for wage employment and income. Despite problems of unemployment and underemployment, cities are where employment is. Rural migrants come primarily to seek entry points into the wage economy, and those who remain are largely successful. The very process of urban expansion leads to formal and informal sector jobs, and those who get a toe-hold, no matter how tenuous, can hope that monetary conditions will improve. Although meager and irregular, incomes are higher in cities than the rural alternative. (Indeed, much of the cash in rural areas comes from urban relatives sending funds back to their families.) Some of this urban income can be devoted to shelter. Many ill-housed urban residents have sources of funds and a willingness to save for better housing conditions.

We have learned that financial mechanisms can be designed to tap these resources, capitalizing both on present income and expectations of future improvement. Innovative efforts in such countries as Tunisia, Tanzania, and Botswana demonstrate that much of the urban population can pay for adequate shelter--if long-term financing opportunities are made available.

Importance of Tenure

A second positive lesson of recent experience is the fundamental importance of secure tenure. People will often create handsome, durable housing from meager beginnings. They will apply ingenuity to improve rudimentary shelter as their expectations and income levels rise....if they have the basic security of possession. The symbolic significance of tenure is powerful. It can release people's willingness to spend their own time, savings, and talents on the evolution of a shelter unit, resources which no conventional formal sector housing program could hope to duplicate. Secure tenure is a key to unlocking this flow of energy. That security need not be in the form of outright ground ownership. For in many countries, with sharply divergent economic systems, successful experiments are creating various leasehold arrangements which provide both security and mortgageability short of title deeds.

Affordable Standards

Secure tenure and flexible financing arrangements are two complementary ingredients in a prescription for expanding the supply of adequate shelter. They work, however, only when blended with a third ingredient that relates to the shelter unit itself and its physical setting--affordable physical standards. For conventional site development and construction solutions will continue to be beyond the means of most urban residents and most urbanizing African countries. Even with innovations in tenure and finance, the type of housing estates and multi-story flats which have served as models throughout Africa can be supported only by a narrow range of income levels. If the objective is adequate, affordable shelter, there must be increasing national commitments to more modest physical solutions; physical solutions relevant to the lifestyles of the occupants, physical solutions which permit the shelter unit and its neighborhood to evolve and improve over time.

Some governments have been reluctant to accept such commitments as the basis for national housing policy, hoping instead that the forms and materials of European housing could serve as standards for performance. This hope has fallen short for important reasons. In several countries building materials to support such conventional construction--e.g. concrete, steel, fabricated frames and fittings--have to be imported. The foreign exchange requirements are a deep drain on national economic resources, diverting both funds and attention from stimulation of building industries based on domestic materials. When foreign exchange is in short supply, conventional building stops.

Costs and Subsidies

Then, too, costs of conventional urban shelter have been extremely high. Few families can afford the product, or obtain financing at the required level. As a result, many governments, parastatal organizations, and even private companies have adopted policies of deep subsidy. Units have been provided for civil servants, for company workers, even low wage employees. The shelter is durable, but its beneficiaries pay in some cases only a fraction of the costs.

Deep subsidy has been criticized as a strain on both capital and operating budgets. In my opinion, however, the most significant human problem of heavy shelter subsidy is its selective, discriminatory effect. There has just not been enough money to go around. Even for the classes of workers assisted, costs of constructing and maintaining conventional shelter units have been so excessive that many, otherwise eligible for assistance, are not placed. I have seen salaried civil servants

forced to live in miserable conditions, while others of comparable position pay little for contemporary flats and houses. Part of the problem is a matter of national budget priorities. An equal measure, however, is the expensive space and construction standards employed in shelter-building. For even as nations move away from heavy subsidies a parallel commitment to more modest building types and materials becomes essential. Otherwise income levels of currently subsidized classes will still be unable to support shelter costs. Otherwise the supply of adequate housing and services will not grow to meet the extraordinary level of need. Affordable housing must be built at affordable standards.

Urban Quality

Before turning to the nature of affordable standards, I would like to recognize one objective which underlies much of past shelter policy: the creation of attractive, livable cities. All governments wish cities to be attractive places, physical demonstrations of national achievements and aspirations. All governments wish cities to expand in an orderly manner. No government wants to adopt policy and implement programs which create slums. While pressures of migration and lack of financial resources may create sub-standard shelter conditions beyond government control, governments believe it politically and morally inappropriate to participate in degrading the urban environment. This objective of attractive, livable cities is indeed valid. It is of a parallel significance to the objective of affordable housing. Too often however, governments have equated urban quality with a very narrow range of building materials, infrastructure standards and supporting codes and ordinances. These have been the models, models often derived from foreign experience and adopted with little amendment. But while the objective was valid, the models were flawed, unattainable, unenforceable, and irrelevant. Public officials need to recognize that other models, more finely tuned to domestic lifestyles, income resources and materials potential could also serve as the basis for livable cities.

I make this comment with considerable understanding. For some years ago, as a public official in a metropolitan community of my own country, my colleagues and I were forced to re-think accepted standards for living space and lot services in order to reduce development costs for lower income families. Bureaucratic resistence had to be overcome even for a single project. The question was the same. How could the objective of high quality be maintained along with expanding housing supply for a broader range of income levels? The neighborhood built at the altered standards is now indistinguishable in durability and character from more affluent neighborhoods nearby.

Compatible Objectives

My answer is that the two objectives are entirely compatible. Sound cities can be created along with affordable housing. Affordable housing does not mean lack of standards, or governmental acquiescence to the growth of slums. It does mean, however, much more careful attention by government to the whole question of standards; greater experimentation, greater guidance, greater commitments of human energies and talents to ensure results both affordable and appropriate to the long-term goals of the nation. In adopting this approach, moreover, certain costs must be accounted for, of a different nature and attributable to different budget categories than more capital intensive solutions to shelter provision. We have a saying in American English that goes, "there is no such thing as a free lunch." This means there is no course of action towards a goal which is free of hazards and costs, costs peculiar to the particular strategy employed. Thus, the use of affordable standards to produce affordable housing demands awareness of certain management and fiscal obligations, obligations which must be assumed for the approach to succeed.

The Nature of Standards

Physical standards are guideposts or benchmarks for detailed project design. They provide a discipline within which the land planner, the architect, the engineer and the project manager exercise their individual skills. The first important point to make about standards for affordable housing is that their precise nature will vary depending on climatic zone, living patterns, and specific urban context. What is workable and acceptable in one region may not be in another. Take the particular example of density--the number of families per hectare who can be accommodated on the land. High density can be considered a general standard for affordable housing. That is to say, the more families accommodated on a given site, the greater opportunity to reduce per capita land costs and the capital costs of roads and utilities such as water and drainage. How high is acceptable will differ among regions and countries. In northern African cities, the traditional patterns of informal settlement are extremely tight and will tolerate new development areas approaching 60-80 families per hectare. This is not a tolerable level in the cities of the Sahel or in south and east Africa where 20-40 families per hectare may be the maximum consistent with lifestyle and tradition.

A similar comment is applicable to building materials. A general standard would encourage use of indigenous materials in dwelling unit construction as distinguished from imported products. Such materials will differ, however, from the pole and daub available in some countries to the mud brick and rubble used in informal shelter elsewhere. In

the discussions to follow, we hope to stimulate a vigorous exchange of information on specific physical standards now being considered by your countries. There are many approaches and conclusions to be shared, much experience to be communicated, among countries with similar climatic, ecological and development conditions. Such an exchange will be a useful product of this conference.

Here, however, I would like to outline with you some basic principles to guide the standard-setting effort: first to identify the shelter components for which standards can be set and then to suggest for each component some general guidelines along with their management and budgetary implications. I will deal with new and replacement housing, although many of the points apply equally to the important task of upgrading existing informal settlements.

The four components for standard setting are: location, infrastructure and services, the housing plot, and the shelter unit. Each component has significant effects on capital and recurrent costs of shelter; to the beneficiary and to the community. I will concentrate primarily on the location and infrastructure components which present the most difficult standard-setting issues.

Some Principles

A. Location

Three location principles merit consideration.

1. Sites should be selected that are extensions of existing built-up areas or extensions of committed new developments. There are two reasons for establishing this standard.

a. To minimize off-site infrastructure costs. Shelter projects need service by access roads, water and sewer systems, electric power lines and other utilities. Capital costs for the shelter project are reduced to the degree that such systems are already in place, with capacity to take additional population loadings. Modest extensions of existing systems, moreover, normally cost less than totally new installations and can be accomplished more rapidly. If new development areas are being planned anyway, especially for industry or higher income housing, their base infrastructure capacity can generally be expanded at a lesser cost than totally isolated undertakings.

b. To maximize accessibility to employment and community services. Although not always considered in the economic equation, the costs of getting to work, to commercial facilities, to health centers, etc. are part of family expenditure related

to shelter. If affordable housing is located near employment, people can walk. If such housing is a continuation of the urban pattern, existing public transportation can serve or be extended. If new processing plants are to be created, adjoining housing can serve their workers.

2. Sites for new housing should be of sufficient size to permit shelter efforts large in scale, diverse in income levels and in economic activities. Scale can be an important element in affordable housing. Certain savings and efficiencies can be achieved in projects involving several hundred or more sites and dwellings that are not available to small, "vest-pocket" projects. These are savings in installation of interior roads and utilities and in construction materials which often have lower per unit cost at larger scales of assembly. Large scale projects can often support construction and fabrication enterprises on-site, thereby providing sources of employment to potential project residents.

A further imperative to scale is its potential for mixing income levels and forms of economic activity. At the scale of 1,000 or more dwellings, it is entirely possible to develop plot sizes and unit types to serve a broad range of incomes. A cross-subsidy approach can be employed. Under cross-subsidy shelter costs to lower income levels can be reduced by allocating proportionately higher shares of site development and infrastructure to middle and higher income families. Cross-subsidy on a project scale is being tried with considerable success in a number of countries including Botswana and Tunisia. When projects also include sufficient space for industry and commerce activity, these economically productive enterprises can be allocated a larger share of facilities costs.

Beyond the cost factor, there are social benefits to large-scale mixed income undertakings. The poor are not segregated. One of the strengths of urban informal settlements is their diversity, people with various income levels and preferences, a cultural richness lost in projects scaled to a narrow income percentile.

In America, we have lost much of this richness and diversity because of over-concentration on housing developments for restricted income levels. This is an example which African cities would do well to avoid--and can avoid by establishing in advance the mixing principle.

3. Sites should be selected which permit the highest densities of settlement consistent with public health, national lifestyles, and existing practices of informal shelter. As I have indicated above, the high density principle is appropriate. It can be a principal tool to reduce unit costs of land, roads, and certain utilities.

Now, while each of these location principles seems eminently reasonable, each is contrary to certain common practices which have blocked achievement of affordable housing.

In many situations, for example, initial price and availability of land have been the principal factors in locating housing for lower income people. Settlements have been placed on cheap land with serious physical and environmental problems, far from existing services and employment. The results have been both social isolation and excessive costs for development, services, and commutation.

Sites have often been too small, and shelter projects a token handful of plots or units. When scale of settlement is not a concern, scale economies and cross-subsidy possibilities are lost.

Master plan allocations near the built-up areas of cities have often assigned extremely low densities to vacant residential land. The densities have been so low as to make shelter development uneconomical except for the well-to-do. Since high income shelter has not been in great demand, many substantial parcels have been passed over and continue vacant.

Regrettably, this is not the only failure of master planning. It is fair to say that many urban plans reflect the values of European and American models, not African reality. The planners have just not been willing or able to address informal settlement, its extension and control. Master planning is a potentially powerful instrument in the service of affordable housing. As a guide to basic locational, density, and infrastructure decisions, the planning instrument needs to incorporate siting standards relevant to its setting.

By adopting these general standards for site location, countries must accept commensurate obligations for performance. These are planning and management obligations which require skilled people to perform and demand support allocations in national and municipal budgets. For example: a high priority must be placed on the training and employment of planners if shelter development is to be fitted within the fabric of existing communities and the extension of their service systems. If projects are to be large in scale and mixed in use and income level, a high degree of organizational skill is needed to manage and stage their evolution. These human skills have a monetary requirement which might not apply in less sensitive shelter programs or in programs limited to production of housing structures rather than creation of viable communities. These people-costs must be accepted and factored into budgetary commitments.

B. Infrastructure and Services

The next level for standard-setting represents the infrastructure and services that support the project site itself. These facilities are normally installed by the sponsoring developer at capital costs attributable to the project. Some of these costs can, as indicated above, be returned through cross-subsidy by allocating disproportionate shares--at whatever the construction standard--to higher income and employment-generating beneficiaries. The development standards are themselves, however, capable of variation and can be manipulated in the service of affordable costs.

Let me begin by listing the specific types of facilities which can be viewed under the heading of infrastucture and services.

1. Circulation systems: arterial and collector roads, internal neighborhood streets, pedestrian pathways.
2. Water systems: trunk lines, block linkages and unit connections.
3. Sewer systems: trunk lines, block linkages and unit connections.
4. Drainage systems: main channels, block and unit links.
5. Electricity systems: main channels, block and unit connections.
6. Solid waste disposal.
7. Schools.
8. Health facilities.
9. Religious facilities.
10. Recreation and other public open space.

Capital costs for each of these facility types vary enormously with local circumstances and project design. But each type is a candidate for experimentation to reduce costs, and such experimentation shows considerable promise. For example, one study of prototypical sites and services projects demonstrates the following conclusion: that on lots of similar size, variation in standards could produce cost savings for basic utilities (Items 1-5 above) of 100 percent or more per unit.*

Governments are now recognizing that levels of utility service can evolve over time, that construction can begin with a minimal array of facilities whose costs can be carried--with or without subsidy--by the first round of residents. Then, as income levels rise and more development occurs the various networks can be expanded, providing higher standards of service. This principle was, for example, employed in Kenya's 6,000 unit Dondora project where minimum functional and by-law requirements determined initial levels of service. Site engineering plans were then designed in detail to allow for future upgrading.

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* Caminos, C. and Goethert, R: Urbanization Primer for Design of Site and Service Projects, World Bank, 1976.

Precisely how extensive a basic utilities network should be is a matter of intense debate, however, along with the question of public subsidy to reduce occupant charges. In at least one country, Tanzania, decisions have been made to install no infrastructure other than communal water taps for certain projects intended to reach the lowest income levels. Here the beneficiaries will receive, and pay for, regularized lots and the water service only. Debates will continue as experience grows to provide the basis for more definitive guidelines. The principle of affordable infrastructure has been established, however, based on the premise that levels of service can be scaled to improve with economic circumstances.

Yet this principle also has requirements and costs, conditions which must be understood in project design and management.

1. Even though initial levels of installation may be minimal, it is desirable to:

    a. design in advance the full systems intended to serve the project.

    b. build early-on those system elements whose later replacement would involve excessive cost and management difficulties.

Thus, a project eventually intended to provide individual house taps may begin with communal standpipes. The ultimate house connections should be included in project design with provision for plot easements or other restrictions to permit eventual construction.

While plot connections represent minimal expense, trunk water and sewer mains are major elements of cost. These major trunk systems may merit initial installation, even though their full capacity is not used until later. It can be folly to lay small diameter pipes scaled to low levels of present consumption only to provide replacement in a few years with pipes of larger capacity.

Although also a matter of considerable debate, similar capacity commitments may be needed for other facilities, such as project roads. Major arterial roads, expected to carry bus and automotive traffic merit early construction, with sufficiently strong surfaces to bear heavy loadings as project development proceeds.

Extremely careful evaluation is needed to stage infrastructure installation and to determine which permanent elements to construct in the initial phase. Creative cost-accounting is needed as well, pro-rating the charges for major utility networks over the life of the project so that initial residents are not forced to pay disproportionate shares of infrastructure cost.

2. Even though some facilities and services may be substantially deferred, land area should be reserved at the outset and sites protected from encroachment. For example, ultimate interior street and pathway systems should be designed in advance and right-of-way reserved along with the sites for such service facilities as schools, health centers, religious institutions, and recreational areas. Later it will be invariably more costly to locate and assemble such sites.

3. One consequence of minimal capital costs for infrastructure can be a heavy maintenance requirement. If only partial or unfinished systems are installed, these facilities can deteriorate over time unless carefully tended. Take, for example, the two cases of unlined storm drains and communal water taps. Each of these represents a minimal capital cost solution.

With storm drains, the normal intention is to provide ditches first (along with the necessary culverts) and ultimately concrete or other permanent linings. But the ditches often become clogged with debris and are subject to erosion. Unless periodically cleaned and repaired, they soon deteriorate.

Communal water taps represent considerable savings over individual house connections. Nevertheless, if the responsibility for their upkeep is not clearly established, the standpipes and their surrounding areas can become readily fouled.

It is the prospect of this kind of outcome which has often made governments reluctant to endorse minimal cost solutions to shelter needs. The outcome is in no way inevitable, however, if project sponsors recognize in advance the necessity to plan, organize, and budget for maintenance. It means mobilizing, as part of project activity, a maintenance force which could be drawn from beneficiaries.

With unskilled labor generally abundant, maintenance activity could itself be a source of jobs. Costs may well be modest compared with capital expenditures for more finished systems. Maintenance costs are nevertheless important to highlight in initial feasibility and appraisal studies and to include in recurrent budgets. Again, a course of action taken to produce substantial savings, is not without its own costs.

The maintenance issue also points up government's basic obligation in affordable shelter efforts; the obligation to lead, to organize people and their performance to produce viable communities.

C. Shelter Plot

Establishing affordable standards for the shelter plot is a "balancing act", an exercise to weigh carefully potentially conflicting objectives.

Plot size should be small enough to support the maximum acceptable densities that can economize on utilities and service costs. At the same time, the plots need to be large enough to permit eventual modernization and expansion of the shelter unit as occupant incomes improve.

An ample lot size also permits construction of rental accommodations along with the main shelter unit. This is important in some countries as an income supplement and a way to reach segments of the urban poor who cannot be directly helped by affordable housing programs: transients without families, and people in the lowest income percentiles unable to qualify for long-term financing even at minimal levels. In countries such as Lesotho, Swaziland, and Tanzania, these groups have traditionally rented rooms or spaces in squatter areas. It is appropriate to encourage such practices in more regularized settlements.

Recognizing this need for flexibility, some countries have undertaken careful planning which fits density to expansion potential. In Tunisia's AID-assisted core unit program where the sponsor constructs the basic house, foundations are prepared for an additional room. Somewhat higher standard houses on small lots permit vertical extensions on the original units as incomes increase. In Tanzania, sites and services plots are sized to allow for outbuildings and rental rooms.

D. The Shelter Unit

Flexibility is also the key to affordable standards in the dwelling unit itself and its construction materials. Shelter should be encouraged to evolve over time. The concept is to begin with a minimum unit consistent with the occupants' ability to pay, anticipating alterations and embellishments as income conditions improve. This evolutionary concept is applicable to people in a wide range of income levels who can benefit from affordable housing: from the poor who could erect traditional type shelter on a regularized lot with a sanitary core, up to middle income households able to finance a contractor-built unit including a shell of unfinished rooms. The concept conflicts with normal building codes adopted in many cities of the African continent, but considerable progress has been made in adapting these codes or obtaining exceptions for affordable housing experiments.

One example of such adaptation is the "take-away" exercise used in a Nigeria shelter project. Designers began with the existing building code and studied how to take away costly elements which would not effect durability or safety of the dwelling. The code called for 8 inch walls, which they reduced to 6 inches. It called for roof-framing that used 2" x 6" members, 16" on center. These they reduced to 2" x 4" members, 24" on center. Similar surgical treatment was applied to plumbing and electrical requirements, and the overall cost of the shelter unit was reduced by 25 percent.

Building materials themselves are a subject for experimentation and flexibility. Standards should be those of performance and safety,

not specific material types which may not be either cost effective or relevant. A wall should, for instance, perform as a wall...not be specified as a structure made of brick or block or some other substance not readily available. Such performance standards could stimulate markets for locally produced materials whose production can itself be a source of jobs. In some cases, an experimental approach to low cost building materials may be needed both to replace imports and to find substitutes for traditional products no longer available because of resource depletion--such as thatch for roofing in Lesotho.

Once flexibility and experimentation are accepted as the basis for shelter unit standards, however, considerable government guidance and intervention are required. Here too are management and financial implications for the shelter effort. Design skills need to be taught and applied in delineating prototype shelter forms applicable to various income levels, utilizing local material, and designed for replicability. Management and technical assistance must be directed towards organizing shelter unit production, both self-help and contractor built, on a continuing basis. Financing, management and technical assistance must be applied to aggregate a market for local building materials, to regularize production, and to provide loans for their use. USAID-assisted undertakings in Botswana and Lesotho have been particularly effective in these matters.

Some Concluding Comments

As we review these principles for site location, infrastructure, plots and shelter units we should conclude with some perspective on affordable physical standards and their role in expansion of adequate shelter. Standards are crucial to the process. They represent, however, but one of three ingredients that can be mixed and matched in a wide variety of forms to fit the needs of particular groups, in particular settings, at particular times in the evolution of an urbanizing society. Standards share significance with tenure arrangements and financing mechanisms (interest rates, down payments, repayment schedules, etc.), each of which will be explored in depth elsewhere in this conference. While we have concentrated on standards in this discussion, it is important to stress the necessity for simultaneous attention to all three in formulating realistic, relevant shelter policy. The intellectual exercise posed by mixing and matching, by testing, by seeking for the appropriate combinations is a formidable and exciting challenge and is the essence of policy formulation.

It is an intellectual challenge, however, and only an initial step. For the results of such an exercise must then be translated into a community building effort where the formal sector is a partner, not the sole provider. Implementation of any prescription or formula, no matter how appropriate, demands support and participation from the people themselves. Government can lead and government can aid, but the energies of the millions who desire adequate shelter must be enlisted in the community building effort. This task of partnership creation will take all the skill and compassion that governments can muster.

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

DEFINITION OF TARGET GROUPS:

TARGETING AND TARGET GROUPS

Monday, November 12, 1979

2:00-5:00 p.m. Code 18.NHP

Presented by:

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Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

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TARGETING AND TARGET GROUPS

Problem Set

The following material deals with the subject of establishing a target group or target groups for priority in national housing efforts. Participants should review the outline and make an effort to examine the suggested readings. Each participant should come to the session prepared to identify the sources of data available in his or her country to assist in defining target groups. Please write a list of these sources on a sheet of paper for submission at the session.

OUTLINE OF APPROACH

Targeting & Target Groups

I. Context of Housing Production and Policy

While some groups within a society are able to provide/purchase adequate shelter without governmental intervention, the proportion is small, particularly in developing countries.

Government normally undertakes a variety of programs or activities which influence the availability of shelter--these range from creation/licensing of financial institutions to provide mortgages, assembly and resale or disposition of housing sites to private parties or governmental institutions, subsidies of various kinds to civil servants and other favored groups.

When government has taken the housing of lower-income families as an objective, the predominant mode of intervention has been:

--design and construction of dwellings for such facilities

--provision of subsidies for the occupants which may take a variety of forms but amount to the absorption of the the difference between sums which the poor can pay or are asked to pay and the real cost of construction and operations for such units.

Both developing and developed countries have used such approaches.

The history of such subsidized efforts has generally been that the amount of production is unable to keep up with the demand--and for the relatively few families housed continuing costs to government have been considerable.

In developing countries the approach has largely proven infeasible. Rural/urban migration has been so extensive that the conventional construction/subsidy approach has been unable to come close to approximating demand--even for middle income families who often displace the poor in subsidized housing allotments. The results have been proliferation of slums and squatter housing and considerable drains on national treasuries.

To alleviate the problem many countries have begun to adopt different approaches to shelter provision for those unable to afford more conventional solutions.

The approaches have involved the following basic techniques:

--reduction in design and construction standards so that the funds available for shelter can be spread over more units.

--greater reliance on self-help or individual construction and finishing of shelter.

--gradual elimination of slum and squatter displacement efforts in favor of upgrading existing self-built shelter with basic provision of utilities and services.

--evolution of sites and services programs for new shelter in which regularized plots are provided along with utilities and services. Units are then constructed through contractor and/or self-built methods.

--greater reliance on cost recovery from the individual and families who benefit, thus allowing for replicability and wider distribution of housing funds.

--establishment of financial instruments and institutions which provide credit based on incomes and enable families and individuals to take advantage of the opportunities.

--creation of enterprise assistance and training programs which capitalize on the potential for employment and economic development inherent in these approaches.

--encouragement, directly or tacitly, to rental of rooms or portions of units with a twofold objective:

- o as an income supplement for recipient funding
- o to reach transients, migrants, elderly or other groups indirectly which even these more flexible approaches to housing provision cannot reach.

In short, as the demand for shelter--particularly urban shelter--has surpassed conventional means of shelter provision. Governments have adopted more sensitive, flexible, cost effective and sophisticated techniques.

The "price" of adopting such techniques and using them efficiently has been to require that government know more in advance about the population who become beneficiaries of housing efforts. Choices are necessary for any support activity that involves limited resources. By identifying the groups to be served by shelter efforts and by understanding key characteristics about these groups, more effective shelter efforts can be designed.

II. The Process and Context of Identifying "Target" Population

The process of identifying the populations to be served is called "targeting". The population to be served is called the target group or groups. The tools employed in targeting are national and local statistics, special surveys, and the careful formulation of assumptions when such statistics or survey material do not exist or are in rudimentary form.

A. The "poor" as a target group. Some analysts will suggest that all households below a certain minimum income level--which will vary from country to country--be considered the target group. Income is used as a gross short-hand index of how effectively one can obtain shelter and other servcies. The position is that below a certain minimum income level government should focus its efforts at shelter assistance. This concept can serve when other more discriminating indicators are not available.

The concept of "poverty" alone is, however, too simplistic as the basis for all allocation of resources and for program design.

--income levels, purchasing power, and costs may vary considerably between urban and rural areas and between areas of the country.

--a "poverty" level of rural income--because of self-built shelter and traditional rural living patterns may be able to obtain minimally adequate shelter not available to a similar income level in urban areas.

--in urban settings which are rapidly expanding through migration there may be few options for obtaining minimally adequate shelter. As a result, families at a higher than poverty level may be unable to obtain adequate shelter because of institutional or other barriers. These merit consideration as target populations for housing program efforts--in addition to those below a "poverty" level by virtue of income.

B. Choice of location for target group identification--the "where" of targeting. Sufficient information through national sources should be available to determine some priorities for location of housing efforts. Where are the principal shelter problems--or opportunities--unmet by present institutions or private effort?

Contrast ability of rural populations to construct their own units in traditional forms and locations with issues of density, land, public health in an urban setting (heavy in migration flows), opportunities in secondary centers for shelter as a development incentive.

Note also that income levels, expenditure patterns, costs of transport and materials, etc. make for different economic conditions regarding shelter in different urban and rural locations.

Once a basic concept of where to target is established--the target population can be identified.

C. Demographic/economic analysis--population profiles. Income levels are a critical indicator of target population once the locations to be served are identified. Obtaining accurate and current statistics by location is difficult and approximations and assumptions thus become crucial.

The data tools. National and local censuses, information from social security system, public health statistics, special surveys of squatter areas all material which can be probed and arrayed to construct population profiles of the target areas by--

--income levels (identification of high, middle, low by as discriminating categories as possible)

--type of current shelter (e.g. conventional, squatter areas, etc.)

--household size

--employment/unemployment (wage, informal sector, women workers, etc.)

see Swaziland case material for examples.

D. Affordability analysis. While an income distribution can provide insights into the present level of poverty in the target area or areas, it is not sufficient in itself to illuminate basic shelter needs or serve as the base for a program. Necessary to follow-up with affordability analysis and special surveys.

Affordability analysis indicates what forms of housing the range of income levels in the target areas can purchase--on a total cost recovery basis given.

--an estimated proportion or proportions (for various income levels) to be spent on shelter .

--the costs (land and building) for prototypical shelter currently tested and buildable in the country and areas, e.g. known building types.

--at the financing arrangements currently available to residents of the country.

1. Proportion of income levels spent on housing. This is a matter that has to be viewed in the context of particular countries and traditions (see Churchill paper appendix)--can be established by surveys or by estimates--may vary considerably within the country by income levels (e.g. poor may spend or may be prepared to spend proportionately more for shelter than higher income levels). Definitions need to be precise as to whether proportions deal just with shelter costs or also with supporting utilities.

2. Shelter types available. Need to identify the types and cost range of the array of units currently buildable within the society--from luxury individual homes and apartments to sites and services. Especially need to know cost implications of minimal safe standards for low income solutions such as squatter upgrading, prototype core housing, sites and services, etc. If such unit types or estimates do not exist then some approximations based on best available information should be made to serve as base lines for research on affordable housing.

3. Financing arrangements. A review must be made of the array of shelter financing arrangements and capacities currently in existence. The two analyses are extremely important.

It may be that current financial mechanisms, interest rates, amortization periods are adaptable to serve a wide variety of income levels to obtain shelter on a cost recovery basis--but, that the resource and institutional capacity is well below the need. This suggests that the principle objective in targeting a population and developing a program should be to increase these resources.

For example, Tunisia where a wide array of private and governmental financing techniques are available covering low income families as well (e.g. core units). Principle shortcomings may be in the minimal levels of financing available.

On the other hand, the financial systems may themselves be undeveloped and able to serve only a narrow segment of the population--e.g. Swaziland where financing instruments are geared only to the upper income groups, specialized industries and profession, or locked into subsidies of government workers. In these conditions, efforts would be required to broaden the financial mechanisms themselves as well as to increase capacity.

E.g. if middle income urban families lack options for obtaining affordable shelter, targeting attention may be needed to them as well as those below a determined poverty line.

E. Designating the target group(s) for program design. The final step in identification is to array income levels and other characteristics against affordability. From this assessment it should be possible to identify the class or classes of population to be served (including how low along the income level spectrum it is appropriate to consider direct shelter assistance, e.g. as distinguished from expediting rental arrangements in accommodations for higher income level families, welfare payments and other financial assistance because of lack of ability to pay, etc.)

It then becomes possible to perform the other crucial analyses in formulating a shelter program, e.g.:

--estimating the scale of need to be addressed
--estimating the scale of resources to be applied
--designing the instruments, institutional adaptations, projects, etc. to be applied.

F. The supplementary special survey. Existing statistics, supplemented by analyses and assumptions are appropriate in making the initial identification of a target group or groups. They are normally inadequate, however, to serve as a solid basis for program and project design to serve these groups. Where possible, special interview surveys of needs, attitudes, and present living patterns are desirable before moving into actual design. These surveys should be conducted by trained interviewers who can establish good rapport with the people to be contacted. (See example of Swaziland squatter area survey attached.) On a sample basis the following information can be elicited:

--adequacy and use of existing shelter

--income and expenditure patterns

--employment patterns, skills, women in labor force

--ability to save and willingness to devote income to housing expenditures

--attitudes towards various shelter options (sites and services, upgrading, self-help)

--family size and composition

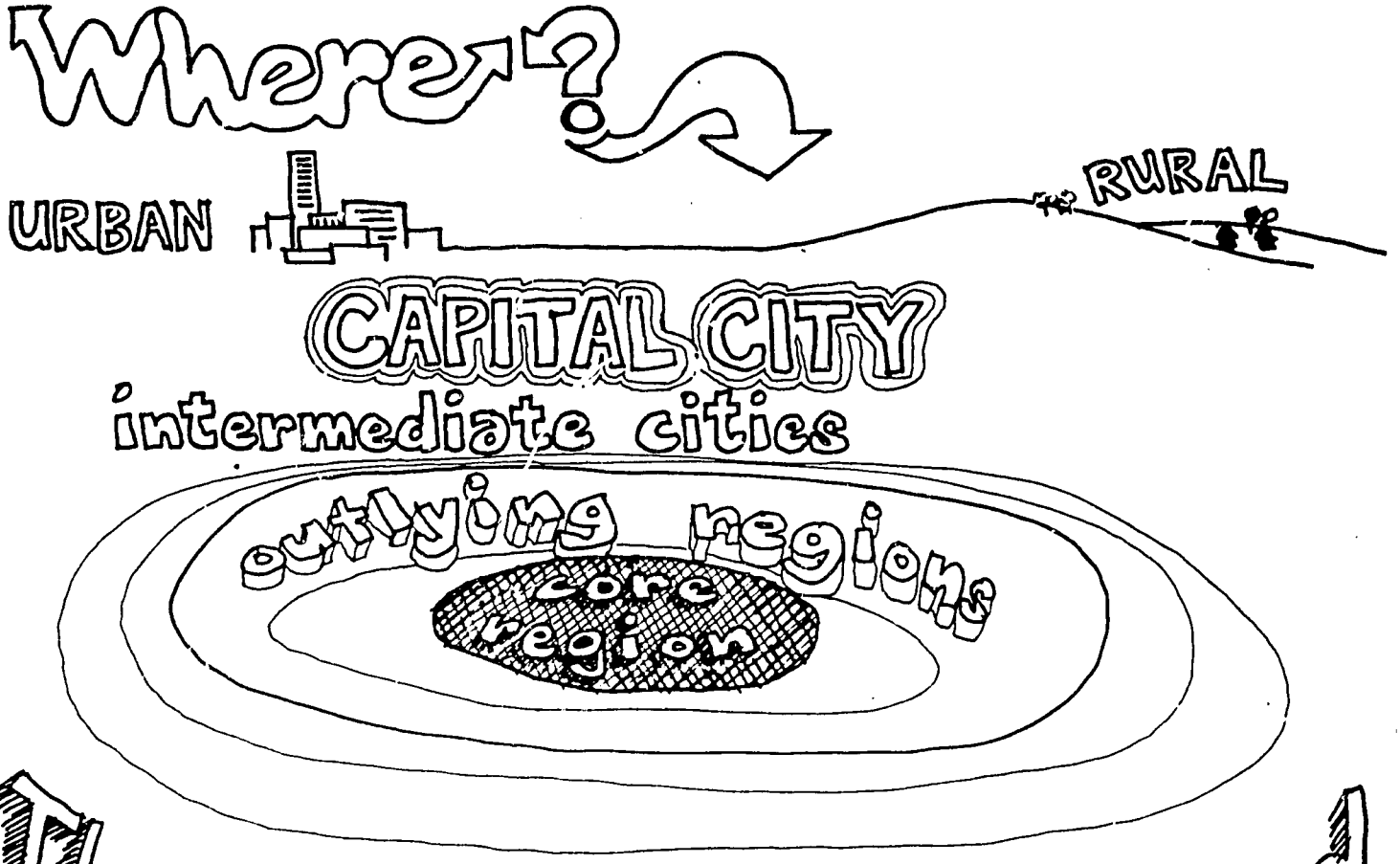
--renters

--transportation costs and modes.

GRAPHICS FOR SESSION ON TARGETING AND TARGET GROUPS

The Targeting Concept

— A PEOPLE CENTERED BASIS FOR SHELTER POLICY AND PROGRAMS



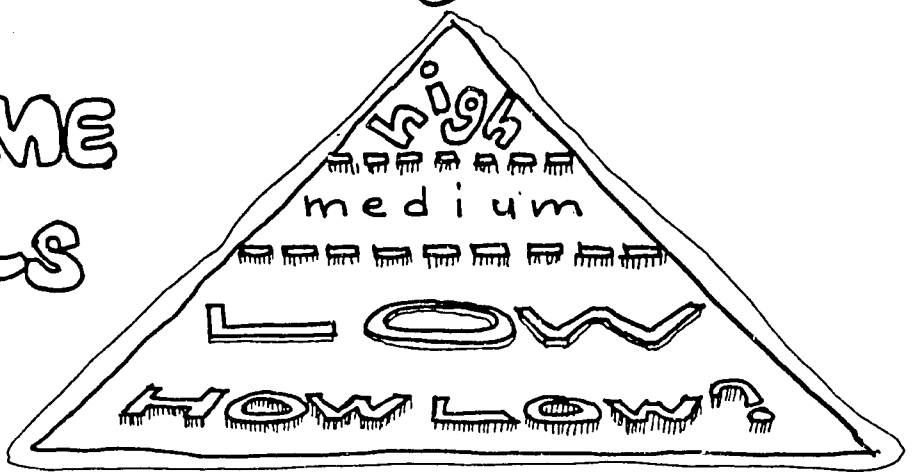
The need for priorities and choices by location

The Targeting Concept

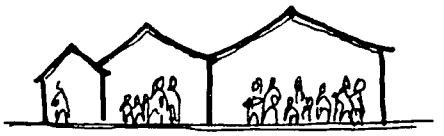
— A PEOPLE CENTERED BASIS FOR SHELTER POLICY AND PROGRAMS

Who — to target for effort?

INCOME LEVELS



HOUSEHOLD SIZE



The Targeting Concept

— A PEOPLE CENTERED BASIS FOR SHELTER POLICY AND PROGRAMS

What — to target for effort?

shelter

land

tenure

materials

Financing

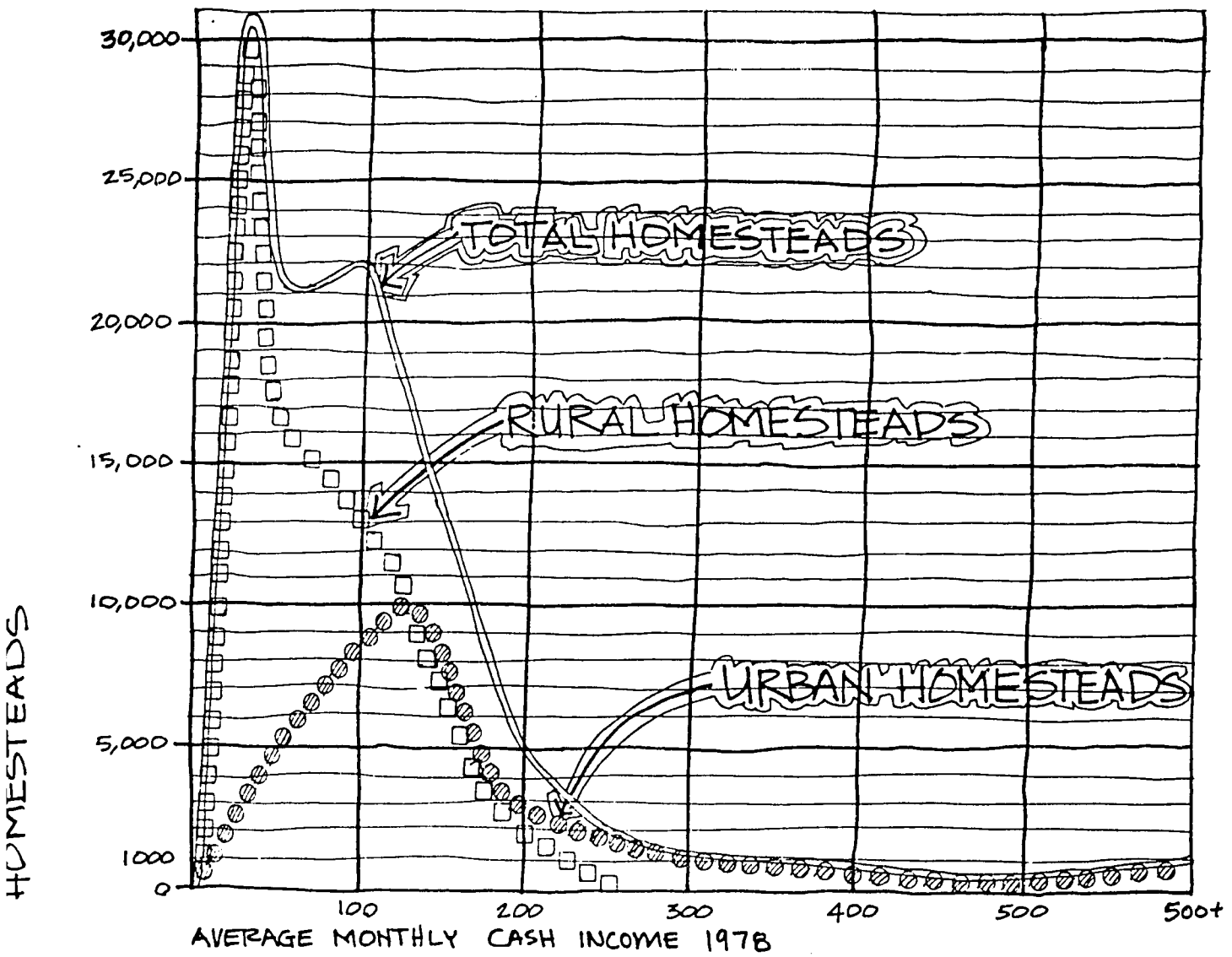
employment

transportation

IDENTIFYING THE TARGET GROUP BY INCOME LEVELS AND LOCATIONS

step 1: what is the present income distribution nationally?

case study Swaziland



IDENTIFYING THE TARGET GROUP BY INCOME LEVELS AND LOCATIONS

step 2: if urban areas are identified for special treatment, what is the income distribution within urban areas for non-squatter and squatter families.

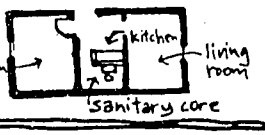
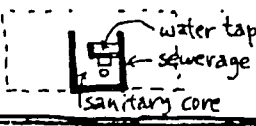
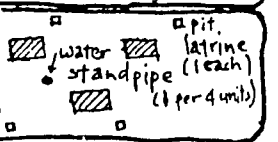
case study Swaziland

income	urban families	core region urban families	core region urban families in informal sector housing - squatter areas - slums
high (E 350+)			
medium (E160-350)			
low (under E 160)			

IDENTIFYING THE TARGET GROUP BY INCOME LEVELS AND LOCATIONS

step 3: if core region urban families in squatter housing are to be the target group – what types of solutions could they afford at present income levels, state of the construction art and nature of financing available?

Case study Swaziland LOW INCOME FAMILIES IN SQUATTER AREAS OF THE PRINCIPAL CITIES (CORE REGION)

monthly income	no. of families	%	affordable solution
E135 - 160	1,010	12%	one bedroom house (E 4140) at 25% of income 37 m² gross building area 12.8 units per acre 
E 110 - 135	1,430	17%	full sites & services (E 3000) at 25% of income 330 m² plots – 6 units per acre no electricity 
E 75 - 110	2,560	31%	basic sites & services (E 1500) at 25% of income 12 plots per acre 
E 45 - 75	1,990	24%	squatter upgrading (E 400) 10% of income ▫ pit latrines foot paths other projects as called for
LESS THAN E45	1,310	16%	
TOTAL LOW INCOME FAMILIES IN SQUATTER AREAS OF PRINCIPAL CITIES (CORE REGION)	8,300	100%	

IDENTIFYING THE TARGET GROUP BY INCOME LEVELS AND LOCATIONS

step 4: add the present shelter needs of target population to estimated growth requirements.

case study Swaziland

core region

present scale of need:

households in informal sector, 1978 [variety of treatments required: upgrading, tenure, new units]	8300
estimated current annual formal sector hsg. production	500
estimated annual increase in households 1978-83	1300
estimated annual gap in new production to be met by informal sector housing 1978-83 [will become new squatters without special treatment]	800

DRAFT EXERCISE

AID Shelter Institute

Targeting & Target Groups

The suggested exercise could be performed by individuals after having done the reading or as a "Take Home" device to be turned in following the session. It could also serve as the basis for an interesting seminar discussion.

The class program and supplementary readings discuss the need and the means for identifying target groups.
Take the situation in your own country. Write a brief paper answering the following questions:

1. What area or areas within your country should be targeted for special shelter assistance? Why?

2. What data sources are available in your country to help identify potential target groups and their characteristics?

READING MATERIALS:

SUPPLEMENT TO TARGETING AND TARGET GROUPS

READING MATERIAL

AID Shelter Institute

Targeting & Target Groups

I. Excerpts on Housing Needs and Target Population
From Swaziland Shelter Sector Assessment,
Rivkin Associates, Inc. in Association with
Carl House, USAID, 1978.

II. Basic Housing Needs
by Anthony Churchill, IBRD, 1979.

Notes on Readings:

I. The Swaziland material demonstrates how data were used and assumptions were made to identify groups for whom shelter assistance would be designed in one African country. It also includes a questionnaire that was administered to residents in squatter areas to learn about income patterns, attitudes, etc. The most important aspect of this material is the way in which the analysts made assumptions based on limited reliable data. While the assumptions remain to be tested, they provided at least an initial basis for identifying the possible beneficiaries of a housing program.

II. The Churchill paper is an excellent international overview of basic shelter needs and a potential role for international institutions. Its Appendix provides data on household income and expenditure for several countries.

SUPPLEMENTAL READING TO TARGETING AND TARGET GROUPS

I. Excerpts on Housing Needs and Target Population

from:

Swaziland Shelter Sector Assessment

by

Rivkin Associates in association
with Carl House.

USAID, 1978

V. Shelter Needs, 1978-83

A. Scale of the Need, Location and Components

Population growth and movement within Swaziland has had a dramatic impact on urban shelter needs. In the Core Region, 790 new urban and peri-urban households[1] were added each year between 1966 and 1976--295 in the Mbabane area, 300 in the Manzini-Kwaluseni-Matsapa area, and the balance in communities between.

Elsewhere in Swaziland, too, the number of new urban households exceeded the rural. This was due partly to the smaller household size in the towns and villages and largely to the attraction of new job opportunities. Table V-1 illustrates the average annual increment of households for several of Swaziland's urban areas. In many respects this dispersion of urban growth is fortunate. Although squatter conditions have developed in a number of places, they do not constitute so massive and intractable a problem as they might were they concentrated in a single urban center.

Situation of Needs Outpacing Housing Production. Annual production of housing through the formal sector has simply not kept pace with the rate of urban household formation. The shortage of formal housing affects families at all levels of the income scale.

Households in Mbabane and Manzini had been increasing at average rates of 300 per year, respectively, quite steadily for half a decade before combined efforts of the private sector, the government worker pool housing program, and other housing organizations such as the Industrial Housing Company (Pty) Ltd., the National Housing Corporation and the Ministry of Local Administration Low Income Housing unit began to

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1. Calculated from population increase and avarage household sizes prevailing in 1976.

FIGURE 23 THE CORE REGION

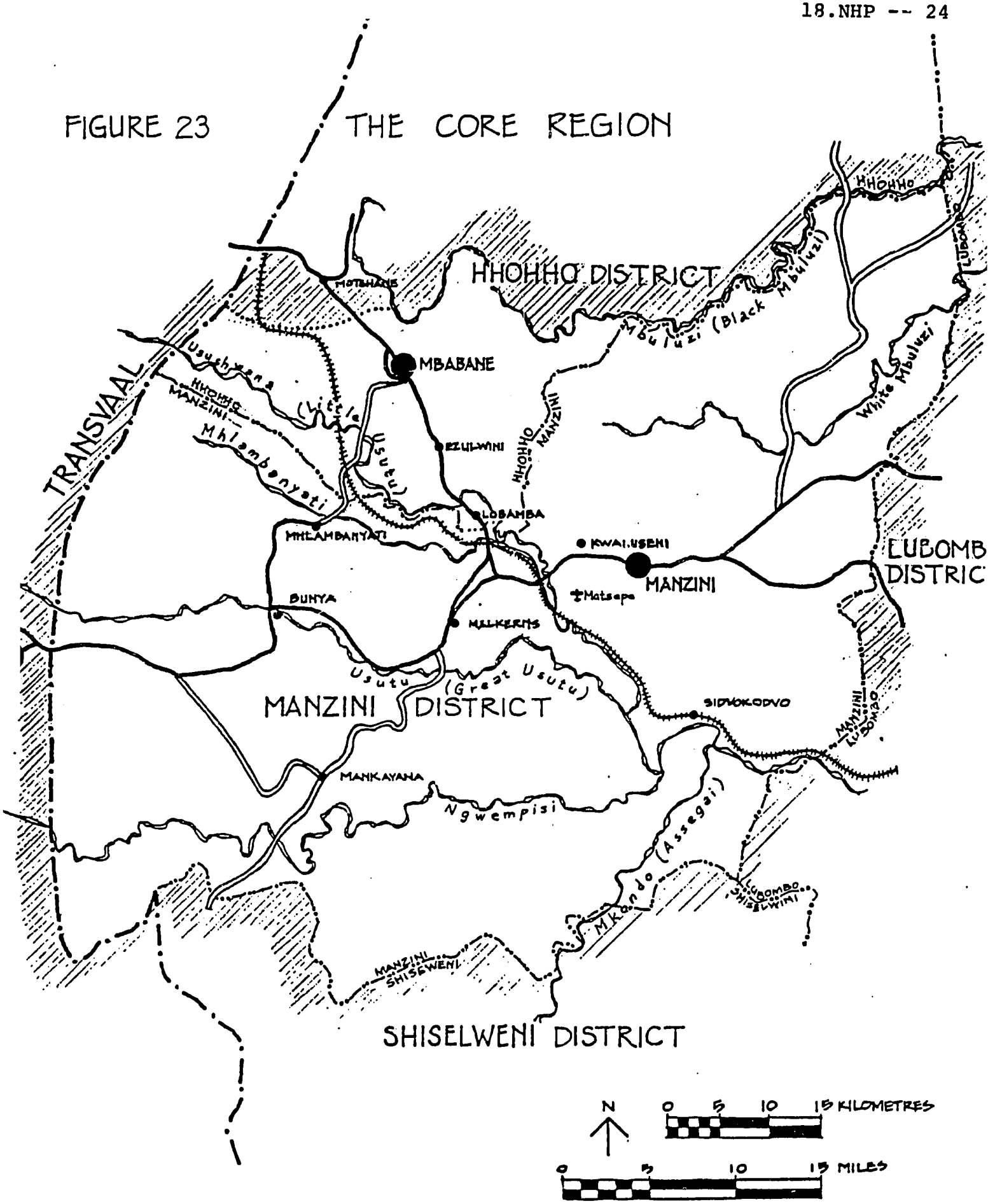
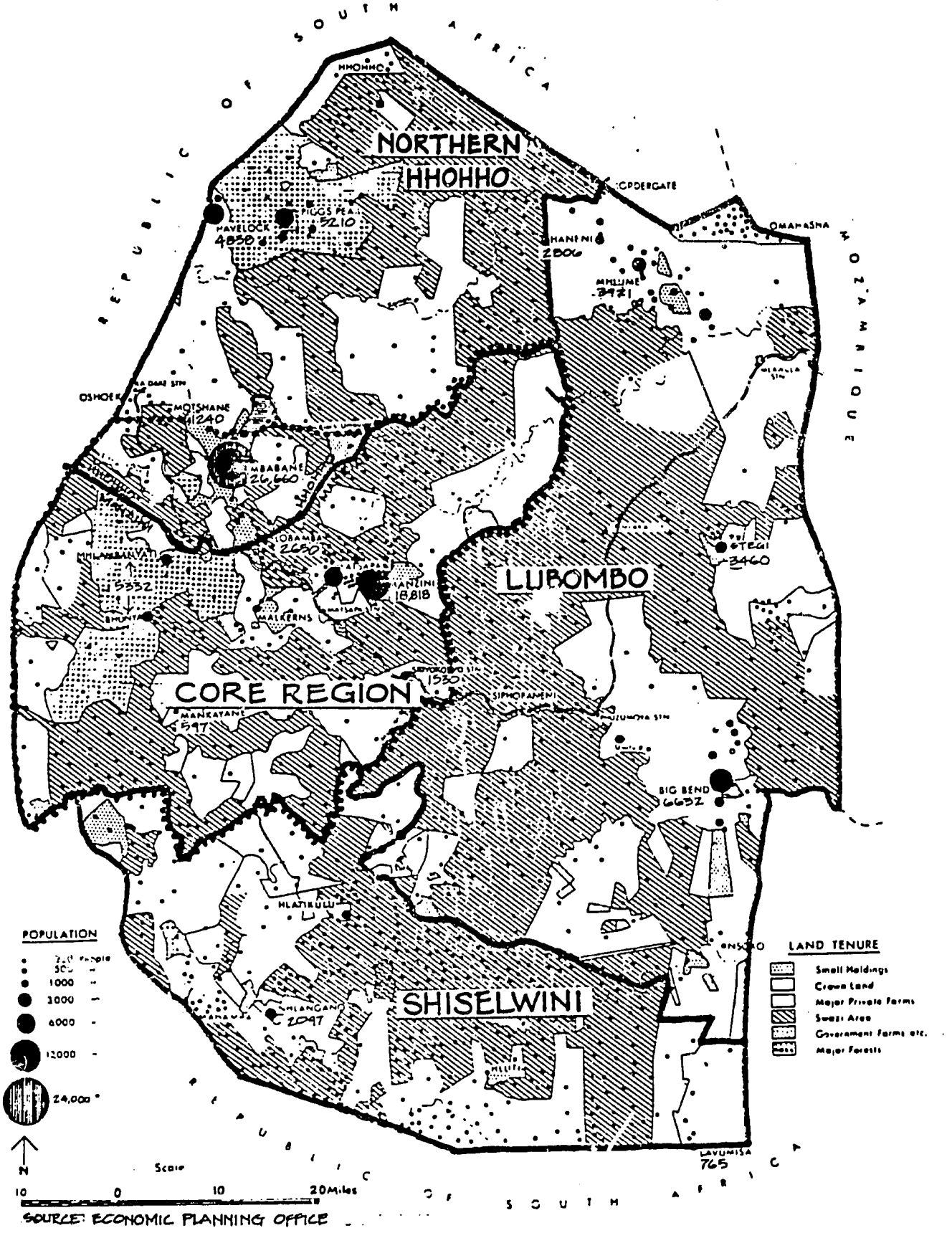


FIGURE 4

SWAZILAND·POPULATION AND LAND TENURE · 1976



SOURCE: ECONOMIC PLANNING OFFICE

raise annual production levels to anything approaching the annual need. (See Tables V-1 and V-2).

Informal Sector Bridges the Gap. Meanwhile the new families who could not be accommodated in these new units or in others already existing, found sites for themselves on Swazi Nation land, temporary occupancy Government land or unlawfully occupied squatter areas and provided shelter informally for themselves.

The informal, low-income settlements of shelters built of mud, stones and poles represent the backlog of need unmet by the formal sector of Mbabane and Manzini, and indeed, virtually every other urbanized community in Swaziland. A measure of the prevalence of urban squatter conditions is depicted in Tables V-3, V-4 and V-5. (Data for individual towns are in Table A-35.)

Swaziland had, at the time of the 1976 Census, 14,600 urban homesteads (or household units) built of non-durable materials wholly or partially. Of this number 10,450 or 72 per cent were in the Core Region, about equally distributed between the Hhohho portion and the Manzini portion.

This type of structure is quite typical for Swaziland. Indeed, self-built homesteads in urban areas comprise but 20 per cent of the total for this type of dwelling across the whole of Swaziland. Over and above the basic need to upgrade housing conditions throughout the country, urban self-built housing presents special problems more serious than simple numbers alone reveal. The densities at which these dwellings are built in urban areas create particular health hazards since they characteristically lack sanitary facilities for disposal of human wastes. The problems are compounded by accumulation of other wastes amidst the confined living area. Footpaths are dangerous, uneven and steep, winding circuitously among the houses set helter-skelter.

TABLE V-1. ANNUAL INCREASE IN URBAN HOUSEHOLDS, 1966-76

ILLUSTRATIVE EXAMPLES

URBANIZED AREA	NUMBER OF NEW HOUSEHOLDS PER YEAR 1966-1976**
Mbabane Area	295
Manzini-Kwaluseni-Matsapa	300
Pigg's Peak Area	160
Hlatikulu	50
Nhlangano	120
Stegi	125
Big Bend Area	475
Mhlume Area	410
Tshaneni Area	415

**Calculation based on the average urban household size prevailing in 1976: 4.2. Average rural household size was 6.7, average for urban and rural combined, 5.7. These figures differ somewhat from household sizes reported by the Census due to definition of urban area here which includes both a town or village and the surrounding area of concentrated settlement. These represent an implied rate of increase in numbers of dwelling units based on need rather than an actual count. Housing data for 1966 comparable with the 1976 Census tallies are not available. Thus, the number of units actually built during the 1966-76 decade is not known precisely. The relative proportions of informal and formal sector production are not known either.

TABLE V-2. ESTIMATE OF FORMAL HOUSING CONSTRUCTION ACTIVITY MBABANE AND MANZINI, 1971-78

DEVELOPER	PERIOD OF OPERATION	ANNUAL AVERAGE PRODUCTION (NO. OF UNITS) DURING PERIOD OF OPERATION	
		MBABANE	MANZINI-MATSAPA
Private Sector* (Including Housing for company and parastatal employees)	1974-1978	120	50
Public Works (Government Pool Housing)	1971-1978	80	56
Industrial Housing Company (Pty) Ltd.	1973-1978	48	34
Ministry of Local Administration-Low Income Housing Unit	1975-1978	35	
National Housing Corporation	1974-1976		75
Peak Year Production (1975-76)		283	215

*Estimates based on review of building permit applications and final inspection reports for the two towns.

Table V-3

CONDITION OF HOMESTEADS, 1976:
DURABILITY OF CONSTRUCTION MATERIAL*

	Durable**		Partially Durable		Non - Durable		
	No.of Home-steads	% of Nation Total	No.of Home-steads	% of Nation Total	No.of Home-steads	% of Nation Total	TOTAL
Core Region	8,250	44.0	10,900	32.6	12,900	37.2	32,050
Urban:							
Hhohho	3,000	16.0	1,050	3.1	4,050	11.7	8,100
Manzini....	3,600	19.2	1,750	5.2	3,600	10.4	8,950
Rural:	1,650	8.8	8,100	24.2	5,250	15.1	15,000
Northern Hhohho Dist.	1,950	10.4	6,250	18.7	8,900	25.7	17,100
Urban:	500	2.7	1,300	3.9	650	1.9	2,450
Rural:	1,450	7.7	4,950	14.8	8,250	23.8	14,650
Shiselweni District...	2,000	10.7	8,900	26.6	6,850	19.8	17,750
Urban:	550	2.9	100	.3	200	.6	850
Rural:	1,450	7.7	8,800	26.3	6,650	19.2	16,900
Lubombo District...	6,500	34.7	7,400	22.2	6,000	17.3	19,950
Urban:	5,400	28.8	400	1.1	1,550	4.5	7,350
Rural:	1,100	5.9	7,050	21.1	4,450	12.8	12,600
SWAZILAND TOTAL.....	18,750	100.0	33,450	100.0	34,650	100.0	86,850
Urban:	13,100	69.9	4,550	13.6	10,050	29.0	27,700
Rural:	5,650	30.1	28,900	86.4	24,600	71.0	59,150

* Numbers do not add in all cases due to rounding. See Appendix Table C for detail breakdown.

** Durable corresponds to the 1976 Census designation "permanent" and it refers to wall construction in cement block, stone or stabilized brick. Partially durable corresponds to "mixed" in the census and means a portion of a structure or at least one structure in a group that constitute a homestead (family compound) is built of durable materials. Non-durable corresponds with "temporary" and refers to buildings of unstabilized mud, poles and unmortared stone.

Table V-4

CONDITION OF HOMESTEADS, 1976: SOURCE OF WATER

	TAP IN HOUSE		TAP OR STANDPIPE OUTSIDE HOUSE		OTHER		TOTAL	
	No.of* Home-steads	%	No.of Home-steads	%	No.of Home-steads	%	No.of Home-steads	100%
Core Region	6,400	20.0	7,750	24.2	17,900	55.8	32,050	
Urban:								
Hhohho	2,600	31.9	3,400	41.7	2,150	26.4	8,100	
Manzini.....	3,150	35.4	3,500	39.3	2,250	25.3	8,900	
Rural:	700	4.6	900	6.0	13,500	89.4	15,000	
Northern Hhohho.	1,500	8.8	2,750	16.1	12,850	75.1	17,100	100%
Urban:	850	34.7	1,400	57.1	200	8.2	2,450	
Rural:	650	4.4	1,350	9.2	12,650	86.3	14,650	
Shiselweni District.	650	3.7	1,350	7.6	15,750	88.7	17,750	100%
Urban:	450	52.9	350	41.2	50	5.9	850	
Rural:	200	1.1	1,000	5.9	15,700	92.9	16,900	
Lubombo District.	3,250	16.3	5,350	26.8	11,350	56.9	19,950	100%
Urban:	3,000	40.8	3,850	52.4	500	6.8	7,350	
Rural:	250	2.0	1,500	11.9	10,850	86.1	12,600	
SWAZILAND	11,800	13.6	17,250	19.9	57,800	66.5	86,850	100%
Urban:	10,000	36.1	12,550	45.3	5,150	18.6	27,700	
Rural:	1,750	3.0	4,700	7.9	52,650	89.1	59,150	

* Numbers do not always add due to rounding.

Table V-5

CONDITION OF HOMESTEADS, 1976: SANITARY FACILITIES

	WATER CLOSET*		PIT LATRINE		OTHER		TOTAL
	No.of Home-steads**	%	No.of Home-steads	%	No.of Home-steads	%	No.of Home-steads 100
Core Region	8 150	25.4	8,500	26.5	15,450	48.1	32,050
Urban:							
Hhohho.....	3,000	37.0	3,650	45.1	1,450	17.9	8,100
Manzini....	4,200	47.2	2,750	30.9	1,950	21.9	8,900
Rural:	900	6.0	2,050	13.7	12,050	80.3	15,000
Northern Hhohho.	2,600	15.2	2,650	15.5	11,800	69.2	17,100
Urban:	1,800	73.5	450	18.4	200	8.1	2,450
Rural:	850	5.8	2,200	15.0	11,600	79.2	14,650
Shiselweni District.	700	3.9	2,250	12.7	14,800	83.4	17,750
Urban:	500	58.8	250	29.4	100	11.8	850
Rural:	200	1.2	2,000	11.8	14,700	87.0	16,900
Lubombo District.	5,950	29.8	2,600	13.0	11,400	57.2	19,950
Urban:	5,100	69.4	1,500	20.4	750	10.2	7,350
Rural:	850	6.7	1,100	8.7	10,650	84.5	12,600
SWAZILAND	17,400	20.0	16,000	18.4	53,450	61.5	86,850
Urban:	14,600	52.7	8,600	31.0	4,500	16.2	27,700
Rural:	2,800	4.7	7,350	12.4	48,950	82.8	59,150

* Numbers do not always add due to rounding

** These figures should be used only with great caution because census tabulations indicate, among other inconsistencies, more homesteads with "water closets" than there are homesteads with indoor sources of water.

Most serious, however, is that 19 percent of Swaziland's urban households are without such sources of safe drinking water. This situation continues in spite of a concerted effort by government to provide treated water via standpipes serving several dwelling units or taps within individual homes. Informal settlement is spreading into new areas faster than the water supply is being extended.

The drinking water problem is even more severe in Swaziland's rural areas, where 89 percent of the households lack a source of treated water supply.

New Urban Households on the Way. Projections of Swaziland's population and its geographical distribution are shown in Table V-6. If the overall growth rate observed in the 1966-76 decade (28%) continues, Swaziland will approach the one million mark at the turn of the century.

By then 40 percent of the nation's population will be living in urban areas. National average household size will be 5.3 (down from today's level of 5.7) because the smaller urban households will represent a larger share of the total than they do at present.

The Core Region will still be the most heavily populated, but-- assuming efforts to maintain a dispersed pattern of growth are successful-- will still have less than half the population.

Urban households will increase by an average of 2,200 per year through 1988 and over 3,900 per year the following decade. Annual need for sheltering new urban families in the Core Region alone will amount to 1,680 over the next ten years and 3,140 units in the ten years following.

Table V-6

Distribution of Population and Households 1976, 1978[a] and Projected 1978, 1988, 1998

Core Region[b]	1976 Urban[c]	1976 Rural[d]	1976 Total	1978 Urban	1978 Rural	1978 Total	1988 Urban	1988 Rural	1988 Total	1998 Urban	1998 Rural	1998 Total
(Manzini District plus Mbabane Expanded Area, Lobamba, and Ezulwini)												
Population	71,770	101,040	172,810	81,590	105,330	186,920	151,880	125,650	277,530	283,870	150,190	434,060
Households[e]	17,033	15,024	32,057	19,430	15,720	35,150	36,160	18,750	54,910	67,590	22,420	90,010
Persons/Household	4.2	6.7	5.4									
Northern Hhohho District												
Population	11,290	88,930	100,220	11,660	92,850	104,510	14,520	111,380	125,900	19,300	133,610	152,910
Households	2,461	14,632	17,093	2,530	15,220	17,750	3,160	18,260	21,420	4,200	21,900	26,100
Persons/Household	4.6	6.1	5.9									
Shiselwini District												
Population	4,045	113,125	117,170	4,270	117,460	121,730	6,960	140,400	147,360	9,760	167,820	177,580
Households	845	16,899	17,753	910	17,530	18,440	1,480	20,960	22,440	2,080	25,050	27,130
Persons/Household	4.7	6.7	6.6									
Lubombo District												
Population	27,740	76,590	104,330	30,270	79,380	109,650	45,440	94,880	140,320	69,030	113,410	182,440
Households	7,363	12,581	19,944	7,970	13,010	20,980	11,960	15,550	27,510	18,170	18,590	36,760
Persons/Household	3.8	6.1	5.2									
Swaziland Total												
Population	114,845	379,685	494,530	127,790	395,020	522,810	216,800	472,310	691,110	381,960	565,030	946,990
Households	27,711	59,136	86,847	30,830	61,520	92,320	52,760	73,520	126,280	92,040	87,960	180,000
Persons/Household	4.1	6.4	5.7			5.7			5.5	4.1	6.4	5.3

FOOTNOTES TO TABLE ON DISTRIBUTION OF POPULATION AND HOUSEHOLDS (V-6)

* Population estimates for 1978 are based on projections for individual communities and the residual rural population for each district. Assumptions applied in the community projections are explained in Appendix Table A.

** "Core Region" encompasses the Manzini District plus the following portions of Hhohho District: Mbabane Expanded Area, Lobamba and Ezulwini.

*** "Urban" includes the communities listed below. The 1966 and 1976 Census tallies show urban population of 50,800 and 80,600 respectively. They do not include as urban the squatter settlements on the outskirts of Mbabane, the communities of Malkerns, Mankayana, Lobamba, Ezulwini, Sidvokodvo, Motshane or the concentrations of population settled around Pigg's Peak, Stegi, Big Bend or Mhlume. Because infrastructure investments and settlement in these areas may be the basis for future growth, depending on employment policy and opportunities, we include them in this analysis.

Core Region

Mbabane Expanded Area (Enum. Dist.'s 5001-31, 1528)
Manzini Expanded Area ..... (6001-23)
Bhunya-Mhlambanyati ..... (2503,2553)
Malkerns ..... (2301,2310)
Mankayana ..... (2527)
Lobamba ..... (1537)
Ezulwini ..... (1531,1538)
Sidvokodvo ..... (2341)

Balance of Hhohho District

Motshane-Ngwenya ..... (1539,1514)
Pigg's Peak Expanded Area ..... (1218-19)
Havelock ..... (1220)

Shiselweni District

Hlatikulu ..... (3242)
Nhlangano ..... (3347)
Lavumisa ..... (3536)

Lubombo District

Stegi Expanded Area ..... (4322,4324)
Big Bend Expanded Area ..... (4407-8,4413,4420,4423, 4440-2,4340)
Mhlume Expanded Area ..... (4201,4204-7,4215,4249)
Tshaneni ..... (4202-3)

*** "Rural" includes the balance of population in each district.

**** Numbers of households are a composite of 1976 Census count of homesteads and estimates for three of the individual communities. Details are shown in Appendix Table B.

***** Household estimates for 1978, 1988 and 1998 are based on household sizes prevailing in 1976. Numbers may not add due to rounding.

****** Reduction in average household size for Swaziland as a whole occurs over time because the smaller urban household units are projected growing at a faster rate than the rural households. Consequently they constitute an increasing proportion of the total.

The distribution of projected household growth by individual urban areas is presented in Table A-36. The rate of flow to the Mbabane and Manzini areas is seen to be double that of the past decade.

Recapitulation of Shelter Needs. Urban shelter needs over the next five years may be divided into two component parts: needs of people who have already settled in and around the towns, and needs of the families yet to come. Census data on living conditions set the scale of the problems of the first group:

* 5,150 urban homesteads without a source of treated drinking water
* 4,500 urban homesteads without toilet or sanitary pit latrine
* 14,600 urban homesteads in residential structures of nondurable or partially durable materials (which is only partially an indication of inability to afford lasting materials and much more significantly an indication of inability to secure tenure on the land so as to build a mortgageable house.)

The three types of problem generally occur in combination, but there are almost 10,000 of these urban dwellings where water and sanitation problems are not a critical health hazard. For the families in these households the crucial need is to secure tenure on a piece of land so they have the basis for improving the quality of their housing over time.

To the foregoing measures of urban need must be added the needs of new households in the urban areas:

* 2,200 urban families per year (700 per year in the Mbabane and 600 in the Manzini urbanized areas)

*11,000 over the five years 1978-83 who will need water, sanitation, land tenure and housing

Rural needs force a somewhat different set of priorities. There are:

*52,600 rural families lacking a source of treated drinking water

*49,000 rural homesteads without sanitary facility for human waste

*45,000 rural homesteads where nondurability of building materials is a problem at least for some of the structures

* 1,200 new rural homesteads forming each year or

* 6,000 new homesteads for which water supply will be the first order of need, 1978-83.

To these figures, both urban and rural, must be added the needs for shelter and relocation of any families displaced by urban redevelopment, public works projects or rural development area resettlement programs.

B. Household Income and Housing Affordability

There are no well developed data on household income in Swaziland, but because of their importance to this analysis, estimates of average and median income and income distribution have been made based on a variety of sources. This analysis required considerable judgment by the research team. Therefore, the tables should be used as planning estimates, not as actual data. They should be revised when better survey data becomes available.[2]

Average monthly income for urban families is estimated to be E190 ($218.00) per household in 1978. As estimated 47 percent of urban households cannot afford to live in shelter produced by the formal sector and therefore are most likely to be living under squatter conditions. Their incomes average about E95 per month.

High, medium and low income ranges are roughly defined on the basis of housing affordability. Low income families are those with 1978 monthly cash incomes in the E135-160 range. That is the level generally required to afford the one-bedroom prototype house of the Housing Unit at 1978 prices and market terms if monthly payments are held at 25% of monthly income. (This assumes unsubsidized units replicated in a new self-help project with costs for mortgage and homeowners' insurance folded into the mortgage total as in the Msunduza project.) To illustrate the relationship of this breakpoint for housing affordability to occupation and earnings scales, families at the top of this E160 group might include those headed by private sector male clerical workers or public sector male skilled workers. (See Table A-38.)

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2. The MLA Housing Unit has commissioned a study of housing quality and family incomes in the poorer sections of Mbabane and Manzini. Data forthcoming from this survey will be more definitive.

The breakpoint between middle and high income families occurs at E350 per month. This would place in the high income category most male public and private sector administrative and managerial and male private sector professional and technical occupations. Some male private sector skilled workers might be included as well. Civil service grades 11 and up would be high income.

Based on these definitions a distribution of urban income levels was created. It is presented in summary below.

TABLE V-7. SUMMARY OF INCOME DISTRIBUTION ESTIMATES

	Urban Non-Squatter Households (53%)	Urban Squatter Households (47%)	Total Urban Households (100%)
High Income (E 350+)	24%		13%
Middle Income (E 160-350)	55%	10%	34%
Low Income (E160 and under)	21%	90%	53%
Total	100%	100%	100%
Mean (E/month)	E 280	E 95	E 190
Median (E/month)	230	90	150

Note: Authoritative information on incomes is not available for any year since 1976. Economic Planning Office suggests in the Draft Third Plan that 1976-78 wage gains have not kept pace with rises in the preceding years (14% in 1975 and 24% in 1976), that the increases have been considerably less in the public sector than in the private and that cost of living has been catching up with the increases. In order to test the effect on housing affordability, alternative assumptions on 1976-78 household income growth are shown below. For the purpose of creating the income distribution an annual growth rate of 12% for those years was assumed.

Urban Household Category	1976 Mean Income Per Month	1978 Mean Income if 1976-78 Annual Increase is 8%	10%	12%
Non-Squatter	E223	E260	E270	E280
Squatter	E 76	E 89	E 92	E 95
All Categories	E152	E177	E184	E190

Housing prototypes have been defined on the basis of existing models, standards, and costs. A contractor-built one bedroom house with sanitary core, kitchen, and living room with 37 M^2 of gross building area at density 12.8 per acre can be built for E4,596 in 1978. If available, and if financed at market terms (SDSB) this unit would require E460 down and E41 monthly (plus utilities) and would be affordable by an estimated 65 percent of urban households (assuming 30 percent of total household income went for mortgage payments at 11 percent interest for 25 years). Table V-8 presents estimates on key data for the "minimal one bedroom house", two levels of standards for sites and services, and squatter upgrading.

Table V-8 distributes 1978 households (with particular focus on low income households) across the prototypes in accordance with shelter affordability on market terms. Although this establishes a context for program planning, it does not deal with policy decisions or recommendations about the rate at which the current housing situation should be improved.

Table V-8

ESTIMATED HOUSING NEED AND AFFORDABILITY[a] - 1978

(Based on planning assumptions, not empirical data. Footnotes appear on following page.)

	Swaziland Urban Families		Core Region Urban Families		Swaziland Urban Families in Informal Sector Housing		Core Region Urban Families in Informal Sector Housing	
	Number	%	Number	%	Estimated Number	%	Estimated Number	%
Total Families	30,830	100%	19,430	100%	14,500	100%	9,200	100%
Income Distribution (1)								
High Income (E 350+)	4,000	13%	2,530	13%	--	--	--	--
Medium Income (E 160-350)	10,480	34%	6,600	34%	1,500	10%	9[illegible]	10%
Low Income (under E 160)	16,350	53%	10,300	53%	13,000	90%	8,300	90%
Shelter Affordability by Low Income Families (2)								
Total Low Income Families	16,350	100%	10,300	100%	13,000	100%	8,300	100%
Can Afford One Bedroom House[b] (E 4140) at 25% of Income (E 135-160 monthly income)	3,400	21%	2,140	21%	1,600	12%	1,010	12%
Can Afford Full Sites and Services[c] (E 3000) at 25% of Income (E 110-135 monthly income)	3,420	21%	2,160	21%	2,250	17%	1,430	17%
Can Afford Basic Sites and Services[d] (E 1500) at 20% of Income (E 75-100 monthly income)	4,390	27%	2,760	27%	4,000	31%	2,560	31%
Can Afford Squatter Upgrading[e] (E 400) at 10% of Income (E 45-75 monthly income)	3,100	19%	1,950	19%	3,100	24%	1,990	24%
Cannot Afford Economic Housing (less than E 45 monthly)	2,040	12%	1,290	12%	2,050	16%	1,310	16%

Footnotes to Table V-8

Housing Prototypes - Illustrative Standards and Costs

a. Market Level Financing Terms at Swaziland Development and Savings Bank. 10% down, 11% interest, 25 year term for repayment (not past 25th birthday) 11.8% constant payment per year, maximum 30% of income for debt service.

b. One Bedroom Expandable Unit. One bedroom plus sanitary core, kitchen and living room with 37 M^2 gross building area at 12.8 per acre. Aided self-help unit. Mortgage includes insurance costs.

Total Cost = E 4140

Down Payment 414 (10%)

Mortgage E 3726 x 11.8%/year = E 37/month debt service

25% of income requires E 148 per month of household income

30% of income requires E 123 per month of household income.

c. Fully Served Sites and Services. Individual water tap for each dwelling unit, sewerage, sanitary core, 330 M^2 plots (6 per acre), no electricity.

Total Cost = E 3000 including land, infrastructure, and materials for house

Down Payment 300 (10%)

Financing E 2700 x 12.4%/year (20 year term) = E 28/month debt service

25% of income requires E110 per month of household income.

d. Basic Sites and Services. Water standpipe for each 4 dwelling units, individual pit latrine, lots @ 12/acre.

Total Cost = E 1,500 including land, infrastructure, and materials for home

Down Payment 150 (10%)

Financing E 1,350 x 13.6%/year (15 year term) = E 15/month debt service

20% of income requires E 75 per month of household income.

25% of income would require E 60 per month of household income.

e. Squatter Upgrading. Pit latrines, footpaths, etc. as called for in individual projects.

Total Cost = E 400 including infrastructure only

Financing E 400 x 13.6%/year (15 year term) = E 4.50/month debt service

10% of income requires E 45 per month of household income

25% of income would require E 18 per month of household income.

C. Motivation for Home Ownership

Swazi families who value home ownership are readily willing to spend 25 to 30 percent or more of their income on debt service for their homes. However, the history of heavily subsidized rental housing provided by government and by companies has made home ownership relatively less attractive. A few families who could afford to own their own homes on very favorable financing terms (9 percent mortgages for government employees) have taken advantage of these terms to build houses and rent them out rather than give up their government-subsidized rental units. This abuse, the carrying of two housing subsidies in one family, is being brought under control with increased scrutiny by government authorities.

Families selected for the first stage of the aided self-help project had incomes ranging from E40-E150 monthly [3], clearly within the category of low income by the definitions used in this report. This was possible due to subsidies on both costs and financing. Approximately 70 percent of the cost of completed units was passed on to the participant purchasing families. The remaining 30 percent was a subsidy by the government and U.N. grant assistance covering the infrastructure portion and costs of staff. [4] Financing was arranged through SDSB at 7 percent interest for 20 years with no down payment on the E200 plot. Current market rates are 11 percent interest for 25 years and 10 percent down payment is required.

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3. Source of this information is the Housing Unit of MLA.
4. A valid argument could be made that staff costs are part of the government's Housing Unit recurrent budget and therefore should not be counted as project overhead. From another viewpoint, however, the need to escalate the scale of shelter programs substantially implies a need for expanded Housing Unit staff resources. In the face of tight government controls over growth in the recurrent budget, there are advantages to an accounting procedure which classifies staff costs as project overhead. In this way they become part of the dwelling unit cost included in the mortgage and recoverable from the ultimate home occupants.

Squatter families typically "own" their own units, though they lack assured tenure to the land. Squatter units typically cost about E250: E115 for materials (roof, window, door and two bags concrete for the floor) plus E135 for the value of their labor in constructing it (500 hours @ E.27 per hour).

About 20 percent of squatter units are rented, typically at E5 to E12 per month. This would be 10-20 percent of family income in squatter areas of Mbabane and about 6-13 percent of family income in Manzini.

Water has been provided at standpipe locations at about one for every ten to twenty families at certain squatter areas. There is no charge to the residents for either the initial cost or the continuing water usage, over and above the E2 annual fee for temporary occupancy of government-owned land, if applicable.

Mobilizing Personal Income for a Shelter Program. Household income of urban families is one resource in Swaziland that appears not to have been tapped to its potential in providing shelter. Some families are capable of paying considerably more for their accommodations than they are paying now, if 25 percent of income is the criterion.

The foregoing affordability analysis "matches up" portions of the spectrum of urban household with packages of shelter services, i.e. the prototype accommodations each income group can afford without severe strain. Actually mobilizing resources of this sort, however, requires that there be programs which produce the facilities, and that mechanisms be created whereby individual families can assume the responsibility for paying off the costs of the shelter they occupy. The 1977 rural-urban migration study in the low income settlements of Mbabane and Manzini indicated that quite a number of families maintain savings accounts in a bank.

Some claim to be saving to purchase cattle. Others tell of housing aspirations. Yet shelter as an object of savings appears to be less competitive--not only because interest rates are relatively low (4 to 7 percent) and taxable--but also because shelter takes so very long to materialize.

D. Capital Requirements

If the 11,000 new households expected in Swaziland's urban areas over the next five years were to be provided shelter at standards related to their capacity to afford it so that no new squatting occurs, the capital requirement would be on the order of E20 million annually.[5] This estimate does not make a distinction between what portion would be with or without a subsidy. Nor does it imply any assumptions about which institutions should be responsible for satisfying any portion of the need. Nor does it include any provision for slum clearance or otherwise upgrading shelter for households living in the urban areas now. The E20 million would be an initial capital outlay for housing, land and on-site infrastructure. It does not include major infrastructure such as trunk line sewers or major roads and it does not include community facilities such as schools, sports fields or parks.

Certainly, a substantial part of such an investment could be channeled in the form of loans which would be repaid, possibly into a revolving fund for shelter reinvestment.[6]

The figure is not meant to imply a particular program outline, but rather to establish the order of magnitude of foreseeable needs. It sets a context within which alternative program proposals may be debated and priorities set.

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5. See Appendix A-44.

6. By contrast, it should be considered that the combined total of all outstanding bank loans for home mortgages today at the Development and Savings Bank and the Swaziland Building Society is E9.0 million.

Table A-39

ESTIMATED DISTRIBUTION OF INCOME FOR URBAN FAMILIES IN SWAZILAND

(1978 TERMS)

	% Total Families			Distribution			Cumulative Distribution		
	Non Squatter	Squatter	Urban Total	Non Squatter	Squatter	Urban Total	Non Squatter	Squatter	Urban Total
High Income									
E350+	13.0%	--	13.0%	24.5%	--	13.0%	24.5%	--	13.0%
Middle Income									
E160-350	29.0%	5.0%	34.0%	54.7%	10.6%	34.0%	79.2%	10.6%	47.0%
Low Income									
E135-160	5.9%	5.1%	11.0%	11.1%	10.9%	11.0%	90.3%	21.5%	58.0%
E110-135	3.9%	7.2%	11.1%	7.4%	15.4%	11.1%	97.7%	36.9%	69.1%
E75-110	1.2%	13.0%	14.2%	2.3%	27.6%	14.2%	100.0%	64.5%	83.3%
E60-75	--	5.3%	5.3%	--	11.3%	5.3%	--	75.8%	88.6%
E45-60	--	4.8%	4.8%	--	10.1%	4.8%	--	85.9%	93.4%
E18-45	--	5.5%	5.5%	--	11.8%	5.5%	--	97.7%	98.9%
E0-18	--	1.1%	1.1%	--	2.3%	1.1%	--	100.0%	100.0%
Subtotal Low Income	11.0%	42.0%	53.0%	20.8%	89.4%	53.0%			
Total	53.0%	47.0%	100.0%	100.0%	100.0%	100.0%			

Note: These estimates are based on Employment and Wages - 1976, the Establishments Register - 77/78, and the 1977 urban-rural migration survey. As these sources are based on different segments of the labor force, and no source of household income data covers all population segments, considerable judgement has been exercised by the researchers in interpolating these estimates from the data. These estimates should be replaced as soon as better data becomes available. Also, it should be remembered that these income estimates exclude expatriate income earned from abroad.

Table A-40

Derivation of the Household Income Distribution of Swaziland
1976 and 1978

This table is derived primarily from information on wages manipulated through the methodology described on the next page. There probably is a skewing of this data downward from the nature of the source data. For example, expatriates are included but that portion of expatriate income which comes from foreign donor sources is not included.

Avg. Monthly Cash Income 1976	1978 (+ 12%/year)	Total Homesteads	Urban Homesteads	Rural Homesteads
E540+	500+	1,000+	1,000+	
400	500	640	640	
350	440	700	700	
300	375	1,000	1,000	
250	310	1,300	1,300	
200	250	2,210	2,000	210
150	190	6,000	3,000	3,000
100	125	22,000	10,000	12,000
50	60	21,200	5,200	16,000
25	30	30,800	800	30,000
Total Homesteads		86,850	25,640	61,210
Total Monthly Cash Income (1976)		7,200,000	3,900,000	2,200,000

Notes:

1. 1E = $1.15
2. Wages increased by 12 percent in 1975 and 23 percent in 1976 according to the Central Statistical Office', Employment and Wages, 1976. Projection to 1978 assumes the lower rate of 12 percent which is about equal to increases in the cost of living.

Continued on next page.

Footnotes to Table A-40, Continued

3. In the absence of actual data assumptions were made concerning general indicators of the distribution of homestead income. The approach outlined below should be validated or replaced by empirical data as soon as survey reports become available:

   a. Average monthly wages for non-agricultural male wage earners by skill level for both public and private sectors were taken from the Central Statistical Office', Employment and Wages, 1976. This represented a distribution of male wage earners into twelve income levels ranging from E51/month for private sector, unskilled workers to E581/month for private sector professional and technical employees. These were assumed to be heads of homesteads. (See Table A-38.)

   b. Male wages earned were increased by 25 percent to reflect additional homestead income produced by wage earning women (assumed to be wives). This was regarded as homestead income.

   c. Homestead income was reduced by 15 percent to adjust for money sent to the rural homesteads.

   d. A distribution curve of these twelve cells of assumed levels of homestead income was made, reasonable income intervals were marked off and the numbers of homesteads within them were counted.

   e. Allocation of some of these wage earning homesteads was made to rural areas as guided by employment in forestry, mining, and quarrying.

   f. Non-wage earning rural homesteads were distributed by income based on de Vletter, The Rural Homestead as an Economic Unit, July 1978, p. 23.

APPENDIX 46

RURAL-URBAN MIGRATION STUDY

In the summer of 1977, students at the University of Botswana and Swaziland* conducted a survey in a number of the low income, informal shelter settlements of Mbabane and Manzini. The questionnaire attached to this appendix was administered to approximately 300 respondents. They were distributed among the settlements as follows:

Low Income (Migrant) Housing Area	No. of Survey Interviews	
Mbabane and Vicinity		94
Fonteyn	13	
Mangwaneni	19	
Corporation	12	
Msunduza	27	
Mvakwelitshe	4	
Sidwashini	19	
Manzini and Vicinity		206
Khoza's Area	94	
Kwaluseni	9	
Moneni	51	
Zakhele	29	
Kamanzana	3	
Sitandeni	20	

Students were instructed to interview at every third house (not a randomly selected sample) and to go on to the neighboring house if they found no one at home or a respondent unwilling to be interviewed.

The questionnaires were coded and tabulated for selected questions in July 1978 by the Rivkin Associates' team. After being culled to remove obviously invalid or inconsistent questionnaires, there were approximately 285 questionnaires remaining in the sample. Not all questions were answered in each case so the sample size for individual questions varies. In the case of monthly income data reported in Figure 9, p.IV-16, for example, the weighted average figures for households reporting income from all sources (e.g. salaries of all household members, room rentals, informal sector enterprises, et al) was computed. Other information presented in the Figures 9-13 of Chapter IV was checked against enumeration district tallies from the 1976 Census (e.g. shelter occupancy) or the Rivkin team's observations from field visits and a limited number of interviews.

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* Under the supervision of Fion de Vletter.

The survey was designed with objectives other than strictly gaining data on which to base the planning of shelter. Therefore, much information that would be crucial to a housing program (e.g. current savings practices, expenditure patterns and the capacity of various income strata to save) is not systematically obtained. Nor is comparability with other available data easily established.

Income information for families who applied to participate in the Msunduza aided self-help housing project shows a monthly average of E76 in 1978. The difference between this level and the E55 of the UBS survey could be attributable to sampling error, inflation between 1977 and 1978 and possibly even a bias because the lowest income families of Msunduza would not be applying for the Housing Unit project. Even while this shelter sector study is being completed, a survey of housing quality and incomes in the low income areas of Mbabane and Manzini is in process for the Housing Unit. The new survey may be expected to reveal a more definitive picture. Thus, the Rivkin team has urged that income estimates in this shelter sector study be regarded as judgmental and indicative only.

For the purpose of designing a shelter program such as this study outlines in its recommendations, the Government of Swaziland will need proper survey data for the low income population of all the towns and significant settlements in urbanizing areas. It will be important to gain knowledge of the resources and income potential of the families who will be migrating to the urbanizing areas over the coming years as well as the families who have already arrived. An inventory of shelter conditions, costs, production levels, and availability in the smaller towns will also be necessary for the planning of appropriate program components.

Mbabane-Manzini Rural-Urban Migration Study

Department of Economics,
University College of Swaziland

Name of Interviewer _____ Date _____

Area of Interview _____ Household Number _____
(If possible)

Description of Premises

Sex of Respondent ___Male ___Female Position in Household _____

_____

Background/Motivations/Achievements

1. How old are you? _____

2. What level of education have you attained? _____

3. Where is your "home"? (i.e. place which could be considered a family base)
(Specify area by name, district and nearest town)

4a. When did you leave your home area? _____

Why did you leave your home area?

Where did you go and what did you do from the time you left your home area to moving to this area?(Ask respondent to indicate all places lived in and all employment activities engaged in during that time)

What would you have done if you had remained in your home area?

What attracted you to come to this area?

What type of employment did you expect to obtain on moving to this area? (Ask respondent to indicate what he realistically expected to do as opposed to what he/she wanted to do)

What type of work have you done since arriving in this area? (Ask respondent to indicate all forms of income generating activities engaged in)

. Are you satisfied with your present form of employment?_____

If YES: How long were you in this area before obtaining satisfactory work?

If NO: Why not?

Family Structure

6a. Who did you stay with when you first arrived in this area?

b. How long did you stay with them?_____

. Did you stay in any other households before moving into this house?_____

If YES: Who did you stay with and for what periods of time?

7. Who lives in this household presently? (Ask respondent to specify relationship and age of each inhabitant including all non-family members)

8. Do you or any of your family own a rural homestead? (Explain)

If YES: Who lives in rural homestead? (Ask respondent to specify relationship and age of each inhabitant to the best of his/her knowledge)

9. How many people do you support with your income? (Explain)

Income Flows

10a. What types of activities/employment are you presently earning income from?

b. How much do you earn per month from these activities/employment?(approximation) (Break down by activity if possible)

10c. Who else in your household earns income? (Specify who, what type of work and approximate monthly income)

11. Do you receive food or any goods from your rural homestead?_____

If YES: What types of food/goods and what quantities per month (approximately)?

Expenditure Patterns

12. What do you consider your main items of expenditure are? (list in order of importance if possible)

13. Do you send money or goods to your rural homestead?_____

If YES: Approximately what value, how often?

14. Do you plan to buy cattle with your earnings? (Explain)

15. Do you save or plan to save any of your earnings in a bank or its equivalent? (Explain)

Housing

16a. Do you own or rent your house?

b. Who owns the land that you live on?

c. If respondent rents house/land ask: How much do you pay per month for: i/ house

ii/ land

17. Do you rent out or sub-let any rooms in your house? _____

If YES: How much do you earn from rent per month?

18. What payments do you or did you make to: i/ municipality/govt. (Explain in each case)

ii/ local chief

iii/ other (Explain)

19. Have you already or do you plan to spend much money on household improvements or expansion?

If YES: ask respondent to give details.

If NO: Why not?

20a. What do you feel are the main problems of housing in this area?

b. What preblems do you believe require immediate attention?

Services

21. Have any members of this household fallen seriously ill or died

If YES: ask respondent to specify the age of those afflicted an

22a. When ill what medical facilities would you use? (Tick appropriate category(ies) and ask respondent to elaborate if possible)

___ Government Clinic

___ Government Hospital

___ Private Clinic

___Mission Clinic/Hospital

___Private Practitioner

___Swazi Traditional Doctor

___Other (Specify)

b. What do you feel are the main problems of the medical facilities provided for this area?

23a. How far away is your nearest suitable water supply?

b. How is it fetched?

___stream

___stand pipe

___household plumbing

24. How are your wastes disposed of? (Ask respondent to indicate separately for human waste and rubbish)

25a. How many members of this household go to school?

b. If there are any members of the household who are eligible to go to school but do not, why don't they?

Attitudes

26. Would you be willing to consider manual work in any of the following areas? (Ask respondent to explain why/why not for each case)

i/ South African mines (only if respondent is male)

ii/Farming or forestry in South Africa

iii/ Manufacturing sector in South Africa

iv/ Mining in Swaziland

v/ Citrus plantations in Swaziland

vi/ Sugar estates in Swaziland

vii/ Forestry in Swaziland

viii/ Other commercial farming in Swaziland

27. Do you think you will ever leave this area and return to your home area for any period exceeding one year?_____

Why/why not?

28. <u>If respondent does not have his/her own rural homestead ask:</u>

a If you were given land for your own homestead would you return the land? (Explain)

b. Do you think you will ever have your own land for a homestead?

<u>If YES</u>: When?

<u>If No</u>: Why not?

32b. If respondent feels that they have changed ask how they have changed in respect to the following:

i/ marriage

ii/ kinship ties / extended family relations

iii/ respect for elders in family

iv/ respect for traditional authority e.g. chiefs

33a What aspects of life in this area do you like in relation to living in rural area?

b What aspect of life in this area do you dislike in relation to rural area?

SUPPLEMENTAL READING TO TARGETING AND TARGET GROUPS

II. BASIC NEEDS IN SHELTER

APRIL 1979

Prepared by Anthony A. Churchill
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Urban Projects Department

BASIC NEEDS IN SHELTER

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SUMMARY AND CONCLUSIONS

I. This paper is divided into four sections. The first section examines the role shelter plays in meeting basic needs, discusses the factors governing the supply and demand for shelter, and highlights the approach being developed within the Bank to meet these needs. Section two discusses the issues and problems encountered in developing projects of this type. Section three develops a global estimate of the size of the problem, and section four concludes with the role to be played by the Bank in supporting basic shelter projects.

II. The main conclusions of the paper are:

(1) Meeting the basic needs for shelter is well within the resource constraints of most developing countries, i.e., the shelter sector is not a bottomless pit into which scarce resources must be poured unendingly. On average, an 0.8% increase in the share of GNP devoted to housing worldwide (presently between 3% and 6% in most countries) would suffice to provide adequate shelter for low-income groups by the year 2000.

(2) The problems of the provision of shelter are of primarily an institutional nature. Institutional constraints on the supplies of land, public services, and finance have so inflated the cost of housing that only extremely low-quality housing is affordable by the poor.

(3) Overcoming these institutional constraints will be a long and difficult task but, fortunately, there is a growing awareness of the need to change traditional approaches to the provision of shelter.

III. Other points highlighted in the paper are:

(1) From 1980 to 2000, the number of poor households in urban areas will double, while in rural areas their number will actually decline. Thus, the shelter problems of the next two decades are primarily an urban problem, more intractable and less in the hands of households than those of rural areas.

(2) The basic needs of the very bottom end of the income distribution are difficult to reach through shelter programs that emphasize home ownership. The problems of this group are characterized often by quite specific social problems, e.g., physical and mental handicaps. Shelter programs can contribute, however, to improvements in the welfare of this group by improving the availability of rental accommodations and by the general upgrading of the environment.

(3) The public sector needs to concentrate its efforts on improving the supply of public services - not on housing per se. Generally, the poor feel able to construct their own dwellings; what they cannot do is provide services to go with them. Services have not been extended rapidly enough to meet the needs of low-income settlements that now surround most urban areas.

(4) Recovery of costs from beneficiaries is an important element in the success of any shelter program. Without cost recovery it is difficult to keep standards down to affordable levels and replicability is endangered. In addition, large subsidies to the urban poor may divert resources from other high-priority programs. If those in urban areas are paying for what they get, inefficient use of scarce resources is minimized.

(5) Increases in the aggregate level of employment are important factors in insuring the smooth transfer of populations out of low-productivity agriculture. However, new evidence on unemployment and under-employment indicates that these are not the main problems for urban dwellers. Some rethinking of the role of employment components in housing projects must be undertaken.

(6) The efficient management of urban areas is of critical importance in improving the capacity of cities to absorb the inevitable large increases in population productively. Efficient management has more to do with the packaging of services than the delivery of any one service. The packaging of services, particularly when linked to land tenure, broadens the scope for cross-subsidies and income transfers within the community as well as enhancing the prospects for cost recovery.

iv. It is suggested that if the Bank is to play an important role in promoting a realistic approach to resolving the shelter problems of low-income groups, it should continue to expand its activities in this area. A target of 25 projects and US$1 billion in lending (7.3% of the Bank's program) by FY1983 is considered both desirable and feasible. At this rate the Bank would be involved in financing some 20% of the total effort. This is a feasible goal and would be consistent with the present effort at building up the Bank's capacity. Whether or not this number of projects is actually programmed would depend on the results of the development priorities determined on a country-by-country basis.

I. BASIC NEEDS IN SHELTER

1. While the concept of basic needs has its economic dimensions - it deals with the supply and demand for scarce goods and services - it does not depend on economics for its justification. Its justification rests primarily on value judgments about the desirability of consuming a certain bundle of goods and services described as "basic." The fact that value judgments are involved means that "basic" can never be defined in an absolute sense. What is basic will depend on the perceptions and judgments of those making the decisions to supply or demand these goods and services and is likely to be specific only to the socio-economic framework within which the judgments are made.

2. The relativity or arbitrariness of the concept does not invalidate the approach. It does suggest, however, that some caution is required in its application. Explicit recognition of the value judgments involved will avoid the futile pursuit of "absolutes" and permit a more reasonable discussion of the alternatives and trade-offs in the package of goods and services considered to be desirable.

3. In any discussion of basic needs the role of shelter is always given prominence along with food and clothing. Shelter does not mean, however, simply protection from the elements. Shelter is always somewhere, thus it must have a location. The fact that many poor families choose, for example, to live in more expensive and crowded but central urban locations over having more land in the suburbs is indicative of the importance of its locational aspect. This in turn ties in with other important attributes of shelter; it is not just a roof overhead, but a series of services that are an integral part of the specific location and dwelling. These include water supply, sanitation, power, community services, and environmental factors in general. It is when shelter is considered within this broader and more appropriate context that its importance in meeting basic needs becomes more obvious. It is not one service but many services linked to a specific location.

4. Taken in this broad context, it is difficult to define what is "basic" about shelter. Shelter is in fact a multitude of services which can only be discussed within a specific context and as a whole rather than in terms of a particular service. In Korea, for example, a "basic" shelter solution must necessarily include an enclosed and heated space. In less rigorous climates an enclosed space may be unnecessary. The question of a healthy or environmentally sound solution cannot be seen simply in terms of adequate water supplies, but must also take into consideration the disposal of human and other wastes. Thus what is "basic" must be considered within a given cultural, physical, and economic context and generalizable definitions are just not possible. Fortunately, it is unnecessary for the Bank to enter into discussions of these definitional and conceptual quagmires in order to develop practical, albeit imperfect, tools for encouraging the development of appropriate sets of policies and goals in the shelter sector.

5. Household surveys generally break consumption expenditures into broad categories such as food, clothing, and shelter. Usually within the specific context of the survey, i.e., the socio-economic group and nationality of the household, reasonable and consistent definitions of shelter are possible. While some room for dispute is possible at the margin, there tends to emerge a consensus of what are the elements that constitute shelter in that particular context. Difficulties tend to arise when the quality of shelter is traded off against locational advantage, i.e., the extent to which transportation should be included or excluded within the definition of shelter. Some households will pay less for shelter but more for transport costs, and vice versa. Although this factor is important, it does not seriously limit the usefulness of this type of context-bound definition of shelter in the formulation of policies and investment programs.

Rural and Urban Shelter

6. In physical terms, i.e., space standards and amenities, there is often very little difference between the shelters of the rural and urban poor. In many cases, rural shelter forms are simply transposed to the low-income settlements that surround most urban centers. Similarly, there is little difference in health and environmental conditions between rural areas and urban low-income settlements.1/

7. There are, however, a number of important differences that suggest variations in approach in providing for basic needs:

(1) Urban shelter needs are growing faster in absolute terms; more than twice as many new shelter units will be required in urban as opposed to rural areas (see Table 1).

(2) There are growing indications that urban, low-income residential areas, while starting off at the same level of health and environmental parameters as rural areas, may, in fact, be experiencing a general worsening of conditions. The nutritional intake of slum dwellers, for example, is often lower than in rural areas.2/

(3) The high concentration of low-income groups in urban areas with inadequate shelter in daily contact with the urban elites and their rising standards is potentially more politically and socially explosive than the problems of widely scattered rural settlements.

1/ Samir Basta, "Nutrition and Health in Low-income Urban Areas of the Third World," Ecology of Food and Nutrition, 1977, Vol. 6, pp. 113-124.

2/ Ibid., Basta.

Table 1: GROWTH OF HOUSEHOLDS IN POVERTY, RURAL AND URBAN, 1975-2000

Urban Poor Households ('000's)

	1975	+/-	1980	+/-	1990	+/-	2000
E. Africa	1,039	+330.5	1,369	+1,175	2,544.5	+2,158.5	4,703
W. Africa	1,072	+333	1,405	+861	2,266	+961	3,227
E. Asia & Pacific	2,664	+1,491	4,155	+956	5,111	+633	5,744
S. Asia	10,213	+3,757	13,970	+7,285	21,255	+11,300	32,555
EMENA	5,581	+669	6,250	+1,324	7,574	+1,169	8,743
LAC	12,945	+1,078	14,023	+2,775	16,798	+2,530	19,328
Total	33,514	+7,658.5	41,173	+14,376	55,548.5	+18,751.5	74,300

Rural Poor Households ('000's)

E. Africa	5,902.5	+555.5	6,458	+1,100	7,558	+1,067	8,625
W. Africa	2,670	+268	2,938	-450	2,488	-250	2,238
E. Asia & Pacific	14,327	-1,774	12,553	-834	11,719	-1,847	9 9,872
S. Asia	49,677	-878	48,799	-7,763	41,036	-8,327	32,709
EMENA	4,563	-802	3,761	-1,428	2,333	-930	1,403
LAC	6,040	-1,108	4,932	-1,904	3,028	-1,407	1,621
Total	83,179.5	-3,738.5	79,441	-11,279	68,162	-11,694	56,468

Source: See Appendix.

(4) The provision of shelter in rural areas can rely more on individual initiative than in urban areas where collective, often public, solutions are made necessary by the concentration of population.

The first three points emphasize the urgency of the needs of urban areas, the last point emphasizes the organizational and management requirements, both scarce commodities, of shelter solutions in urban areas.

8. In urban areas the need is for large numbers of new units to accommodate the rapid increase in the number of households. In rural areas, the need is more for upgrading of existing units together with the provision of social services. In both rural and urban areas, the needs are substantial and priorities must be set.

9. Although considerable differences will exist between countries and at different points in time, it is likely that promotion of adequate urban shelter will have a higher priority and a greater claim to resources, particularly of the public sector, than rural shelter per se. This is not because the needs of the rural population are unimportant, but because the solutions to the rural shelter problems are much more in the hands of the households themselves. The lack of administrative barriers, the greater availability of land for structures, together with the availability and experience with using traditional building materials and less costly sanitary solutions, will permit rural households to expand or improve their dwellings more readily as incomes rise. In urban areas, even with rising incomes, the implied increase in effective demand for adequate shelter will not necessarily engender the necessary supply response.

Demand and Supply

10. Before discussing the provision of basic shelter, one must first determine whether any acceptable shelter can be provided for those at the lower income levels at a cost which can be covered by the proportion of total income (usually between 15-25%, see Appendix) normally spent on shelter services (i.e., a shelter solution which satisfies the income constraint).1/ What is acceptable can include both acceptability by consumers and acceptability in terms of health or other environmental and economic parameters.

11. The desirability of remaining within the income constraint when considering basic shelter solutions is further enhanced when consideration is given to the overall resource constraints of the economy. There is a large degree of overlap between what is affordable by the household and what is affordable by society as a whole. Few countries have either the resources

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1/ The income of the poor may not always be the binding constraint. As is suggested in para 63, there may be some limited possibilities for transfer of income (or shelter services) from higher income to lower income groups. The possibility of these transfers on any scale will be limited to higher income countries where the question of what is "basic" in an absolute sense, i.e., necessary for life, seldom arises.

or the political will to transfer sufficient amounts of income to subsidize shelter programs for large numbers of their lower income citizens, leaving them no choice but to make such programs largely self-supporting.

12. The experience to date with low-income shelter projects indicates that it is possible to provide adequate and acceptable shelter solutions within this income constraint for all except possibly the bottom 10% of the income distribution (see paras 26-33). Seldom has income been the binding constraint. In all but the very poorest societies, more can be afforded and more is spent than would be required for the "minimum" safe environmental shelter.1/

13. If, as is suggested above, income is seldom the binding constraint in the provision of adequate shelter, the question arises as to why so many of the poor of the world have to live in what would appear even to the most casual empiricist as inadequate shelter. The demand for adequate shelter exists in all countries and within countries across the whole spectrum of the income distribution. This is in contrast to some goods and services (e.g., family planning, education, nutritional intake) considered to fall within the idea of "basic," where because of custom, ignorance or tradition, the level of effective demand is judged to be inadequate. The poor do not live within crowded and unsanitary shelters because of ignorance or lack of knowledge of the alternatives. All evidence suggests that low-income groups can and will spend a sufficient portion of their limited incomes to purchase secure and sanitary shelter.

14. The problems of the shelter sector do not lie on the side of effective demand. Consumption of shelter is low because its price is high due to the failure of the supply system. Experience with the Bank's projects consistently has demonstrated that it is possible to provide low-income groups with secure and environmentally sound shelter at prices they can afford within the constraint of their incomes and the proportion of this income they are prepared to devote to shelter. The problems of the supply side fall under three general headings: land, public services, and finance.

Land

15. The supply of land for shelter is almost an exclusively urban problem. The problem is not one of inadequate land per se, but rather one of delivering this land, particularly to low-income groups, for use in the construction of shelters. The problem is for the most part an institutional

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1/ One recent exercise suggested that US$1,000 per household be considered the minimal amount of capital required to meet shelter expenditures. Assuming a real rate of interest of 6%, and 20% of income devoted to shelter, this amount of capital expenditure would be affordable with a household income of US$25 per month or US$300 per year. (Assuming 6 persons per household, it implies an annual income of US$50 per person.) S.J. Burki and J.J.C. Voorhoeve, Global Estimates for Meeting Basic Needs, Background Paper, PPR, August 1977.

one. Land is usually a small part of the total cost of shelter,[1/] but it is a vital part. Without some form of security of tenure the poor will not make the necessary investments to improve their shelters. Upgrading projects (e.g., the Tondo in the Philippines) are dramatic examples of what can happen once security of tenure is given.

16. The institutional factors that constrain the supply of land are many and vary considerably from country to country in their importance. In some cases, cities have expanded into the surrounding agricultural land where large landholdings have provided a few landlords with monopoly powers (e.g., San Salvador, El Salvador). In others, confused titles and cumbersome legal systems have raised the costs of transferring land to the point where they cannot be afforded by those wishing small plots. More common are size and occupancy conditions that effectively ration the poor out of the formal land markets. Even in those countries that have nationalized land (Tanzania, Zambia) or where most land is already in state hands (Mali) means for distributing this land to low-income groups have yet to be devised.

17. Urban land reform is as urgent a problem as rural land reform, but is likely to be even more intractable.[2/] With the best will in the world, there are difficult technical and social problems associated with changing and adapting traditional land tenure systems to promote the equitable distribution of land within cities. Unfortunately, this will is not always there, and there are strong vested interests in maintaining the status quo.

Public Services

18. The delivery of these services is particularly important to low-income settlements. At low-income levels a higher proportion of shelter costs is accounted for by these services.[3/] In household surveys where low-income residents are asked to list their priorities, it is common to find housing *per se* well down the list with precedence given to water supply, education, transportation and other services. Generally the poor feel able to construct their own dwellings; what they cannot do is provide the services

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1/ The following figures are for land cost as a percentage of total shelter cost in several World Bank projects: Nicaragua, 13%; Senegal, 5.5%; Tanzania I, 0.5%; Tanzania II, 3.6%; Zambia, 0.8%. In the United States from 1968-1973, land costs constituted, on average, only 2% of the monthly cost of housing. Even when land cost is taken as a proportion of capital costs alone, it constitutes only 8.3% of costs. See B. Bruce-Briggs, "The Cost of Housing," The Public Interest, 1973. Also, Bernard Friedan, "The New Housing Cost Problem," The Public Interest, Fall 1977.

2/ See H.B. Dunkerley, A. Walters, J.M. Courtney, W.A. Doebele, D.C. Shoup, and M.D. Rivkin, Urban Land Policy Issues and Opportunities, World Bank Staff Working Paper [illegible] 283, May 1978.

3/ In recent Bank projects, it has varied from 20-30% for most projects but has been as high as 50% (India).

to go with them. Although most governments have maintained monopolies on these services, they have not extended services rapidly enough to meet the needs of the low-income settlements that now surround most urban areas. Unserviced settlements have been growing faster than they have been serviced.

19. The reasons for this disappointing record vary somewhat from country to country. Under the best of circumstances, the task would be a gargantuan one, and in most countries circumstances fall far short of the best. Part of the explanation lies in the slow recognition of the problem. It is only in the last 25 years that most urban centers have experienced this type of population growth, both in terms of the numbers and the income levels. The initial reaction was to assume it was a transitory phenomenon that could be eliminated - hence the commonly found policy of bulldozing slums and squatter settlements. It is only recently that it is being recognized as a permanent feature of the urban landscape and it is only with this recognition that the search for solutions has begun.

20. In general unrealistic standards have seriously limited the rate of expansion of these services. Low tariff structures and inadequacies in the financial performance of the supplying institutions have required large infusions of scarce public funds. Low subsidized tariffs (or the failure to raise tariffs along with inflation) are often allegedly justified in terms of their favorable impact on the poor. Unfortunately, without access to the system, the majority of the poor receive very little benefit from these policies. It is small comfort to observe that the price is low if the poor cannot get the service. It is common to find, for example, the poor paying for water anywhere from 10-20 times the amount paid by higher income groups that are connected to the public water supply system.

21. It is ironic to note the difference in access of low-income areas to electricity and water. It is not unusual to find 85-100% of low-income areas supplied with electric power and only 10-15% supplied with water. The fact that electricity is regarded as less of a merit good than water is an important factor in determining its greater accessibility. This has meant that it has been more acceptable to provide it on commercial terms, i.e., at rates that cover costs and to have the service cut off if bills are not paid.

Finance

22. In most countries, little financing is available for low-income housing. Some finance, usually highly subsidized, is passed through public-sector institutions (e.g., social security institutions) and is available only for public-sponsored housing. Little of this reaches the poor. There are very few private-sector institutions providing finance for housing in developing countries and those that do provide it on short term to higher income groups. Some large employers also provide loans for employees for housing, but this finances only a small proportion of the total housing stock.

23. The bulk of low-income housing is financed out of the savings of the households themselves without involvement of any financial intermediary. One recent survey of low-income housing in Cartagena, Colombia, for example, found less than 10% of low-income housing had any debts against it.[1/] The common pattern appears to be one in which a slow accumulation of funds or materials determines the pace of construction. There also appears to be a high marginal propensity to put any windfall or unexpected income into housing. In Cartagena[2/] it was found that many of those that improved their housing did so in response to remittances received from family members' work outside the country. A similar pattern is observable in North Africa, Turkey and parts of India and Pakistan, where workers' remittances are an important source of income.

24. The lack of significant intermediation of financial institutions in lending for low-income housing undoubtedly contributes to the inefficiency of the whole process of shelter construction. There is obviously a strong desire on the part of low-income groups for improved shelter, and at the same time, there appears to be a great willingness to save in order to invest in improving the housing stock. Greater intermediation between savers and investors should improve the whole process.

25. One important reason for the absence of mortgage lending is the insecurity of the tenure rights of the borrower combined with the lack of protection of the lender. The security offered by a mortgage has little value if the borrower has no clear title or if the lender is unable to posses the property in case of default. In addition to these largely institutional problems, the use by most governments of credit rationing in one form or the other, either through restrictions on types of loans or terms of loans, has usually resulted in poor households being rationed out of the formal credit markets.

Shelter Needs and Welfare

26. In the brief analysis above of the major problems encountered in the provision of shelter, emphasis is placed on the supply constraints and the assumption is made that there is sufficient effective demand even in low-income countries to provide adequate shelter, including essential public services, for most of the population. This does not rule out the possibility that the provision of shelter can be used as an instrument to achieve goals of income redistribution or other welfare objectives. Shelter programs with these welfare objectives, however, have not been a notable success in either the developed of developing countries.

1/ W.P. Strassmann, Basic Shelter in an Urban Framework, World Bank, mimeo, November 1978, pp. 81, 161.

2/ Ibid.

27. One of the reasons for the failures of these programs has been their tendency to regard the poor as a homogeneous group, when in fact large differences in income and wealth are to be found within groups at or below the poverty level. Programs have thus tended to be too broadly based and have wound up trying to cover a much larger group than either necessary or affordabl General interest rate subsidies to low-income housing usually fall into this category, as do a wide variety of public service subsidies. The extent of the subsidies required results in most of the poor being excluded from access as the comparison between power and water supply so ironically reveals.

28. Household surveys of low-income groups reveal a number of characteristics of the very poor which makes it difficult to reach them effectively through the normal provision of shelter or related public services.1/ A large percentage of the first and second deciles of the income distribution in any low-income urban settlement contains significant numbers of transients who often show no income at all. Given the large flow of migrants in and out of cities, it is not surprising to find these job-seekers showing up temporarily at the bottom end of the income scale. In addition, the bottom deciles of the population "...may consist of the young unemployed, the old unemployables, the aged and the infirm."2/ To this could be added the mentally and physically handicapped.

29. The problems of groups like these are more complex than can be addressed by provision of shelter, water supply, health facilities, and other public services. Even if these facilities exist, they may not be able to utilize them adequately. These are the welfare problems that exist in all societies and in developing countries in particular they are concentrated at the bottom end of the income scale. In traditional societies, they are given some protection through the extended family system, tribal customs, and religious institutions. As the pace of urbanization proceeds, this role is being assumed (usually badly) by the state.

1/ The results of most traditional household surveys need to be treated with a great deal of caution. Results describing the bottom end of the income distribution often are meaningless - large numbers with no income at all. In poor societies, they could not survive if this were true. Similarly these surveys, because of the problems of defining both income and employment, undoubtedly exaggerate the degree of unemployment and underemployment. In one recent study of this issue in Families in Port-au-Prince by Simon Fass (AID document, September 1977), very little unemployment and underemployment were found although traditional survey techniques produced unemployment rates of 30% or more.

2/ Rakesh Mohan, Workers of Bogota, World Bank City Study (mimeo), November 6, 1978, p. 74.

30. The importance of understanding the nature and causes of the poverty of these very low-income groups cannot be understated if realistic shelter programs are to be devised for both this group and those with slightly higher incomes. All too often laudably motivated welfare objectives can lead to programs that not only fail to meet the limited objectives with respect to these very low-income groups, but at the same time can cause failures in the supply systems of public goods and services to those groups that can afford them

31. Even within the social constraints that are generally associated with attempting shelter solutions for the bottom 20% of the income distribution, it is possible to develop shelter programs that can contribute to improving the welfare of this group. First, there is obviously some scope for improving the design and financing of shelter programs so that home ownership solutions with cost recovery can reach further down into the second decile of the income distribution. There are limits, however, as to how low an income group can be reached through programs that emphasize self-help or home ownership. Many of those in the bottom two deciles are inevitably renters rather than owners. Their sources of income are either too unstable or insufficient to permit them to commit scarce resources for investments in shelter.

32. Programs that insure an adequate supply of rental accommodations are most appropriate for this group. In many low-income areas it is traditional to rent rooms to cater to this demand for rental accommodations. In both sites and services and upgrading projects, renters benefit by the pressures exerted on rents by the increases in supply of rental accommodation and, perhaps more importantly, by the general improvements in the environment (e.g., water and sanitation) and access to community facilities.1/

33. For those at the very bottom end of the income scale (5-10%), some benefits will be received from the general improvements in the community, but more often than not their problems are only peripherally related to the inadequacy of their shelter. Specific recognition will have to be given to solutions that will address their particular problems - such as age and/or mental and physical handicaps.

Meeting the Supply Constraints

34. To resolve the shelter needs of low-income groups will be no easy task. The constraints are more often of an institutional nature than a lack of resources. These institutional problems have their roots in long-entrenched traditions, prejudices, and practices which will require a sustained effort if they are to be overcome. One factor that will speed changes is the rate of change occurring in the cities themselves. The strains and stresses of the existing social fabric are obvious and with it a growing willingness to experiment with new solutions.

35. While the catalogue of supply constraints falls into readily discernible categories, the solutions are less susceptible to such neat compartmentalization. The solutions require a complex approach that tries to address all of the constraints at the same time. The institutional nature of these constraints also requires that the solutions be as complex and as varied as the institutional problems themselves.

1/ It should be realized, however, that without an increase in the total supply of shelter, improvements in quality may result in the poor being priced out of improved shelter.

36. The Bank has developed various approaches for meeting the shelter needs of low-income groups and, while the approach is being continuously refined, the elements of the strategy are reasonably clear. In some instances, the strategy has involved the extension of the Bank's more traditional approaches in sectors such as water supply, power, transportation, sanitation, and education by specifically designing projects so that these services reach the lower income groups. As pointed out in paras 18-21 above, the provision of many of these services is of critical importance to low-income groups who can usually undertake the provision of shelter itself, but who cannot provide the complementary services.

37. The sector-by-sector approach by itself, however, has had certain weaknesses which have required the development of more comprehensive and integrated approaches of shelter provision in order to strengthen the impact of these services on low-income groups. Most of these services, when taken by themselves, have an important role in the provision of shelter, but their impact is considerably enhanced when they are provided in a complementary manner. Provision of water supplies alone, for example, will have a minimal effect on health unless complementary measures are taken to improve human waste disposal. Removal of stagnant waters and dangers of periodic flooding through drainage projects will have limited usefulness unless there is a system of solid waste removal to prevent the clogging of drains. To bring these services together requires a considerable degree of planning and integration of investments in urban services that is by and large lacking in most urban areas. These services are usually fragmented among different agencies and different levels of government and the coordination of investment is at best haphazard.

38. In addition to the problems of coordination, the purely sectoral approach has the disadvantage that it does not lend itself to addressing the critical problem of land tenure. All too often the lack of legal tenure is a barrier which prevents public service agencies from delivering services to low-income groups. But more important is the fact that without the granting of secure tenure the necessary complementary investments will not be made by the private sector or individual households.

39. Thus, to overcome some of these problems, the Bank has developed what is termed an integrated approach to urban development to complement and support the sector-by-sector approach. These projects have as their focus specific communities and try to insure the delivery of a complementary package of services that meets the priorities of those communities. At the same time, they are trying to improve the management capacity of cities so that the coordination of investment programs is greater and that greater priority is given to such issues as land tenure.

40. To improve the provision of shelter and related services, the major thrust of the Bank's program has been the financing of slum improvement or upgrading projects in existing settlements and sites and services projects for the development of new settlements. The key feature of these projects has been the packaging of land tenure, public services and private investments,

together with improved employment opportunities. The major policy thrust behind these projects has been their emphasis on cost recovery and the evolution of solutions that can be replicated on a large scale. In addition, several projects (e.g., Calcutta I and II, Mexico I and II, and Korea I and II) have broadened the basic shelter approach and have tried to improve the investment planning and implementation capacity of cities and regions. In all cases the goal has been to prepare cities to deal with the economic and social problems of their existing large and rapidly growing numbers of poor citizens.

The Packaging of Services

41. As indicated above (para 37) the complementarity between services strongly reinforces the impact of any one service and on these grounds alone there are persuasive arguments for the package approach. In addition and perhaps more important, the packaging of these services, particularly if they are to be linked to effective cost recovery, requires the close involvement and consent of the communities concerned. Without this community participation (or in the case of new sites and services, consultation with potential inhabitants), it is unlikely that either the priorities within the package or the successful implementation and cost recovery can take place. The involvement of the community being served is a great challenge in the design and implementation of these projects, but at the same time it can result in significant gains if the energies and resources of the community can be directed toward meeting their own basic needs.

42. The packaging of services, particularly when they are linked to land tenure, also broadens the scope for cross-subsidies and income transfers within the community as well as enhancing the prospects for cost recovery. In many cases it is difficult to charge for these services directly because of (1) tariff policies or other institutional constraints on the supplying agency, (2) excessive costs of collection in reaching small consumers, (3) the communal nature of some services which makes it difficult to attribute costs to individual households, and (4) a different value placed on the service by individual households as opposed to the community as a whole (e.g., garbage collection). Where costs cannot be recovered directly, they are usually capitalized in the value of the land. This combined with the strong desire for secure tenure offers an important opportunity for covering costs through charges on land that are directly linked to the provision of tenure. Despite the scarcity situation that exists in most countries (i.e., where households, because of the lack of alternatives, are forced to live in dwellings that are of lower quality than they would be both prepared and able to pay for), there are also opportunities to price land differentially so that some of the scarcity rents can be directed toward either communal services or lower income groups.

Cost Recovery and Replicability

43. The emphasis on cost recovery is an important aspect of the Bank's policy toward provision of shelter for low-income groups. This emphasis arises out of the concerns for the replicability of the solutions being financed and for the impact of such projects on the pattern of rural-to-urban migration.

44. To the maximum extent possible these projects have tried to insure that beneficiaries will have to pay for services received because it has been judged to be a key factor in insuring the replicability of low-cost shelter solutions. Traditionally, governments in both developed and developing countries have subsidized low-income housing. These subsidies have tended to cover a large proportion of total costs. The existence of these subsidies has also meant that minimal pressures were placed on design standards and consequently on costs. The results have been a small number of over-designed, costly units which nevertheless have been so highly subsidized that they have had to be rationed. In the allocation of these units, the poor often have had to give way to the more compelling political demands of the higher income groups. Thus, these programs have never come close to providing for the needs of low-income groups. In one survey of housing in developing countries, the results indicated that up to 60% of the population could not afford the cheapest public housing unit - even with subsidies.1/ The failure of these costly, highly subsidized programs has been instrumental in suggesting that investment in shelter is similar to putting resources into a "bottomless pit."

45. It is in response to the failure of these traditional, subsidized solutions that the emphasis has shifted to upgrading and sites and services combined with cost recovery. A contributing factor in this shift of emphasis has been the growing awareness of the scale on which shelter units are required. The growth of new household formation, both because of migration and natural population growth, plus the growth of income, requires the provision of shelter units at an unprecedented rate. With these growth rates, even modest subsidies imply a level of fiscal transfers that may well exceed the political willingness to make such transfers, particularly in view of the strong, compelling demands of other sectors. Thus, reliance on any major degree of subsidization may endanger the replicability of even low-cost solutions such as sites and services and upgrading.

46. Another major concern that has led to the emphasis on cost recovery is the reluctance to fuel rural/urban migration further through subsidizing urban settlement. The evidence on the motivation of migrants is quite definitive; migrants are coming for jobs, not the services, because for the most part they receive no public services, subsidized or otherwise.2/ Thus, this argument is somewhat academic at the present scale on which most cities are providing services to low-income groups.

1/ See Orville F. Grimes, Jr., Housing for Low-income Urban Families, The Johns Hopkins University Press, Baltimore, 1976, p. 9.

2/ See Lorene Y.L. Yap, Internal Migration in Less-developed Countries: A Survey of the Literature, World Bank Staff Working Paper No. 215, mimeo, September 1975.

47. More important aspects of this same concern are the inefficiencies and inequities in public investment programs that could result from subsidizing urban settlements. For the most part even the urban poor are better off than their rural counterparts, and large subsidies to the urban poor may divert resources from other high-priority programs aimed at the problems of rural poverty. If those in urban areas are at least paying for what they get, transfers of scarce resources are minimized and inefficiencies in investments avoided.

Management of Urban Growth

48. A third aspect of the Bank's approach to the problems of providing shelter is the importance given to the role of the city in managing the problems of urban growth. To provide adequate shelter solutions for low-income groups requires a high degree of coordination and planning at the local level if cities are to expand their programs beyond a few demonstration projects. Unfortunately, few cities are prepared for the demanding task of absorbing the large and inevitable increases in population that will occur over the coming decades. To assist cities in this task, the Bank has tried to include in its integrated approach to urban shelter a variety of project components (e.g., transportation, solid waste disposal, drainage, river control, etc.) which require further improvements in management if they are to be successfully implemented.

49. Transportation, for example, is of vital importance to the efficiency of any city. Decisions made with respect to transport are critical in changing land use decisions with respect to the location of employment and shelter. Similarly land use decisions need to take into account costs of infrastructure such as water supplies and drainage. Unless cities begin to put these elements together, the process of urbanization will be more costly than it need be and a disproportionate share of these costs is likely to be borne by the poor.

50. This is an extraordinarily difficult but essential task because it addresses the institutional problems that are at the heart of the supply constraints in the shelter sector. The difficulties experienced in Bank projects in trying to improve city management are more indicative of the project addressing the right problem than of a failure of project design. The results to date are mixed; there have been successes and failures in the short run, but there is little doubt that over the long run success in meeting the shelter needs of the poor will depend on improving the management of urban growth.

II. ISSUES AND PROBLEMS

A. Cost Recovery and Basic Needs

51. If costs are to be recovered from low-income families, can they purchase sufficient services so as to consume enough to meet their "basic" needs in shelter? In one form of another this question is the one most frequently raised in any discussion of shelter policy in developing countries. Doubts are always being raised about the acceptability of the shelter services that can be delivered if income is taken as the binding constraint.

52. As noted in paras 11-13 above, experience with Bank low-income shelter solutions indicates that it is possible to provide adequate shelter solutions within the constraints of income.[1/] The issue really hinges on the definition of the word "adequate." Experience with shelter projects indicates that safe water, human and solid waste disposal, and protection and security from the environment can be technically provided in sufficient quantity and quality so as to insure a secure and healthy environment at a low enough cost to meet the needs of low-income groups. At the bottom end of the income scale, this means public standpipes, pit latrines, and traditional forms of housing, using traditional materials. In Upper Volta, for example, where the per capita income is US$110, water is being supplied at a cost of US$30 (1977 prices, inclusive of capital and production costs) per household, and the shelter unit itself at a maximum of US$265, for a total of US$295. If an environmentally sound solution is technically feasible in this, one of the highest cost and lowest income countries in the world, it should be feasible anywhere.

53. The problems lie not with the technical feasibility nor with the costs, but rather with the social feasibility and acceptability of the solutions. Acceptability to whom raises some dispute. In the case of Bank projects, it has been possible in all cases to improve visibly the existing situation of low-income groups and the acceptability of the solution is seldom questioned by those receiving these improvements. The solutions, however, are not always acceptable to decision-making powers, from the members of the city council to the Ministry of Health. All too often these bodies have an abstract notion of what is desirable that reflects more their own background and socio-economic status than the desires of low-income groups. Education, persistence, and demonstration projects have all had an important impact on changing the attitudes of these groups. As little as five years ago, there were few countries that were willing to contemplate the type of projects being sponsored by the Bank. Today, the Bank has financed over 32 projects in 26 countries and has under preparation projects in an additional 11 countries.

54. More intractable problems exist within the low-income communities themselves, and most of these problems cannot be solved by additional capital expenditures. Take, for example, the problem of human waste disposal. It is essential that human waste disposal be done in a hygienic manner if a healthy environment is to be established. Studies have suggested that

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1/ Some exceptions must be made for the very bottom end of the income distribution (5-10%) where the major needs are only peripherally related to the provision of shelter (see paras 26-33).

without hygienic waste disposal the advantages of clean water are by and large lost.1/ Technically, there is a great variety of environmentally sound, low-cost solutions but their appropriate use is often compromised by customs and traditions that prevent their effective use.2/ Children, for example, are the major victims of excreted infections, yet at the same time their early training (or lack of it) is a significant factor in the transmission of disease. It is common in many developing countries for children to be "allowed to defecate anywhere in or near the house.... The problem is primarily connected with attitudes and behavior."3/

55. While there is some scope for taking attitudes and behavior into account in the design of projects, the solutions leading to improvements in the environment will often require considerable efforts to change or modify behavior. This is not something that can be done easily or quickly, nor is it susceptible to solutions that simply require greater expenditures. It is, however, of critical importance in any attempt to meet basic needs.

B. Shelter and the Poorest

56. In paras 26-33 attention was drawn to the problems of households at the very bottom end of the income distribution. To meet the basic needs for shelter of this group will require further adaptions and changes in the approach presently taken in Bank-financed projects. The basis can be found in the way this group is accommodated within existing low-income communities and the elements of possible approaches are already beginning to emerge in a number of projects.

57. In existing communities the shelter needs of a large part of this group are usually met through the provision of rental facilities where renters share services with households and have access to community facilities. In some cases shelter is exchanged for labor services, in others it can be a fairly straightforward rental agreement. In new sites and services, recognition is increasingly being given to the need to provide these rental units or rooms within the project area. In some countries (e.g., Tanzania, Korea, and Kenya) there is an established tradition of homeowners renting rooms. In others (e.g., El Salvador) it needs to be developed more fully within existing sites.

58. In all instances the very poor are most likely to be reached only through an increase in the supply of rental units and the housing stock in general. In the type of markets that exist in most developing countries, where there is a scarcity of all types of housing, the poor are inevitably

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1/ Robert Saunders and Jeremy Warford, Village Water Supply, World Bank Research Publication, Johns Hopkins University Press, Baltimore, 1976, pp. 35, 36.

2/ See R.G. Feachem, D.D. Duncan, and K.O. Iwugo, Alternative Sanitation Technologies for the Urban Poor in Africa, Energy, Water, and Telecommunications Department, World Bank, July 1978.

3/ Feachem, Duncan and Iwugo, op. cit., p. 144.

rationed into the worst of the housing stock. Attempts to deal with this through public supply of rental housing and various forms of rent control have been notoriously unsuccessful.1/ In Nairobi, Kenya, where the price of rental rooms is high relative to costs, it is expected that the Bank's second urban project with its potentially large increase in the supply of rental rooms within sites and services areas will have a beneficial impact on the rents paid by and services received by low-income groups throughout the city.2/

59. Outside of improving the supply of rental accommodations, there remains the problem of how to deal with the very low-income groups found within existing communities going through the process of upgrading.3/ In upgrading these communities, it is inevitable that some percentage of their population will be unable to afford even a minimal level of improvements. To insist on cost recovery in these instances may force these low-income groups out of the community.

60. Bank-financed projects have tried to deal with this problem in a variety of ways. One method is to try to cross-subsidize some of the lowest income groups by loading some of the overhead expenditures more heavily on the higher income groups within the community or through profits made on the sale of commercially exploitable plots. Even this has its limits and it may not be possible to avoid a small percentage (usually under 5%) being forced out. In those cases where tenure is also given in recognition of existing squatters' rights, those moving out receive at least a cash compensation from the sale of these rights.

61. In one project (Cartagena, Colombia) all existing settlers will have access to community services, but will have the option of access to public utility connections when and if they can afford them. Land preparation and community infrastructure costs, however, are considered a lien on the plot, and the existing plot holder cannot sell the plot before clearing this charge. As long as the existing holder of the plot remains on the plot he does not receive tenure until the charge is paid, but on the other hand he does not have to pay the charge unless he wishes to sell. In this way existing low-income groups are accommodated, and at the same time the developing agency retains the capital gains resulting from the upgrading process.

62. There are undoubtedly further possibilities by which existing low-income holders of land within the upgraded settlements can be maintained within the community through more direct transfers of income or capital from public resources. These have not been used generally in Bank projects because of the difficulties of identifying who should get the transfers and in administering welfare schemes of this type.

1/ Grimes, op. cit.

2/ See appraisal report on the Second Kenya Urban Development Project, March 1978.

3/ This problem is less acute in new sites and services projects where there is a process of self-selection.

63. Use of these transfers could have an important impact on improving the welfare of low-income groups within these communities if the administrative problems could be resolved. This may be particularly true in the higher income countries where a greater resource base would allow some net transfers to those at the bottom end of the income scale. It is not always obvious though, as mentioned in paras 20-21 above, that transfers in support of shelter services are the best way to address the problems of this group. In many cases their priorities may lie elsewhere.

C. New Sites vs Upgrading

64. Given the rate at which most cities of the developing world are growing, it should be obvious that a considerable share of resources going to the shelter sector should be directed toward development of new sites. Yet this is not always possible, given the constraints of most countries and for some time to come, the needs of low-income families will have to be met through programs of upgrading existing settlements.

65. Upgrading of existing settlements is no less important than new sites, but it may have the disadvantage of ultimately being a more costly and inefficient way of creating urban settlements. More control over where and how settlements develop, for example, can lower servicing costs. There are many cases of existing settlements being difficult and costly to upgrade because of their location on hillsides, on tidal flats, or in ravines. Upgrading after settlement is often an inevitable but second-best solution.

66. Again there are major institutional constraints that are likely to confine the scope of efforts to get ahead of the settlement process. The most important one is land. Land is available in the physical sense, but the mechanisms for urbanizing this land and delivering it to low-income groups are non-existent in most countries (see above). The poor are left with little alternative but to "take" the land either through squatting or through development of illegal settlements. The government is then placed in a passive role of giving de facto recognition to this pattern of settlement by eventually upgrading at a later date.

67. In Bank-financed projects where new sites are being developed, long delays and difficulties have been experienced in obtaining suitable land. In most cases government purchase or condemnation proceedings are just too cumbersome to expedite the speedy procurement of the necessary land. Site development is often confined to the limited amounts of land the government has already under its control. The expansion of a new sites program is likely to be a slow and difficult process once the easily obtainable land has been utilized.

68. On top of the problem of obtaining land, new site developments are subject to a number of administrative and institutional difficulties. Bank-financed projects involving new sites and services seldom have been able to reach as far down the income scale as upgrading projects. Governments

appear to be more reluctant to accept lower standards on new sites than they are for existing settlements. Strong pressures are exerted on designs and standards that make it difficult to reach below the 20th-30th percentiles of the income distribution. It appears to be easier to accept lower standards in existing settlements because, after all, improvements are being made over the existing situation. On new sites there is a great reluctance to repeat the same standards because of a desire to do "better."

69. New site programs are also more management intensive and more demanding of scarce administrative talent within the public sector. In upgrading projects more of the organizational costs can be taken on by the existing community; on new sites there is no community to do this and much of the design, selection and organizational effort falls on the public sector. Until more experience is gained in developing these types of projects and more staff trained to handle their implementation, the public sector's ability to promote these programs will be limited.

70. The public sector's role in developing sites and services projects is made more difficult by its inability to develop sites on a smaller scale. At present public sector intervention has called for the mobilization of a substantial administrative apparatus together with scarce managerial talents. To employ these resources efficiently requires that they be focussed on a project or site of sufficient size to justify the use of these scarce resources. This may require sites of many hundreds of units at a minimum, or in some cases several thousands. It is simply not worthwhile, for example, to bring government procurement procedures into play for a few hectares of land. This exacerbates the land procurement problem; land available on this scale is likely to be either poorly located or in the hands of a few wealthy landowners, often with substantial political power.

71. Public intervention with sites and services projects results in large new communities with their attendant social and economic problems. One real danger, for example, is that the income mix may become too uniform. Design and selection criteria may limit those eligible plots to a fairly narrow band of cities' income distribution. To some extent this can be overcome by better design and by encouraging, through various financial incentives, higher income groups to settle within these communities. There is, however, some understandable reluctance on the part of governments and other sponsoring institutions to divert their efforts to also catering to the needs of higher income groups.

72. What these problems point out is the divergence in the urbanization process from the more traditional pattern of smaller scale infilling and marginal additions to existing communities, introduced by large-scale new public-sector developments. Upgrading projects with some infilling and marginal new additions to the community fit more closely to traditional patterns of development.

73. There are no obvious solutions to some of these problems. Clearly there is an important role to be played by the public sector in developing new sites. Yet at the same time there is the real danger that the effort may yield limited results unless institutional bottlenecks, often inherent in public-sector intervention, are overcome. Incentives need to be developed

so that the private sector, the usual source of most low-income shelter, is encouraged to produce the type of environmentally sound shelter required and affordable by the poor. Public-sector intervention, particularly where it is either subsidized or is dependent on the unique powers of the public sector, for example, in land expropriation or in allocation of public services, may discourage private investments in low-income shelter and leave the provision of this shelter by default to the public sector. There are very few countries in the world where the public sector has the capabilities of doing more than meeting the shelter needs of a small fraction of the population.

D. Self-Help

74. One of the important concepts behind the development of the sites and services and upgrading approaches to low-income shelter has been the role assigned to self-help. It was theorized that low-income communities contained much unemployed and underemployed labor that could be effectively utilized in the construction of shelter. Thus the surplus labor of households could be diverted into producing shelter, thereby increasing both the income and wealth of households. Experience with Bank-financed projects indicates that self-help has an important although somewhat more limited role than was originally perceiv

75. The amount of surplus labor available within the household appears to be limited and less self-help is being observed on project sites than was originally anticipated. Unemployment is not high among low-income households and any underemployment is likely to go more profitably into efforts to expand employment in the existing occupation rather than diverting this labor into shelter construction.1/ In El Salvador, for example, one of the major problems encountered in the mutual-help stage was the inability of households to find sufficient time to participate in the construction process.2/

76. What is being observed is that households are taking on some of the contractual and managerial responsibilities (e.g., design and organization of materials) but are contracting out much of the labor. The economies inherent in the division of labor and in specialization apply equally well in low-income communities. A householder whose main occupation is as a street-vendor is much more likely to expand his selling time than he is to use this time to build his shelter. His opportunity cost as a mason or plumber is obviously higher than it is as a street-vendor. This pattern appears to be fairly typical; householders are contracting out the labor required often to others within the community who have the appropriate skills. The aggregate employment effects are the same and increases in efficiency are gained through specialization. In addition, since jobs are usually

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1/ Dipak Mazumdar, The Urban Informal Sector, World Bank Staff Working Paper No. 211, July 1975; and Rakesh Mohan, Workers of Bogota, November 1978 (paper prepared for Southern Economic Association meetings, Washington, D.C.).

2/ On the other hand, the community spirit fostered through self-help and mutual help is quite substantial and often invaluable. See Fundacion Salvadorena de Desarrolla y Vivienda Minima and Unidad de Evaluacion Socio-Economica. A series of reports on the results of the evaluation of the Foundation's programs, No. 13, July 1977, pp. 4-15, 4-16, respectively.

subcontracted to laborers within the community, much the same sense of community which is encouraged through self-help can be generated - and without the bias against female heads-of-households often implicit in self-help schemes.

77. This has required some changes in the way financing is made available to households. In earlier projects loans were made available for materials only on the assumption that households would employ their own labor. This resulted in a slower than desirable pace of consolidation as households did not have the required labor available. At present the practice is increasingly to grant loans for both materials and labor, leaving it to the individual householder to make the decision as to the amount of his own labor to be employed in the construction process. In Kenya (Dandora), for example, households are contracting out the skilled labor and using family labor to provide support to skilled workers.

E. Employment

78. Cities of developing countries have generally been characterized as swarming with unemployed and underemployed workers. Increases in employment are considered an essential part of any urban basic needs strategy and this has led to an increasing emphasis in Bank-financed projects on the inclusion of employment-generating components as part of general shelter projects. Results to date have not been encouraging. These components have been difficult to formulate and it may be some time before significant results are observed.

79. Undoubtedly some of the problem lies with often unrealistic expectations of what is achievable within a project (as opposed to a general policy context). But perhaps more important is that incorrect perceptions of the employment "problem" are creating these unrealistic expectations. Recent studies are beginning to cast doubt upon the assumption that the rapidly growing cities of the developing countries contain large numbers of unemployed and underemployed.1/2/ It appears that few low-income city dwellers can afford either for prolonged periods of time. What is correct is that there are large numbers of low-income dwellers working at low-productivity jobs and that the low wages are due to a highly elastic supply of labor.

80. Part of the confusion arises from the perceived role of cities in the whole process of structural change taking place in most developing countries. The process of development requires that an increasing proportion of employment be concentrated in non-farm occupations which are generally located in urban areas. Thus one of the major problems of the rural areas is caused by the failure of urban employment to grow rapidly

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1/ Khalil Hamdani, An Economic Analysis of Street Dwellers, Pakistan Institute of Development Economics Seminar Paper No. 32, May 1978, pp. 42-43; Johannes Linn, "Policies for Efficient and Equitable Growth of Cities in Developing Countries," World Development Report, 1978, pp. 63-76; Dipak Mazumdar, op. cit., 1976; and Rakesh Mohan, op. cit., 1978, pp. 28-30.

2/ The definitions of unemployed and underemployed are the usual ones; the unemployed are those actively seeking employment and the underemployed are those working less hours than they wish.

enough to absorb the increases in the rural population.[1/] In this sense, there is an employment problem; the number of jobs being generated within cities is insufficient to productively employ as much of the rural population as would be desirable.

81. In almost all studies of rural-urban migration, the overwhelming motivation is economic; people migrate to cities for jobs.[2/] This is to a large extent a self-regulating flow. The information system between the countryside and the city appears to be remarkably accurate and migratory flows are governed by opportunities available. Thus, the unemployment or underemployment is not likely to be found as a predominant phenomenon among existing urban dwellers.[3/] Rural dwellers cannot afford to migrate if there exists a high probability of them being unemployed for any sustained length of time. This is why, for example, cities such as Bombay have grown rapidly and others such as Calcutta have stagnated.

82. If the employment "problem" is seen from this perspective, increased migratory flows must be seen as a desirable phenomenon. Every time a new job is created there is at least one person ready to take that job and probably several others waiting in the rural areas for similar opportunities. This can seem very discouraging to the policy-maker concerned with trying to generate further increases in employment. No matter how many jobs are created, more are always needed and attempts to raise income are confounded by the increase in the supply of labor.

83. From the perspective of a city manager the results can appear to be disastrous. Cities for the most part are growing more rapidly than can be managed comfortably and increasing employment opportunities are simply translated into more rapid growth.[4/] From this perspective, the problem is not one of lack of employment but rather how to manage the problems generated by increasing employment.

84. If the employment problem is viewed within the broad macroeconomic framework discussed above, it does not lend itself easily to solutions at the city level, let alone the project level. The pattern and rates of national and international development are the important governing factors and what can be done at the city level within a project context appears to be at best marginal.

1/ Rural Development, World Bank Sector Policy Paper, February 1975.

2/ See L.Y.L. Yap, World Bank Staff Working Paper No. 215.

3/ This does not rule out cyclical, seasonal or other forms of unemployment, but refers to a general structural problem.

4/ This is one of the reasons why many governments are concerned with diverting growth to smaller cities. See para 87 below.

85. There is nevertheless an important role albeit a limited one for employment components within shelter projects. Like the delivery of shelter services there are often important institutional constraints on the efficient creation of employment opportunities for low-income city dwellers. Some of these can be tackled within a project framework. Institutional mechanisms for delivering credit to entrepreneurs in low-income areas, for example, are often inadequate or non-existent. Credit components included in these projects are attempting to tackle some of these bottlenecks. The problems, however, are largely of an institutional nature and it is not possible to move quickly or to expect that large volumes of credit can be channelled in this fashion. It will be a long and arduous process requiring a sustained effort before significant results will be observed.1/

86. Further factors complicating attempts to improve employment opportunities for those presently unemployed or underemployed are to be found in the specific socio-economic characteristics of some of these groups. They tend to be young workers just entering the labor force,2/ the educated but temporarily unemployed because of their work preferences,3/ the physically ill,4/ and female heads-of-households,5/ to mention a few characteristics. General measures to improve the demand for labor will not necessarily address the problems of these groups and specific remedies need to be devised. Basic urbanization projects with their focus on community development and community participation can assist in identifying some of these problems and in devising specific remedies.6/

87. Also the employment effects of the whole urbanization process need to be taken into account in evaluating the employment effects of basic urbanization projects. They are not insignificant. This process could be considered as one of the largest growth industries in any city. The construction of

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1/ There is an old Chinese proverb that states: the eating of an elephant begins with the first mouthful.

2/ Rakesh Mohan, op. cit., 1978, pp. 28-30.

3/ Dipak Mazumdar, op. cit., 1976.

4/ Simon Fass, Families in Port-au-Prince, AID document, September 1977.

5/ Anna Maria Sant'Anna, Income Distribution and the Economy of the Urban Household, World Bank Staff Working Paper No. 237, June 1976, pp. 15-20.

6/ The community work banks that form part of the Colombia medium-sized cities project (Loan 1558-CO) are an attempt to promote specific community-based remedies for increasing employment opportunities.

shelter and the provision of related services for populations doubling every 10-15 years represent an enormous investment of resources and a major source of employment for urban dwellers. Making this process more efficient by improving the delivery systems for the whole range of urban services cannot help but have substantial employment effects through improving the overall capacity of the city to absorb its increases in population.

F. Subsidies and Income Transfers

88. In discussing the Bank's approach to meeting the shelter needs of low-income groups, great stress was placed upon the replicability of the solution. Tied closely to this concept of replicability are those of affordability and cost recovery. In other words without cost recovery, experience indicates that the programs are seldom replicable (see paras 43-44 above). The lack of political commitment to income transfers through these programs is not the only reason for these failures. A major factor preventing the efficient transfer of income has been the way in which these transfers have been made. They have usually been in the form of capital transfers covering the whole cost of shelter and related services. Interest rate subsidies and sale prices or rents less than cost have been the most common forms.

89. These types of general subsidies do not address the supply constraints, cover too large a target group, and result in high fiscal costs. They are easy to administer, however, and can have considerable political appeal. Alternative forms of subsidizing low-income shelter solutions have not been utilized on any scale and may offer more efficient alternatives for addressing shelter problems particularly in the higher income countries where some resource transfers are feasible.

90. The form of such subsidies would have to vary considerably in order to meet the institutional context found in each country but in general they would be directed at specific problems found within the shelter sector rather than attempting to cover some part of total shelter costs. One possible guide in selecting those aspects of shelter services for subsidization would be those services where the individual householder does not benefit directly (e.g., various forms of community services) and those where the householder is ignorant of the possible benefits (e.g., various sanitation and health measures). Thus, subsidies could be directed toward community health services or human waste disposal programs. It would be possible, for example, to conceive of programs in which the digging of pit latrines or new types of building materials are subsidized in order to encourage their use.

91. These are just a few of the possibilities, but there is an understandable reluctance to push too hard for these types of subsidies no matter how well they can be justified. The practical problems of administering them and insuring they reach the right groups can often defeat the best of intentions. A cautious and experimental approach is obviously required and could be worth exploring in future Bank projects.

III. SHELTER NEEDS: ORDERS OF MAGNITUDE 1980-2000

92. The above sections of this paper have concentrated on highlighting some of the difficulties and institutional problems encountered in developing poverty-focussed shelter programs. The institutional difficulties and their related supply constraints have not always been considered the main focus of the shelter problem. It has been characterized often more in terms of a "bottomless pit" for scarce resources. This view has colored much of the discussions of shelter policy and has led to a generally pessimistic view of the possibilities for action. Experience in countries where the Bank is supporting basic shelter programs negates this pessimistic view and indicates that solutions are possible even within a situation of relative scarcity of resources for shelter.

93. In this section an attempt is made to expand this experience and to consider the resource constraints on a more global scale. As in any such global estimates, heroic assumptions are required to put together the results and because of this, they should be treated as orders of magnitude rather than as firm estimates. In spite of the estimation problems, the results are fairly robust and indicate that, while obtaining adequate resources is always a problem, it should not be viewed as the binding constraint. Of much greater importance are the institutional constraints.

94. In order to derive estimates of the order of magnitude of resources required to provide basic shelter, assumptions have had to be made regarding the size and rate of growth of the poverty group and its shelter needs. Goals have also had to be set. These goals are, of course, largely arbitrary and could vary considerably from country to country. The main objective or goal used to derive the estimates of resources required is that adequate shelter could be provided by the year 2000 to the population in poverty.

95. The goal used to derive the estimate of resources required is a simple one; it is to provide a "basic" shelter unit by the year 2000 to the population living in poverty in that year. The poverty group is defined as the population with incomes below the rural and urban poverty thresholds (as defined by the Bank) in 1975 dollars. For several countries, in which the relative poverty threshold was more inclusive than the absolute threshold, only the relative threshold was reported and, therefore, used in calculations. In projections of movement into and out of poverty (to derive the population in poverty in the year 2000), the threshold was not shifted over time, making it in essence an "absolute" poverty threshold. This would tend to overestimate the population in poverty in the year 2000 in the sense of its being an "absolute" concept, but even with this bias in the direction of overestimation, the resource requirements are not unreasonable.

96. The year 2000 has been selected as an end point after some iteration. Over a period of 20 years, it would appear to be both financially and administratively feasible to carry out a poverty-directed shelter program which has as its goal the provision of adequate shelter to all low-income groups.

It would obviously be desirable to accelerate the pace of improvements, but it is unlikely to be possible in practice. In some countries the pace can and should be faster; in others it may well be slower. The pace of development of a shelter program for each country will have to be determined separately, since the major factors determining it will be institutional capabilities and political will. Thus, the overall estimates presented here are orders of magnitude for two decades. Annual programs must ultimately fall back on a more detailed analysis of implementation capacity, but for the purpose of illustrating the size of the resource constraint on an annual basis, the two-decade figure has been divided by twenty.

97. The "basic" unit is defined as the shelter affordable by a family exactly at the poverty income threshold. This is to insure consistency of shelter programs with the goal of meeting all basic needs. Since the poverty threshold is defined in terms of the income required to purchase a minimal food package, it follows that if this goal is being met, the minimum shelter expenditure must also be consistent with the effective demand for shelter at this threshold.

98. In most cases this "basic" unit should be more than adequate to meet the minimum shelter needs defined in terms of a secure and healthy environment. Thus, by selecting the basic unit as the unit affordable at the poverty level, the estimate of resources required probably overstates the amounts necessary just to meet basic needs. Experience with Bank projects indicates that basic needs in shelter can be met at income levels below the poverty threshold.

99. The unit costs of this "basic" unit are derived by capitalizing the stream of expenditures that households at the poverty threshold are prepared to spend on shelter and related services.1/ The resource requirements are the result of multiplying this unit cost per person or household (for each country) times the estimate of population in poverty in the year 2000. In order to take into account the backlog of housing needs that will have accumulated by 1980, it was assumed that the poverty group in this period would have some, albeit inadequate, type of shelter. The cost of upgrading their shelters is assumed to be one half the cost of new units. This is roughly in line with Bank experience on the differential costs between upgrading existing shelter and providing new shelter.

1/ See Appendix for details of calculations. It should be noted that shelter and related services include all services that are normally purchased by the household. It includes not just the services of the on-site networks of water, electricity and streets, but also the services provided by off-site infrastructure - the power generator and the water mains. It is the total amount the household can afford to spend on these services and is an inclusive concept. It does not include those social services, e.g., health and education which are accounted for separately in household budgets.

100. The results are summarized below:

Table 2: TOTAL INVESTMENT REQUIRED TO PROVIDE THE POOR IN 2000 WITH A "BASIC" UNIT (1975 US$ billions)

	Urban	Rural	Total
LAC	62	7	69
EMENA	11	3	14
E. Africa	6	5.5	11.5
W. Africa	4	2	6
S. Asia	25	20	45
E. Asia & Pacific	8	8	16
Global	116	45.5	161.5

Source: See Appendix.

101. Adding up of the regions yields a global estimate of between 1975 US$160-170 billion. The use of different income growth assumptions to derive the number of households in poverty has little effect on the overall estimates, although considerable differences appear between regions and countries. An assumption of no growth at all in the per capita incomes of the poor quickly yields unrealistically large numbers, particularly for the poorer regions (South Asia and East Africa). This goes to underscore the importance of growth in general in these regions. Without a sustained rate of income growth, there is no hope in trying to address the shelter needs of the lower income groups in these countries.

102. The totals above need to be interpreted with some caution. They are not the amounts required for shelter investments by the public sector. They are simply the net amount of resources an economy would have to invest by the year 2000 in order to insure that it had a sufficient stock of "basic" units on hand in order to provide one unit to each of the poor families existing at that time.

103. Presenting the end results of a goal that has a two-decade time frame gives little feel for the processes that will have to take place in order to reach this goal. Obviously the investments will have to be made over a period of time. The timing and pace of these investments will vary considerably from country to country. By setting an end period goal, some of the needs of the poor within the period may not be met. Considerable differences in both the size of the problem relative to resources as well as differences in implementation capacity exist from country to country which could radically affect the timing or pace of a specific country program. For the richer countries the pace may be too slow and a ten-year time horizon may be realistic. On the other hand, the poorer countries will be hard put to meet this goal within the two decades.

104. In order to develop a better feel for the feasibility of implementing a program of the orders of magnitude suggested by the US$160-170 billion suggested above, the total figure was divided by 20 to produce the annual figures shown below:

Table 3: ANNUAL INVESTMENT 1/
(1975 US$ billions)

	Urban	Rural	Total
LAC	3.1	0.35	3.45
EMENA	0.55	0.15	0.7
E. Africa	0.3	0.275	0.575
W. Africa	0.2	0.1	0.3
S. Asia	1.25	0.1	2.25
E. Asia & Pacific	0.4	0.4	0.8
Global	5.8	2.27	8.07

1/ One twentieth of estimates of Table 2.

Source: See Appendix.

105. By taking one twentieth of the desired total for the year 2000, a linear pattern of investment expenditures is assumed. This tends to somewhat exaggerate the amounts required in the early years and underestimate those required in later years. It is perhaps more useful to consider these annual expenditures as the amounts required for the mid-point of the period, i.e, around 1990.

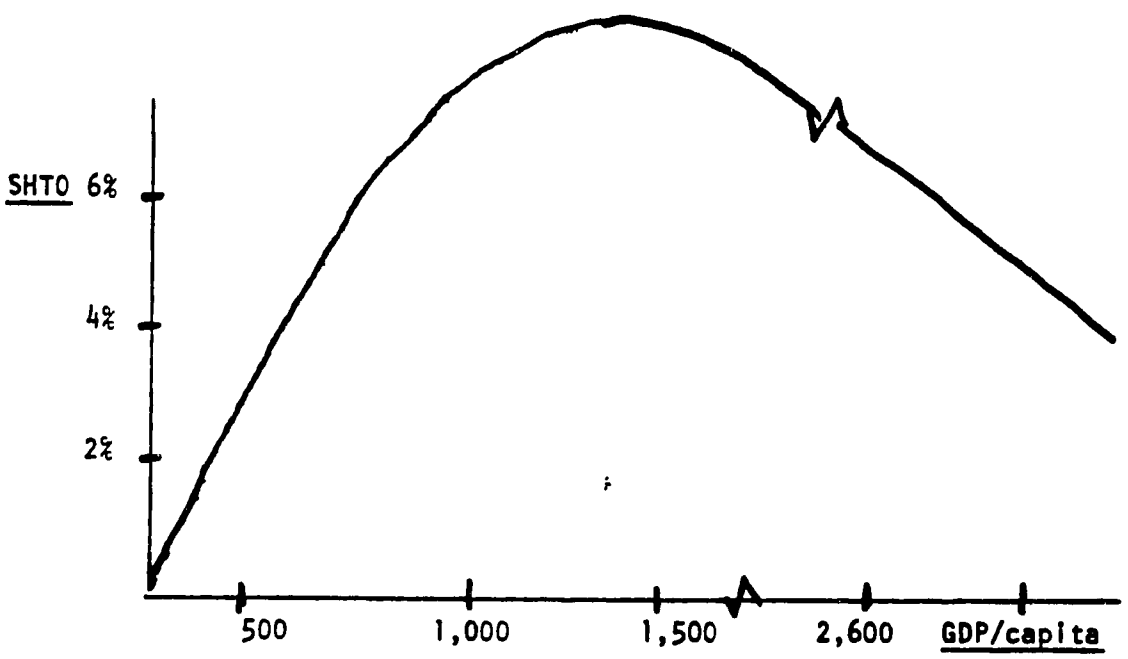
106. The estimate is also a net estimate, that is, it is an estimate of the housing stock that will be available to house the population in poverty. To the extent some housing may well "trickle up" to the middle class through upgrading, it underestimates the gross investment required. On the other hand, particularly if poverty-oriented shelter programs of the magnitude suggested here are undertaken, there will be some "trickle down" taking place. How much of a total investment is required in order to insure that the targetted level of shelter reaches the poor will be a matter of policy. An inadequate level of investment in shelter for the middle classes, for example, will make it difficult to insure that programs designed to reach the poor actually will reach them.

107. How realistic are the targetted levels of resources to be devoted to low-income shelter? On the whole it is felt that the estimates are not unreasonable. There are several ways in which the feasibility of the programs implied by these estimates can be checked against both the resources available and the capacity to manage such programs.

Shelter Expenditures and National Resources

108. Any program designed to meet basic needs in shelter must consider the demand it places on the use of national resources. Investment in shelter is just one of the alternative uses of scarce savings in developing countries. Other uses, such as food production or education, are also of high priority. Obviously, any program that suggests a major shift in the share of investment resources going into shelter is likely to be difficult to implement, given the competing demands of other high-priority items.

109. There are no *a priori* reasons for designating any particular level of investment in shelter as being the "right" one. Societies for many reasons have chosen to allocate different levels of resources at different times for shelter expenditures. The three factors likely to have the largest impact on the share of GDP going into new residential construction are incomes, population growth, and rates of urbanization. The empirical evidence suggests that the relationship between the levels of development (GDP/capita) and the share of housing investment in total output (SHTO) exhibits the following pattern:1/



1/ The following analysis is based on an article by L.S. Burns and L. Grebler, "Resource Allocation to Housing Investment: A Comparative International Study," Economic Development and Cultural Change, October 1976.

110. As incomes rise, the share of investment in shelter increases until it is between 6% and 7% of total investment and then declines to about 3% (the U.S. figure). This pattern is not surprising given the underlying factors. At very low levels of income the high rate of return on alternative investments (e.g., food) necessarily results in a low level of investment in shelter. Growing incomes are likely to be associated with a high rate of household formation and rapid urbanization and consequently greater investments in shelter. With the slowing down of population growth and urbanization as higher levels of income are reached, new investment in shelter tends to decline as a percentage of total output.

111. Using the estimating procedures developed by Burns and Grebler (op. cit.), the following "norms" were developed and projected for 1983-1986 for the Bank's six regions:1/

Table 4: AVERAGE ANNUAL % SHARE OF HOUSING IN TOTAL OUTPUT (1983-1986)

East Africa	1.7
West Africa	3.3
East Asia & Pacific	3.5
South Asia	2.4
EMENA	4.1
Latin America	5.6

These "norms" should be used with caution. They simply reflect historical trends in aggregated form and considerable differences can be found from country to country.2/

112. Given these "norms," it is instructive to compare how the projected levels of investment required to meet a basic needs shelter program compare with what might normally be allocated to new investment. The following figures show the average annual investment necessary for a basic needs program as a percentage of "normal" (i.e., the estimates from Table 4) investment in shelter:

1/ The 1983-1986 average annual share of housing in total output is predicted, according to the Burns and Grebler method, from GDP/capita, average population growth rates and urbanization rates for 1975-1980. GDP/capita was obtained from World Tables 1976 and Prospects for Developing Countries 1978-85, Development Policy Staff, World Bank, p. 29-35. Population and urbanization rates were obtained from U.N. population projections, medium growth, medium variant.

2/ See, for example, B. Renaud, Resource Allocation to Housing Investment: Comments and Further Results, March 1, 1978, World Bank. In the case of Korea, particular climatic conditions probably account for a higher than expected share of GDP in housing.

	%
East Africa	26
West Africa	32
East Asia & Pacific	25
South Asia	28
EMENA	7
Latin America	10

113. The resulting percentages show a wide range which reflects both income levels and, more importantly, rapid population growth. In West Africa in particular, the percentages are high because of the large and growing percentage of the population living below the poverty level. In EMENA, on the other hand, higher levels of income combined with a lower rate of growth of population present a much more manageable picture.

114. These results can be interpreted in several ways. In East Africa, for example, of the 1.6% of GDP that would "normally" be going into new shelter investment, roughly one quarter or 0.4% of GDP would have to be directed toward the poverty group's shelter investments. To the extent that this is not being done presently, it would require either a diversion from the present patterns of shelter investment toward the poverty group or an increase in the share of GDP going toward investment in shelter.1/

115. The diversion of these resources toward low-income groups is likely to be difficult. Most of the investment and savings decisions are made by the private sector, and there is a strong effective demand for shelter on the part of upper and middle-income groups. Few developing countries have developed the types of general monetary and credit mechanisms that would make it possible to either shift the supply of credit toward lower income groups or to increase the share of savings going into the shelter sector. In most cases various systems of rationing credit at subsidized interest rates effectively exclude the shelter sector from the formal credit markets, and to the extent that such credit does reach the shelter sector, it is heavily biased against the lower income groups.

116. Increasing the share of GDP going into shelter is also likely to be a challenging task. It is doubtful that any increase can be achieved without altering substantially the existing institutional structures for delivering both the physical and financial resources necessary to provide shelter for low-income groups. In most countries this cannot be done through increased public expenditures - the call upon limited public resources is just too large (paras 108, 115). Thus to increase the share of GDP going toward the shelter sector will require increasing the savings and/or income of the lower income groups. This must be matched by efforts to improve the physical and financial performance of those institutions responsible for delivering critical public services.

1/ It is difficult in nearly all countries to determine what share of the present total investment in shelter is directed at low-income groups. Accounts, both public and private, are inadequate for making this determination. The existence of growing slums around most cities is a persuasive argument in suggesting that it is not enough.

117. In practice no single strategy (i.e., either increasing the share of present shelter expenditures going toward the poor or increasing the share of GDP going toward the shelter sector) is likely to work. Some combination of both strategies will be necessary, with considerable variance from country to country depending on its income level and institutional development.

118. Another factor that emerges from these general estimates is the importance of income growth particularly for the low-income countries of Asia and Africa. In the case of Africa, the underlying factors are the high rates of growth of both the populations and the urban centers. The presently projected rates of growth, particularly for East Africa, imply that one third to one half of all national resources spent on shelter will have to be directed toward the lowest income groups. For many countries this implies a substantial change from the present pattern which is heavily biased in favor of higher income groups. But without higher rates of growth of income and/or a slowing down of population growth, such shifts may not be possible with the present limited economic and political institutional framework of many of the countries.

119. At the opposite end of the spectrum are the higher income countries of Latin America, Southern Europe, the Middle East, and North Africa. For most of these countries, programs aimed at the shelter needs of their poverty groups should be easily manageable within existing resource and institutional constraints.

IV. A BASIC NEEDS STRATEGY

120. Although considerable caution must be attached to the use of global estimates of the type developed above, it is nevertheless possible by using these figures to gain some insights into the nature of a basic needs strategy in the shelter sector. The application of any strategy in a country would require, of course, a specific country-focussed analysis. The approach developed in this paper provides an illustration of how such a country-specific analysis can be undertaken.

121. The development of a strategy necessarily implies some attempt at ordering priorities. One of the first points that emerges from an examination of the data is the preponderance of new shelter units that will be required in urban areas. In the 20 years from 1980 to 2000, the number of poor households in urban areas will double, while in rural areas their numbers will actually experience some decline (see Table 1).

122. Regardless of the doubts about the data, the direction of the change is clear - the provision of new shelter for the poor is predominantly an urban problem. This suggests that the major focus of any strategy will have to be in urban areas. There are also other compelling reasons for placing a heavy emphasis on urban shelter. As discussed on pages 2-4, the problems of urban shelter are more intractable and less in the hands of households than those of rural areas. The maintenance of an adequate health-related environment is a much more important aspect of urban than it is of rural shelter. This does not mean that the problems of rural shelter should be ignored, just that the problems of the rural areas will require less attention.

123. The estimated resource requirements of a poverty-focussed urban shelter strategy for the next 20 years are between US$120-130 billion (1975 dollars), or an annual expenditure of between US$6-7 billion. In terms of national resources, these amounts do not appear unreasonable, and, given a few years in some countries to develop the implementation capacity, it should be possible to carry out programs of these orders of magnitude.

124. Any programs of basic needs in the shelter sector must be viewed, however, in the wider context of an overall policy aimed at raising incomes, particularly in the low-income countries. Refocussing the direction in which resources go to the shelter sector, regardless of the amounts, will be a difficult task if there is not at the same time a concomitant expansion of the revenue base.

The Role of the Public Sector

125. With a few exceptions, most countries have relied on the private sector to provide the bulk of the savings and investments in the shelter sector. Most governments, however, have reserved for themselves a monopoly on the provision of many shelter-related services such as water supply, power and transportation. It is usually the failure to deliver these services that has most adversely affected low-income settlements. In the discussion below, the two aspects of public investment, that of shelter provision per se and that of delivery of public services, are examined separately.

126. A survey of experience with public shelter programs in both developed and developing countries shows more failures than successes.1/ Although there is considerable variation from country to country, the following factors account for most of the failures:

(1) Standards have exceeded the ability to pay of the poor with the result that large subsidies have been required.

(2) Governments have been reluctant or politically unable to enforce rent and mortgage collections.

(3) Shelter units have been built far away from sources of employment and often without the complementary social infrastructure.

(4) Little account has been taken of the life-style of low-income communities nor have many attempts been made to actively involve them in the design of their shelter solutions.

127. This catalogue of factors is a familiar one. Lying behind all of these factors is a basic mistrust, or perhaps more charitably, a lack of understanding, on the part of many policy-makers of the needs and aspirations of the poor. The requirement for higher standards than can be afforded by the poor is often motivated by a real desire to improve living standards. "That is not good enough for our people" is a commonly heard refrain. No matter how laudable the motivation, the facts are that unaffordable standards lead to shelter programs where very little ever gets down to the poor.

128. Is it realistic to expect sufficient resources to be forthcoming for the financing of low-income shelter programs? Even with full cost recovery, there exists a financing problem as repayments will come in over a long period of time. The cost is between 5% and 10% of public revenues in all but a few countries where public revenues are low relative to GNP. (The purpose of making this comparison is to illustrate the financial feasibility of undertaking a poverty-oriented shelter program, not necessarily to advocate a publically

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1/ Financial Management of Government Housing Projects, Ad Hoc Group of Experts on the Financial Management of Government Housing Projects, U.N. Department of Economic and Social Affairs, 1976, pp. 8-24.

subsidized program.) This is not an extraordinarily large amount, particularly when consideration is given to the fact that a large part of the financing is likely to come from private sources.

129. For the most part, the government will be called upon to finance those public services over which it has a monopoly. Typically this will amount to about one third of total shelter costs. In addition to the investment expenditures used in this paper, the government will also be called upon to finance the social infrastructure (schools, health clinics, social services, etc.) that forms an integral part of any acceptable urban settlement. On the basis of experience with Bank projects, this is likely to be an additional amount of 10-20% of the shelter expenditures estimated above.

130. Thus, combining what the government is likely to be called upon to finance in the way of public services (probably around 30% of total shelter expenditures) and social services suggests the call upon the financial resources of the public sector is likely to be less than 50% of the total investment of any poverty-oriented shelter program. This does not preclude the possibility of an even greater degree of public participation in the financing of the housing unit itself through public housing banks and other financial intermediarie

131. The orders of magnitude of the total investment required to promote low-income shelter programs are such as to suggest that in many countries they could be used as a mechanism for income transfers, i.e., that substantial subsidies would be financially feasible. The estimates used here, it will be recalled, assume that a "basic" unit is provided. To the extent that all incomes fail to at least reach the poverty threshold (and the projections of growth in the poverty groups explicitly assume this to be the case), the provision of a unit affordable only at this threshold will necessitate some degree of subsidization since there will be an insufficient effective demand to permit the recovery of all costs. The provision of a "basic" unit, however, may go beyond what is required to satisfy minimum health and environmental conditions. In most cases these can be met with less than a "basic" unit.

132. Nevertheless, a subsidy to low-income shelter is clearly affordable in many countries, and the desire to transfer income through the provision of shelter is an attractive alternative for redistributing income. The effectiveness in practice of using shelter programs to redistribute income leave open to question whether or not it can be an effective means. Experience to date suggests that it is not easy to target subsidies in such a way that they are only confined to low-income groups and the expansion of these subsidies beyond this limited target group quickly yields financially unfeasible programs. Perhaps more careful use of subsidies (see paras 88-91) could overcome some of these difficulties, but their efficacy remains to be seen.

133. If a program is to involve some element of subsidy, one critical element in judging the effectiveness of the subsidy in meeting the income distribution goals is whether or not the program is replicable on a scale large enough to cover all of the targetted group within a reasonable period of time. Such a test must go beyond the simple theoretical financial feasibility and include judgments on the political and administrative practicality of implementing the program over the required time period. Explicit recognition must also be given to what effects such subsidies would have on the distribution of resources between rural and urban areas. Even if the resources come from within the urban economy, the effect of such a subsidy on rural-urban migration needs to be taken into account.

134. Whether low-income shelter solutions are to be subsidized or not, the role of the public sector will be critical in their promotion. At present many of the constraints on the supply of shelter are themselves the result of public sector policies and can only be effectively changed through changes in public policy. These policy changes are of much greater importance than merely increasing the share of public resources going to low-income shelter. Without these changes the energies and resources of the low-income households cannot be effectively directed toward the resolution of their shelter problems.

A Role for the Bank

135. The importance of institutional changes in overcoming the bottlenecks in the supply of shelter suggests that the Bank can have a role that exceeds its limited capacity to finance basic shelter projects. Through its projects, the Bank is in a position to demonstrate the effectiveness of the approaches advocated in this paper. The institutional changes required in many countries will not be easy to make and the political will to make these changes will not be forthcoming unless there is a demonstrable chance of success.

136. To date the Bank has been fairly successful in its advocacy of a new approach to providing shelter for low-income groups. In the last six years, basic urbanization projects with a cost of US$1.3 billion have been processed with the benefits expected to go to over 10 million people. What is more important is that the general acceptability of these types of shelter projects is increasing. As late as 1972 only a few countries were willing to try these less conventional approaches to urban shelter provision; today the demand exceeds the Bank's capacity to process these projects. In the first five years of the Bank's efforts in this area, 29 projects were processed, 12 in the last year (FY1978); the program for the next five years (FY1979-83) calls for nearly 90 projects and the trend is upward.

137. In addition to the basic urbanization projects, the Bank's efforts have been aided by the increased emphasis on basic service provision contained in sector-oriented projects, particularly water supply and sanitation. The poverty-directed content of these programs is increasing and when coordinated with basic urbanization, small enterprise, and transportation projects provides a powerful mechanism for improving both the efficiency and the equity of the process of urbanization.

138. The process of demonstrating the efficacy of the shelter approaches advocated by the Bank must necessarily go beyond the involvement in one or two projects in a country. As noted earlier, the process will be a long and difficult one and will require the continuous involvement of the Bank over a fairly long period of time. Within the context of a specific project, it is not possible to achieve all desirable changes in the required amounts at the same time. Take, for example, the problem of interest rates. Most countries have had a policy of subsidizing capital for low-income (and not so low-income) housing and in many cases these interest rates are substantially below market rates. In a first project it has not always been possible to move immediately to more realistic interest rates and compromises have had to be made. These have been followed up by further changes in a second project. A similar strategy has been necessary for a whole range of issues, from cost recovery to design standards. In some instances the exact nature of the changes required can only be guessed at and a process of experimentation is required before solutions can be used on a larger scale.

139. It is in the process of follow-up and continuous involvement, particularly when the Bank can bring to bear its experiences in a variety of countries, that the Bank can play its most useful role in helping countries to devise strategies to meet the shelter needs of their low-income populations. Probably a minimum of three or four projects per country over a period of years is required, with more in large countries. This means that if the Bank is to have any lasting effect on policy, a heavy involvement both in terms of staff time and finance is required.

140. It is difficult, at this point in time, to anticipate what new directions, if any, should be taken in the Bank's approach to the problems of sheltering low-income households. The present approach stresses the importance of experimentation and development of new ideas and institutions. There is obviously much to be learned and each new country and project offers a new challenge, but the essential features of the approach remain the same; affordable solutions, recovery of costs and community participation. The careful monitoring of results combined with a modest research effort provide some of the necessary feedback for further development and modification of existing projects and programs.

141. Perhaps the most important development in recent years has been the growth in many countries of institutions which have as their mandate the promotion of the type of shelter solutions being supported by the Bank. Through its support of contact and communications between these institutions, the Bank has been instrumental in developing a community of interests whose experience and exchange of ideas have done much to promote the rapid acceptability of new approaches to the age-old problems of shelter.[1/]

1/ One example of this effort is the Bank's sponsorship of an international newsletter, The Urban Edge, published monthly by the Council for International Urban Liaison, 818 18th Street, NW, Washington, D.C.

142. How much should the Bank assist in financing the development of this strategy? The answer is, of course, a matter of policy rather than a matter for analysis. The actual number of projects and the countries in which they take place will depend, of course, on the overall analysis of the Bank's program in each country. The calculations below are merely illustrative of the possibilities, taking into account the limitations on the Bank's capacity.

143. The total global expenditure for a poverty-oriented shelter program is on the order of US$6 billion (1975 dollars) per year. Although this amount is not large relative to the financing capacity of the developing countries, it does represent a sizeable share of the funds available from the Bank. In any case, at this point in time the constraints are on the Bank's capacity to develop and process these types of basic urbanization projects rather than on the financial resources available.

144. At present (FY1979) the Bank has the capacity to do about 15 basic urbanization projects per year. With an average loan size of approximately US$23 million (in FY1975 dollars), this implies a lending capacity of about US$345 million per year (in FY1975 US$). Given the past build-up of staff and the growing experience of this staff, it should be possible to develop and manage a program on the order of 25 projects per year by the end of FY1983. Average loan size is also growing. Projects now in the preparation stage tend to be larger, indicating an increase over time. If average project size increases by 10% in real terms between FY1979 and FY1983 (not an unreasonable assumption, given past trends) and the capacity to do 25 projects a year is developed, the total lending program for these types of projects would amount to US$625 million (US 1975 dollars) by FY1983. Assuming Bank financing averages 50% of total project costs, this would imply Bank support for US$1.3 billion out of a total estimated need of US$6 billion per year (US 1975 dollars).1/ This should be large enough to permit the Bank to continue its institution-building role in countries where projects are already under way and at the same time permit a modest expansion into new countries.

145. At this rate the Bank would be involved in some 20% of the total effort (US$1.3 billion out of US$6 billion) and would be financing 10% of the total. A level of US$625 million by FY1983 (or US$1 billion in current dollars) would represent 7.3% of the lending program, implying an increase in the share of these projects of about two percentage points over present levels. This is a feasible goal and would be consistent with the present effort at building up the Bank's capacity. Whether or not this number of projects actually is programmed would depend on the results of the development priorities determined on a country-by-country basis.

1/ The commitment deflator has been used to adjust the US$1 billion in 1975 dollars to current dollars.

146. Whether or not this target is reached may be dependent on factors outside the Bank's control. Many countries are not yet ready to accept the type of affordable and replicable shelter solutions being financed by Bank projects. Even in those countries where it has been accepted, time is required to build up the institutional capacity to undertake such projects on any large scale. In the meantime, there is a real danger that many countries will spend significantly larger amounts of resources on sheltering the poor than implied by the figures used in this paper and still fail to address the problem. Small numbers of high-standard, excessively subsidized units can quickly use large amounts of resources while helping very few poor households.

BASIC NEEDS IN SHELTER

Appendix

Household Expenditure and Income Levels

1. The major factor determining the quantity of housing consumed by any household is obviously the income of the household. The relationship between income and housing expenditures is usually estimated on the basis of household expenditure surveys. The results of these surveys are not easy to interpret. Gathering information of this type is fraught with difficulties of definition in addition to the normal statistical problems in dealing with such a non-homogeneous commodity. In the developed countries, considerable effort and sophistication have gone into estimation of the income/housing expenditure relationship. The results are less than satisfactory. In developing countries the primitive level of information available simply compounds the difficulty of the problem.

2. All indications are that this is not a simple relationship. Factors such as family size, age, education, race, income expectations, etc., all enter into the decision as to what part of the family budget will be spent on shelter.[1/] Seldom is sufficient information available to allow the construction of the type of models that would be required to estimate these relationships with any great degree of confidence.

3. Decisions must be made, however, on the basis of information available. The existing information, regardless of how limited it is, can improve the decision-making process, provided the basis of the information is properly understood and its limitations recognized.

4. Household surveys provide information on the average expenditure of households. They say nothing about what percentage of any increase in income will be spent on housing. However, in developed countries various studies suggest that the average and marginal propensities to consume shelter-related services are about equal, i.e., that if 20% of income is spent on shelter, then 20% of any increase in income (perceived as a permanent increase) will also be spent on shelter. This implies an income elasticity of ≤ 1, which has been supported by the results of a number of studies.[2/]

1/ It might be argued that shelter is a "merit" good and too little will be spent on it. In this case consideration should be given to attempting to raise expenditure. All indications are that this is an extremely difficult task, however. See Ad Hoc Group of Experts on the Financial Management of Government Housing Projects, op. cit., 1976.

2/ Some more recent studies in developed countries have suggested that the elasticity might be less than one (see S.K. Mayo, Theory and Estimation in the Economics of Housing Demand, paper presented to the American Economic Association meetings, Chicago, August 1978).

Bank Experience

5. Bank experience in a number of developing countries shows considerable variation around the 20% figure. Data collected in household surveys (see Table A-1 below) of sample populations representing the lowest third of the income distribution in 12 countries yielded an estimate of 19%. Although this is close to the results obtained in developed countries, some of the survey results are suspect, and it is possible that at very low incomes (e.g., the results for Madras suggest that the figure is closer to 7%) a much smaller amount than 20% is spent on housing.

Estimated Average Expenditures on Housing

6. The data presented in Table A-1 were used in a regression analysis which yielded the following equation (t values in parentheses):

$$\text{Average expenditure on housing} = \underset{(-0.43)}{-12.4} + \underset{(5.22)}{0.187}\ \text{Average household income} \qquad R^2 = 0.64$$

7. This result is somewhat supportive of the assumption, usually applied in developed countries, that approximately 20% of income is spent on housing. However, it is clear (see Table A-1) that this worldwide average may be inappropriate for individual countries. The 20% of household income spent on shelter is probably a reasonable average worldwide, but an intuitive interpretation of experience (rather than a vigorous statistical analysis) suggests that the figure is closer to 15% for low-income countries and 25% for middle and higher income countries. An alternative assumption, for a particular country or countries, can be easily incorporated into the analysis which follows.

Table A-1: HOUSEHOLD SURVEY DATA (US$)

Country	Average Annual Expenditure On Housing	Average Annual Household Income 1/	Average Expenditure On Housing As a% of Average Household Income
Botswana 2/	241.0	1,205	20.0
El Salvador 3/	126.7	1,056	12.0
Ethiopia 4/	91.2	1,142	8.0
India			
Madras 5/	14.1	217	6.5
Baroda 6/	32.0	469	6.8
Indonesia 7/	90.0	600	15.0
Ivory Coast 8/			
Abobo	26.5	172	15.4
Adjane	30.6	207	14.7
Pelieuville	24.5	191	12.8
Jamaica 9/	165.3	601	27.5
Kenya 10/	158.4	792	20.0
Morocco 11/			
Douar Doum	99.0	759	13.0
Douar Maadid	193.0	855	22.5
Douar Hajja	276.0	,187	23.2
Philippines 12/	62.4	618	10.0
Upper Volta 13/	72.0	480	15.0

1/ All household income and expenditure data were obtained from household surveys specific to the bottom third of the income distribution in each country.

Footnotes to Table A-1, continued

2/ Botswana, Second Urban Project, Staff Appraisal Report, May 8, 1978, p. 41.

3/ Salvadorean Foundation for Development and Low-Cost Housing (FSVM), Socio-Economic Evaluation Unit, Series of reports on the evaluation of the Foundation's programs; No. 10: Socio-Economic Study of Santa Ana, Vol. 2; February 1977, p. 49.

4/ First Urban Development Project Proposal, Ministry of Urban Development and Housing, Addis Ababa, March 1978.

5/ Madras Urban Development Project, Madras Metropolitan Development Authority, August 1974, pp. 196-7.

6/ Report on the Chawls and Khadkis of Baroda, 1977, Baroda Municipal Corporation, Chapter 4, pp. 15-16.

7/ February 8, 1978 memo to E.V.K. Jaycox from Inder Sud. Original source: Biro Pusat Statistik, SUSEKNAS, January-April 1976, Jakarta, 1977, Table 2, Expenditures for Housing.

8/ Upgrading report: Abobo, Adjame, Pelieuville; Socio-Economic Survey, January 1978, BCEOM, IBNETD.

9/ Jamaica, Appraisal of a Sites and Services Project, April 12, 1974, Report No. 294a-JM, p. 20.

10/ Low-Cost Housing and Squatter Upgrading Study, Progress Report No. 5, August 1976, Waweru & Associates, Project Group International, Ltd., E. African Engineering Consultants, Economist Intelligence Unit, Ltd., Tables 9-116, p. 15 onwards.

11/ Rabat Urban Development Project, Staff Appraisal Report, February 3, 1978, Report No. 1800-MOR, Urban Projects Department, pp. 6, 48.

12/ Special Socio-Economic Survey (field interview, February/March 1974), Tondo Foreshore Development Authority, publication undated.

13/ Appraisal of Upper Volta Urban Development Project, January 3, 1978, Report No. 1660a-UV, Urban Projects Department, p. 28, revised by M. Cohen.

The Target Population

8. The goal that has been set is to provide adequate shelter to those in the poverty group as defined by the 1975 poverty line. The first step required is to estimate the number of households, rural and urban, that fell below the poverty line in 1975. This was done on the basis of available data on income distribution.[1/] The accuracy of these data leaves much to be

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1/ See Shail Jain, Size Distribution of Income: A Compilation of Data, Johns Hopkins University Press, Baltimore, 1975.

desired and the results should be regarded as orders of magnitude rather than precise estimates. These data are not available for the same year in all countries, but the distribution was applied to 1975 income levels on the assumption that there has been little change in distribution from the time of the estimates (in some cases they go back to 1966) to 1975. This is not an unreasonable assumption, given the stability of income distribution in most countries.

9. During the 25 years under consideration, population and income growth will obviously change the numbers of households that fall below the 1975 poverty line. The assumption made regarding income growth is based on the Bank's projections of real growth in national income through the year 2000 for high-, middle-, and low-income countries. It was assumed that the incomes of the households below the poverty level would grow at the same rate as national income. This income growth, combined with population growth, then determines the net movement in or out of the poverty level as defined in 1975.1/

10. The population estimates are based on the U.N.'s medium variant for both rural and urban population growth. It is assumed that the growth rate of population in households below the poverty line is the same as the national rates for urban and rural populations. To the extent that the population growth of the lower income groups is faster than the national averages, the results are understated. For most countries, however, the lower income groups have sufficient weight in the national averages so that the amount of underestimation is likely to be minimal. The detailed calculations follow:

(1) World Bank projections of real growth in national income through the year 2000 for high-, middle-, and low-income countries are combined with projected rate of population growth (urban and rural) for individual countries to determine the upper bound of per capita income growth.

(2) Using urban and rural income distributions for individual countries, and 1975 urban/rural total per capita income levels, the per capita income level for each decile of the relevant income distribution is calculated for 1975. The percentage of population with per capita incomes below the absolute poverty level can thus be determined, as shown below:

The income distribution indicates the percentage of national income accruing to each decile of the population.

GNP = US$5 million, Population = 5,000, Poverty threshold income = US$460

1/ An alternative assumption, that of a 1% per capita growth, was also tried and yielded about the same results.

% of Population	% of Income	Average Per Capita Income, 1975
0-10	1.8	$180
11-20	3.3	$330
21-30	4.3	$430
31-40	5.0	$500

In 1975, 10% of the population owns 1.8% of the national income. Thus, average per capita income for the 10% of population at the first decile is 0.018 times the GNP, divided by 500 (10% of the population) = $180. Another 10% of population at the second decile owns 3.3% of the national income. Average per capita income at this decile is 0.033 times the GNP, divided by 500 = $330.

If the poverty threshold per capita income is $460, approximately 30% of the population is poor. This is an approximation because the decile income distribution tells us only the average per capita income for each decile. If income is very unevenly distributed within deciles, the actual percentage of population below the poverty line may range within 10% on either side of the approximation. We have implicitly assumed, in using such an approximation, that income is perfectly evenly distributed within each decile.

(3) Assuming that the individual countries' urban/rural income distributions do not change over time, the rate of growth of per capita income is applied through the year 2000. The result is an estimate of the percentage of population with per capita income (in constant dollars) below the absolute poverty level in the years 1980, 1990, and 2000. For example:

Under the national growth assumption, per capita income grows by 3.5% per annum, so that by 1980 only 10% of the population is poor.

% Population	Average Per Capita Income 1975	Average Per Capita Income 1980	Poverty Threshold Income = $460
0-10	$180	$254	
11-20	$330	$465	
21-30	$430	$606	
31-40	$500	$705	

11. The results using the national growth assumption are summarized in Tables A-2, A-3, and A-4. The regional summaries are based in part on country-by-country estimates for those countries with available data. In order to arrive at regional totals, the average of the regions of countries with data was applied to the population estimates of the countries without data. The average size of the household is taken as six (see para 18 below).

12. The distribution of the poor between rural and urban areas today follows the general pattern of the distribution between rural and urban segments of the total population. Approximately 30% of the world's poverty group (1975 definition) resides in urban areas, with considerable variation from region to region. In Latin America, for example, two thirds of the poor live in urban areas. In South Asia, it is just over 20%. By the turn of the century, the bulk of the poor (50-60%) will still reside in rural areas only in South Asia and East Africa. For the rest of the regions, poverty will have become a predominantly urban problem.

13. The projected possible decline in rural households in poverty needs to be viewed with some skepticism, particularly in South Asia. The declines are predicted on the basis of income distribution data that show considerable movements out of poverty, given modest increases in per capita income. This may reflect more poor data than reality. For the rest of the world, the results are more in line with readily observable shifts in population.

14. The target population is determined for both growth assumptions according to the following guidelines:

a. If the poorest household population increases continually through the year 2000, all of the increase plus 50% of poor households in 1980 (consistent with the assumption in para 19: "...differential costs between upgrading existing shelter and providing new shelter.") are the target population.

b. If the poorest household population decreases continually through the year 2000, the target population is 50% of poor households in 1980.

c. If the poorest household population increases and then decreases, the target population is 50% of poor households in 1980.

d. If the poorest population decreases then increases, 50% of poor households in 1980 are the target population.

See Table A-5 for target population by country.

(See Table A-2 for estimates of percentage of population in poverty by country.)

Table A-2: PERCENTAGE OF POPULATION IN POVERTY

	Urban				Rural			
	1975	1980	1990	2000	1975	1980	1990	2000
East Africa								
Botswana	40	42	44	45	31	29	22	18
Kenya	35	37	44	51	39	36	32	27
Malawi	41	46	52	59	17	14	11	9
Sudan	39	36	33	31	19	15	9	7
Tanzania	64	64	69	74	38	36	33	30
Zambia	---------N/A--------				18	9	6	4
West Africa								
Chad	19	20	31	44	11	9	8	7
Ivory Coast	49	47	43	40	30	23	14	9
Senegal	34	32	26	20	32	27	15	9
Sierra Leone	40	42	44	45	37	32	28	25
East Asia & Pacific								
Indonesia	50	50	40	30	65	50	40	30
Korea	9	7	0	0	14	11	0	0
Malaysia	15	15	14	12	24	18	13	9
Philippines	31	27	21	17	22	17	11	7
Thailand	15	10	9	8	13	11	7	5
South Asia								
Bangladesh	50	62	70	76	65	45	35	25
Burma	21	25	28	30	14	11	9	7.5
India	40	43	43	43	46	43	29	20
Pakistan	15	16	16	19	30	25	15	5
Sri Lanka	12	19	18	18	33	33	26	20

Table A-2: PERCENTAGE OF POPULATION IN POVERTY, continued

	Urban				Rural			
	1975	1980	1990	2000	1975	1980	1990	2000
LAC								
Argentina	25	17.5	9	6	24	13	6	3
Brazil	33	30	25	20	18	14	8	3
Chile	29	24	17	12	19	10	5	3
Colombia	28	25	21	18	25	16	9	5
Costa Rica	22	19	16	13	14	9	7	5
Dominican Republic	25	24	22	21	---------N/A--------			
Ecuador	31	26	17	11	45	30	7	4
El Salvador	22	19	16	14	---------N/A--------			
Honduras	21	19	17	15	27	20	8	6
Jamaica	26	23	18	15	38	30	19	13
Mexico	37	34	30	26	39	32	20	11
Panama	19	18	16	15	19	15	9	6
EMENA								
Egypt	28	24	17	16	19	15	9	5
Tunisia	37	35	30	26	29	21	9	6
Turkey	51	47	40	31	32	25	14	8

(4) Absolute numbers of poorest population are calculated using the percentage in poverty (from step 3) and UN estimates of population for the years 1975, 1980, 1990, and 2000. Assuming that a household consists of six people, the number of poor households is calculated. (See Table 1 in the text for regional estimates, Appendix Table A-3 for country estimates.*)

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*To obtain the regional totals reported in the text, divide the sum of the country figures for a given region by the following amounts (as explained in para 11):

East Africa	0.36
West Africa	0.18
East Asia & Pacific	0.85
South Asia	0.96
LAC	0.64
EMENA	0.44

Table A-3: POOR HOUSEHOLDS ('000s)

	Urban				Rural			
	1975	1980	1990	2000	1975	1980	1990	2000
East Africa								
Botswana	5	7	16	29	32	33	31	31
Kenya	87	123	267	549	756	698	984	1,113
Malawi	21	30	57	107	131	121	122	126
Sudan	156	188	300	488	500	452	361	370
Tanzania	110	145	276	520	895	970	1,184	1,434
Zambia	N/A				96	51	39	31
West Africa								
Chad	18	27	75	181	66	61	66	72
Ivory Coast	81	105	167	248	195	162	117	88
Senegal	72	84	106	125	170	158	107	75
Sierra Leone	29	37	60	27	155	148	158	168
East Asia & Pacific								
Indonesia	2,186	2,755	3,458	3,922	11,947	10,220	9,903	8,576
Korea	241	238	0	0	417	330	0	0
Malaysia	91	114	163	198	347	291	252	189
Philippines	818	897	1,095	1,305	1,080	952	772	560
Thailand	174	151	227	319	775	760	633	547
South Asia								
Bangladesh	441	708	1,360	2,457	7,975	6,393	6,664	6,088
Burma	244	411	645	1,047	566	486	469	448
India	8,824	11,505	17,116	25,432	37,470	38,770	31,418	24,691
Pakistan	473	657	1,104	2,070	2,671	2,528	1,942	776
Sri Lanka	68	131	180	247	582	622	543	436
LAC								
Argentina	846	649	390	293	204	104	42	18
Brazil	3,582	4,004	4,861	5,387	1,338	1,080	654	255
Chile	411	382	337	285	67	33	15	8
Colombia	744	826	1,024	1,203	415	277	166	95
Costa Rica	28	29	35	41	29	21	19	15
Dominican Republic	94	116	174	258	N/A			
Ecuador	153	161	163	157	310	229	64	42
El Salvador	60	64	82	108	N/A			
Honduras	30	34	49	69	98	84	44	42
Jamaica	36	37	39	41	76	60	37	24
Mexico	2,303	2,641	3,556	4,475	1,421	1,246	882	531
Panama	27	32	41	54	26	22	15	11
EMENA								
Egypt	832	857	869	1,139	619	513	336	198
Tunisia	166	195	260	328	154	122	62	46
Turkey	1,473	1,710	2,219	2,398	1,244	1,027	633	377

(See Table A-4 for target population by country.)

Table A-4: TARGET POPULATION ('000s households)

	Urban	Rural
LAC		
Argentina	324.5	52.0
Brazil	3,385.0	540.0
Chile	191.0	16.6
Colombia	790.0	138.5
Costa Rica	26.3	10.5
Dominican Republic	200.0	N/A
Ecuador	80.5	114.7
El Salvador	76.0	N/A
Honduras	52.2	42.0
Jamaica	21.8	30.0
Mexico	3,154.0	623.0
Panama	38.8	11.0
EMENA		
Egypt	710.0	257.0
Tunisia	230.0	61.0
Turkey	1,543.0	514.0
West Africa		
Chad	167.5	41.7
Ivory Coast	195.5	81.0
Senegal	83.0	79.0
Sierra Leone	18.5	94.0
East Africa		
Botswana	26.0	16.5
Kenya	487.5	635.0
Malawi	92.0	65.5
Sudan	394.0	226.0
Tanzania	448.0	949.0
Zambia	N/A	25.5
South Asia		
Bangladesh	2,103.0	3,501.0
Burma	842.0	691.0
India	19,679.0	19,385.0
Pakistan	1,742.0	1,264.0
Sri Lanka	182.0	311.0

Table A-4: TARGET POPULATION ('000s households), continued

	Urban	Rural
East Asia & Pacific		
Indonesia	2,545.0	5,296.0
Korea	119.0	165.0
Malaysia	141.0	145.5
Philippines	857.0	476.0
Thailand	244.0	380.0

Note: To obtain regional poor household totals reported in Table 1 in the text, divide the sum of the above figures for a given region by the following amounts:

E. Asia	0.85	W. Africa	0.18
S. Asia	0.96	LAC	0.64
E. Africa	0.36	EMENA	0.44

Costs Per Household

15. Assuming that poor households can afford to spend 20% of household income on housing annually, it is possible to calculate the capital value (investment cost) of this expenditure. When calculated at the poverty-level income, the result will be an estimate of the capital investment necessary to supply households with a minimum (i.e., poverty-level) amount of housing.

16. The costs of providing this housing are estimated using the following assumptions:

(1) The cost of capital is assumed to be 6% in real terms and the term of the mortgage 15 years.

(2) Average household size is six.

(3) The household income available for shelter expenditures is 20% of income at the poverty line.

17. These assumptions reflect judgments based on experience rather than precise estimates for individual countries. The cost of capital undoubtedly varies considerably from country to country and over time. The 6% is a compromise, as is the 15-year term of the mortgage. Variations in one or both change the investment costs in obvious directions. The 6% may be on the high side and the 15-year mortgage is probably on the low side, but on balance the resulting estimates do not appear to be unreasonable as rough orders of magnitude.

18. Setting the average household size at six reflects a rough approximation of the global situations. In some developing countries it may be slightly higher or slightly less. In any case the size of the household has no impact on the cost estimates. Unit costs are based on household incomes which are derived from per capita income estimates. Increases or decreases in household size may be used to derive an estimate of the number of units necessary rather than the total amount of investment.

19. In order to take into account the backlog of housing needs that will have accumulated between 1975 and 1980, it was assumed that the poverty group in this period would have some, albeit inadequate, type of shelter. The cost of upgrading the shelters built in this period is assumed to be one half the cost of new units. This is roughly in line with Bank experience on the differential costs between upgrading existing shelter and providing new shelter.

20. At 6% per annum for 15 years, the capital sum of annual household expenditure on housing will be 9.711 times 20% of annual household income at the poverty level:

(Urban Target Population) x (20% of Urban Poverty Threshold) x 9.711
Household Income

+

(Rural Target Population) x (20% of Rural Poverty Threshold) x 9.7
Household Income

=

Total Investment Necessary, 1980-2000

(See Table A-5 for poverty-level household incomes and Table A-6 for total investment by country.* Source for capital sum, 9.711, is Compound Interest Tables, Present Value of 1.)

Table A-5: POVERTY-LEVEL HOUSEHOLD INCOMES, 1975 (US$)

	Urban	Rural
East Africa		
Botswana	1,050	750
Kenya	864	540
Malawi	360	360
Sudan	690	480
Tanzania	876	510
Zambia	1,050	750

*To obtain the regional totals reported in the text, divide the sum of the country figures for a given region by the following amounts (as explained in para 11):

East Africa	0.36
West Africa	0.18
East Asia & Pacific	0.85
South Asia	0.96
LAC	0.64
EMENA	0.44

Table A-5: POVERTY-LEVEL HOUSEHOLD INCOMES, 1975 (US$), continued

	Urban	Rural
West Africa		
Chad	366	300
Ivory Coast	1,218	576
Senegal	906	420
Sierra Leone	468	324
East Asia & Pacific		
Indonesia	750	570
Korea	948	840
Malaysia	1,290	1,290
Philippines	1,080	930
Thailand	750	468
South Asia		
Bangladesh	600	540
Burma	360	240
India	480	390
Pakistan	390	498
Sri Lanka	408	456
LAC		
Argentina	3,918	3,036
Brazil	2,430	1,734
Chile	1,254	894
Colombia	924	918
Costa Rica	1,860	1,326
Dominican Republic	1,248	1,434
Ecuador	966	690
El Salvador	1,056	750
Honduras	930	666
Jamaica	2,262	1,830
Mexico	2,904	1,830
Panama	2,286	1,632
EMENA		
Egypt	714	510
Tunisia	1,746	972
Turkey	984	1,140

Shelter Expenditures and National Resources

21. In order to explore the ease or difficulty with which countries can be expected to meet the investment goals presented in Table A-6, we compare the estimated investment necessary with what is "normally" invested in housing. The method is as follows:

(1) We predict the "normal" share of housing in total output, according to the Burns and Grebler method referred to in para 111, on average for the period 1983-86. The equation originally estimated by Burns and Grebler appears below:

$$SHTO = 1.87 + 52.38(GDP) - 0.0164(GDP)^2 - 0.73(DPOP) + 0.239(DPOP)^2 + 0.077(URB)^2 \qquad R^2 = 0.61$$

Table A-6: TOTAL INVESTMENT NECESSARY (by country) (US$ millions)

East Africa	
Botswana	76.9
Kenya	1,482.0
Malawi	109.9
Sudan	737.9
Tanzania	1,700.0
Zambia	37.0
West Africa	
Chad	143.0
Ivory Coast	653.0
Senegal	210.0
Sierra Leone	75.8
East Asia & Pacific	
Indonesia	9,353.0
Korea	488.0
Malaysia	717.0
Philippines	2,654.0
Thailand	700.0
South Asia	
Bangladesh	6,360.0
Burma	909.7
India	32,992.0
Pakistan	2,539.0
Sri Lanka	419.0

LAC	
Argentina	2,776.0
Brazil	17,794.0
Chile	494.0
Colombia	1,664.0
Costa Rica	122.0
Dominican Republic	484.7
Ecuador	304.7
El Salvador	155.8
Honduras	148.6
Jamaica	202.0
Mexico	20,003.0
Panama	207.0
EMENA	
Egypt	1,238.0
Tunisia	894.0
Turkey	4,081.5

Data on the following variables for each of 35 countries were substituted into the original equation to obtain SHTO 1983-86. Results are listed by region in text Table 4 and by country in Appendix Table A-7.

GDP = GDP/capita 1975-80, from World Tables 1976, and Prospects for Developing Countries 1978-85, Development Policy Staff, pp. 29-35.

DPOP = Average population growth rate 1975-80, from UN population projections.

URB = As defined previously, for 1975-80 using UN population projections.

Table A-7: AVERAGE ANNUAL % SHARE OF HOUSING IN TOTAL OUTPUT (1983-86) BY COUNTRY

East Africa	
Botswana	3.7
Kenya	3.3
Malawi	2.4
Sudan	2.8
Tanzania	3.3
Zambia	4.3
West Africa	
Chad	2.4
Ivory Coast	4.6
Senegal	3.6
Sierra Leone	2.6
East Asia & Pacific	
Indonesia	2.3
Korea	4.1
Malaysia	4.2
Philippines	3.5
Thailand	3.5
South Asia	
Bangladesh	2.5
Burma	2.2
India	2.2
Pakistan	3.0
Sri Lanka	2.2

LAC	
Argentina	9.3
Brazil	4.8
Chile	6.3
Colombia	4.0
Costa Rica	5.2
Dominican Republic	4.8
Ecuador	4.7
El Salvador	4.1
Honduras	4.1
Jamaica	7.5
Mexico	6.1
Panama	6.7
EMENA	
Egypt	3.3
Tunisia	4.0
Turkey	5.0

(2) The anticipated share of housing in total output combined with projected average annual 1983-86 GDP for each of the countries listed in Table A-7 yields expected housing investment in dollar terms. These dollar figures can be compared with projected average annual investment necessary (1980-2000) to determine how well a plan for supplying basic needs in housing will correspond to the investment capabilities of LDCs.

Average annual investment necessary as a percent of SHTO 1983-86 is presented in the text (p. 29) by region, and Appendix Table A-8 by country.

Table A-8: AVERAGE ANNUAL INVESTMENT NECESSARY AS % OF "NORMAL" INVESTMENT IN SHELTER, BY COUNTRY

East Africa	
Botswana	28
Kenya	85
Malawi	23
Sudan	33
Tanzania	90
Zambia	N/A
West Africa	
Chad	56
Ivory Coast	13
Senegal	15
Sierra Leone	36
East Asia & Pacific	
Indonesia	8
Korea	4
Malaysia	5
Philippines	7
Thailand	0
South Asia	
Bangladesh	56
Burma	20
India	45
Pakistan	7
Sri Lanka	12
LAC	
Argentina	1
Brazil	24
Chile	24
Colombia	12
Costa Rica	3
Dominican Republic	11
Ecuador	6
El Salvador	5
Honduras	4
Jamaica	2
Mexico	7
Panama	3
EMENA	
Egypt	2
Tunisia	10
Turkey	9

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

MODEL FOR ANALYZING ALTERNATIVES IN URBAN PROJECT DESIGN

Tuesday, November 13, 1979

9:00 a.m. - 12:00 noon Code 19.NHP

Presented by:

James O. Wright, Jr.

SHELTER TRAINING WORKSHOP

November 5-30, 1979

I. INTRODUCTION. . . . . 19.NHP -- 2

II. THE TRADE-OFFS BETWEEN FINANCIAL TERMS, DESIGN STANDARDS AND LAND USE PARAMETERS. . 19.NHP -- 3

III. THE MORE PRECISE DETERMINATION OF DESIGN STANDARDS AND INFRASTRUCTURE COSTS. . . . . 19.NHP -- 4

IV. THE FEASIBILITY OF WALK-UP APARTMENTS . . . 19.NHP -- 6

PROGRAM SHEETS. . . . . 19.NHP -- 7

PADCO/BERTAUD MODEL FOR ANALYZING ALTERNATIVES IN URBAN PROJECT DESIGN

19.NHP

After a brief presentation and general description of the model (see outline), the use of the model can be demonstrated to the participants by having them volunteer proposed values for project parameters and showing the implications of these values. Alternatives can be quickly proposed and demonstrated. The lecturer should prepare a set of illustrative data in advance in case it is needed to stimulate the participants' understanding of the model.

OUTLINE OF PRESENTATION

I. INTRODUCTION

A. Background

1. The model was developed during a period of several years while working in many developing countries.

2. To use it one must first have a good understanding of the housing market including a thorough understanding of target groups' incomes and expenditure patterns.

B. Purpose and Scope

1. The model is to study the trade-offs in project parameters. These parameters can be considered in three groups:

   (a) Financial parameters (e.g. interest rates and recovery periods).

   (b) Design standards and costs (e.g. costs for on- and off-site infrastructure and for housing structures).

   (c) Land use parameters (e.g. amounts of open space and plot sizes).

2. There is an infinite number of combinations of values for these parameters. The model uses the mathematical relationship between the parameters to assess different alternatives quickly. For example, for a given project we can know immediately the amount by which plot sizes can be increased if infrastructure costs are reduced.

3. The model can also be used to analyze alternative mixes of plots within a project and to calculate cross-subsidies. It can be used to assess the desirability of walk-up apartments versus single story construction.

II. THE TRADE-OFFS BETWEEN FINANCIAL TERMS, DESIGN STANDARDS AND LAND USE PARAMETERS (Program I)

A. Purpose

Program I (Data Sheet 1) is the most widely applicable of the programs of the model. It is used to assess the trade-offs between the financial terms, design standards and land use parameters listed in Data Sheet 1. It can also be used to assess the implications of using different sites for low-cost shelter projects.

B. Use of the Program*

1. In most cases the monthly payments affordable (f) and available financial terms (h,i,N) should be known. These should be entered in the indicated data registers and used to calculate the amount of capital available to individual households for new housing (k).

2. Values for design standards and unit costs should be entered in lines 6-15 of Worksheet 1 and the indicated data registers. The required density (d) to achieve these standards within the cost constraint (k) can then be calculated.

3. Values for proposed land use parameters (Worksheet 1, lines 17-19) should then be entered to calculate plot size (j).

4. The above process can be reversed. If a different plot size is desired, it can be entered to calculate the required

---

* For all worksheets, variables highlighted with heavy lines are the principal inputs and/or outputs of the programs. All other variables are entered in data registers.

density. The monthly payment required for this density, given values for the parameters in lines 2-15, can then be calculated.

5. Likewise, the cost affordable at a given level of density for land (e), on-site infrastructure (c_1), and core houses (ab) if values are stipulated for all the other variables.

C. Conditions for Use

1. For the above calculations the monthly payment assumed available per household for housing (f) should be net of utilities costs, land taxes and other factors which could affect the amount of loans which could be amortized. If alternative site locations are being considered, the cost of commuting should also be netted out of monthly payments (f).

2. Likewise, site preparation costs should be included in land cost (e) and differences in the cost of off-site infrastructure (c_2) should be taken into account to achieve a fair assessment of affordable standards in each alternative site.

3. In the initial stages of project planning rough estimates for project parameters based on previous similar projects can be used. A methodology for establishing more exact values is presented below which is useful in the later stages of project planning.

III. THE MORE PRECISE DETERMINATION OF DESIGN STANDARDS AND INFRASTRUCTURE COSTS (Program II)

A. Purpose

1. This program is useful for developing more accurate estimates of on-site infrastructure costs (c_1) and the percentage

of circulation space required (p) when estimates from previous experience are not available. These can be calculated if layout design variables such as street widths, block lengths, and plot ratios are stipulated and contractors' unit costs are available to calculate the linear costs of infrastructure network (c_3) and the unit cost of road and footpath construction.

2. The more detailed determination of c_1 and p are also required because both actually vary when plot sizes change. Program I assumes they remain constant and it will yield accurate enough results for general policy planning.

B. Use of the Program

1. Values for primary street width (u), secondary street width (v), block length (w), and plot ratio (x) are entered in Data Sheet 1, lines 21-24 and the relevant data registers. Operation 1 will calculate the percentage of circulation space (p) given an average plot size.

2. Operation 2 will calculate the network cost per square meter (t).

3. If values for c_3 and c_4 are entered in lines 27-28 and the relevant data registers, the cost of on-site infrastructure per m^2 can then be calculated.

C. Conditions for Use

1. More precise values for c_1 and p determined above can be fed into Program I.

2. An average plot size should be assumed initially to calculate values for p and c_1. If the plot size is changed significantly from this average during the use of Program I.

however, new values for p and c_1 should be calculated from Program II and fed back into Program I.

IV. THE FEASIBILITY OF WALK-UP APARTMENTS

A. Purpose

1. The feasibility of walk-up apartments must frequently be assessed to determine whether the more intensive land use compensates for the higher unit costs of construction. This program calculates the apartment size possible given financial constraints and the costs and planning parameters listed in Data Sheet 2.

2. The feasible apartment size can be calculated and compared with feasible plot and house sizes in the same situation if single story construction were used.

B. Use of the Program

1. The capital available to households for new housing is first calculated as in Program I.

2. The costs of land, construction, and on- and off-site infrastructure are then noted on Data Sheet 2 as are the proposed land use and building design parameters (b_2,y,q, and m_1). The apartment area which is possible given these costs and design parameters can then be calculated.

3. The density per hectare and the floor/area ratio can also be calculated.

4. Possible variations in the above results by using different design standards and costs can be readily assessed. These results can be compared with the results of Program I to assess the relative feasibility of walk-up versus low rise construction.

PROGRAMS I AND II, DATA SHEET 1

TRADE-OFFS BETWEEN PROJECT PARAMETERS

TITLE: TRADE-OFFS BETWEEN PROJECT PARAMETERS

PROGRAMS I AND II DATA SHEET 1		1	2	3	4	5	6	7
	Percentile							
	Monthly Income							
	Percent of Income for Housing							

		Symbol	Data Register	1	2	3	4	5	6	7
1	Monthly Payment	f								
2	Yearly interest rate (%)	I	P-0							
3	Recovery period (years)	N	P-1							
4	Downpayment (%)	h	P-2							
5	Capital available per household	k	E(Stored)							
6	Land cost per m^2	e	S-0							
7	On-site infrastructure cost/m^2	c_1	S-1							
8	Off-site infrastructure cost/m^2	c_2	S-2							
9	Construction cost per m^2	a_1	S-3							
10	Connection cost per plot	a_2	S-4							
11	Special feature cost	a_3	S-5							
12	Community facilities cost	a_4	S-6							
13	Core house size (m^2)	b	S-7							
14	Number of households per community facility*	y	S-8							
15	Persons per plot	i	A							
16	Density (persons per hectare)	d								
17	Circulation space (%)	p	P-3							
18	Parks and open space (%)	M_1	P-4							
19	Community facilities (m^2 per person)	M_2	P-5							
20	Plot size (m^2)	j								
21	Width of primary street (m^2)	u	P-0							
22	Width of secondary street (m^2)	v	P-1							
23	Block length (m^2)	w	P-2							
24	Plot ratio (length : front)	x	P-3							
25	Circulation space (%)	p	A(stored)							
26	Network length per m^2	t	B(stored)							
27	Network cost per linear meter (m)	c_3	P-4							
28	Circulation cost per m^2	c_4	P-5							
29	On-site infrastructure cost per m^2	c_1								

PROGRAM I

PROGRAM II

*If none, a value of 0.00001 should be entered as a proxy for zero.

PROGRAM III, DATA SHEET 2

CALCULATION OF PLOT DISTRIBUTION AND LAND PRICE WITH CROSS-SUBSIDY

TITLE: CALCULATION OF PLOT DISTRIBUTION AND LAND PRICE WITH CROSS-SUBSIDY

PROGRAM III DATA SHEET 2		Symbol	Data Register	1	2	3	4	5	6	7
1	Required % of plot type A	%A	P-0							
2	Required % of plot type B	%B	P-1							
3	Required % of plot type C	%C	P-2							
4	Required % of plot type D	%D	P-3							
5	Area of plot type A (m^2)	jA	P-4							
6	Area of plot type B (m^2)	jB	P-5							
7	Area of plot type C (m^2)	jC	P-6							
8	Area of plot type D (m^2)	jD	P-7							
9	Area for parks and open space (%)	m_1	P-8							
10	Community space (m^2 per person)	m_2	P-9							
11	Marketable community area not charged to beneficiaries (m^2/hsld)	m_3	S-1							
12	Persons per plot	i	S-2							
13	Area for circulation (%)	P	S-3							
14	Total area	T	S-4							
15	Number of plots, type A	NA	A(stored)							
16	Number of plots, type B	NB	B(stored)							
17	Number of plots, type C	NC	C(stored)							
18	Number of plots, type D	ND	D(stored)							
19	Total number of plots	Tpl	E(stored)							
20	Marketable community area (m^2)	Tm_3								
21	Total marketable area (m^2)	TMA								
22	Total marketable area (% of T)	%TMA	S-0(stored)							
23	Average land cost	e	S-5							
24	Land cost, plots type B	eB	S-6							
25	Land cost, plots type C	eC	S-7							
26	Land cost, plots type D	eD	S-8							
27	Land price, community area	em_3	S-9							
28	Land price, plots type A	eA								

PROGRAM IV, DATA SHEET 3

THE FEASIBILITY OF WALK-UP APARTMENTS

TITLE: THE FEASIBILITY OF WALK-UP APARTMENTS

PROGRAM IV DATA SHEET 3		Symbol	Data Register	1	2	3	4	5	6	7
1	Monthly payment	f								
2	Downpayment	h	A							
3	Yearly interest rate (%)	I	B							
4	Recovery period (years)	N	C							
5	Total capital per household	K	E(stored)							
6	Land cost	e	P-1							
7	Construction cost per m^2	a_1	P-2							
8	On-site infrastructure cost/m^2	c_1	P-3							
9	Off-site infrasturcture cost/m^2	c_2	P-4							
10	Common built area per floor	b_2	P-5							
11	Number of apartments sharing b_2	y	P-6							
12	Number of floors	g	P-7							
13	Percent of communal open space	m_1	P-8							
14	Apartment area	b_1	D(stored)							
15	Persons per apartment	i	P-9							
16	Density	d								
17	Floor area ratio	FAR								

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

HOUSING MARKET ANALYSIS

Tuesday, November 13, 1979

2:00-5:00 p.m. · Code 21.NHP

Presented by:

Coralie Bryant

SHELTER TRAINING WORKSHOP

November 5-30, 1979

I. POSSIBLE ROLES AND PURPOSES OF HOUSEHOLD SURVEYS. . . . . 21.NHP -- 1

II. MANAGING THE SURVEY PROCESS. . . . . 21.NHP -- 1

III. COMPONENTS IN THE SURVEY PROCESS-. . . . 21.NHP -- 3

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READING MATERIALS

Rural To Urban Migration: Some Data from Botswana . . . . . 21.NHP -- 7b

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HOUSING MARKET ANALYSIS

I. Possible Roles and Purposes of Household Surveys

There are many different possible reasons for undertaking a household survey. Frequently existing data sources are few and fragmentary. That which is available may not address the questions one has about the demand for, or the supply of, a particular policy or program. In the case of housing policies existing data sources are especially incomplete.

A. Three broad purposes for which household survey data are needed.

1. Developing baseline feasibility of programs and projects requires that survey work be undertaken. The initial design of a program requires data in order that the problem be defined with specificity. When housing is defined as more than physical structures and includes access to those factors which determine availability of housing, and its quality, survey data are essential.

2. Illuminating policy choices and delineating the trade-offs in these policy alternatives requires data. There is a wide range of alternative ways in which one can impact the quality and quantity of the demand and supply for housing. Both the process of household data collection and analysis of its results gives rise to useful specification of these alternatives.

3. Evaluating the impact of a policy requires household survey data. This role for data collection is its most readily accepted and established one. A related, although separable role is its use for monitoring program management and improving managment effectiveness.

B. The purposes for which the survey is undertaken determines the way in which the process will be designed and administered.

Once one has determined <u>why</u> household level data must be collected, the alternatives involved in <u>how</u> that is to be done begin to fall into place. In any of the roles discussed above, however, there may be a good case for a small, in depth preliminary survey, the results of which can be used in helping to design a more comprehensive effort to follow.

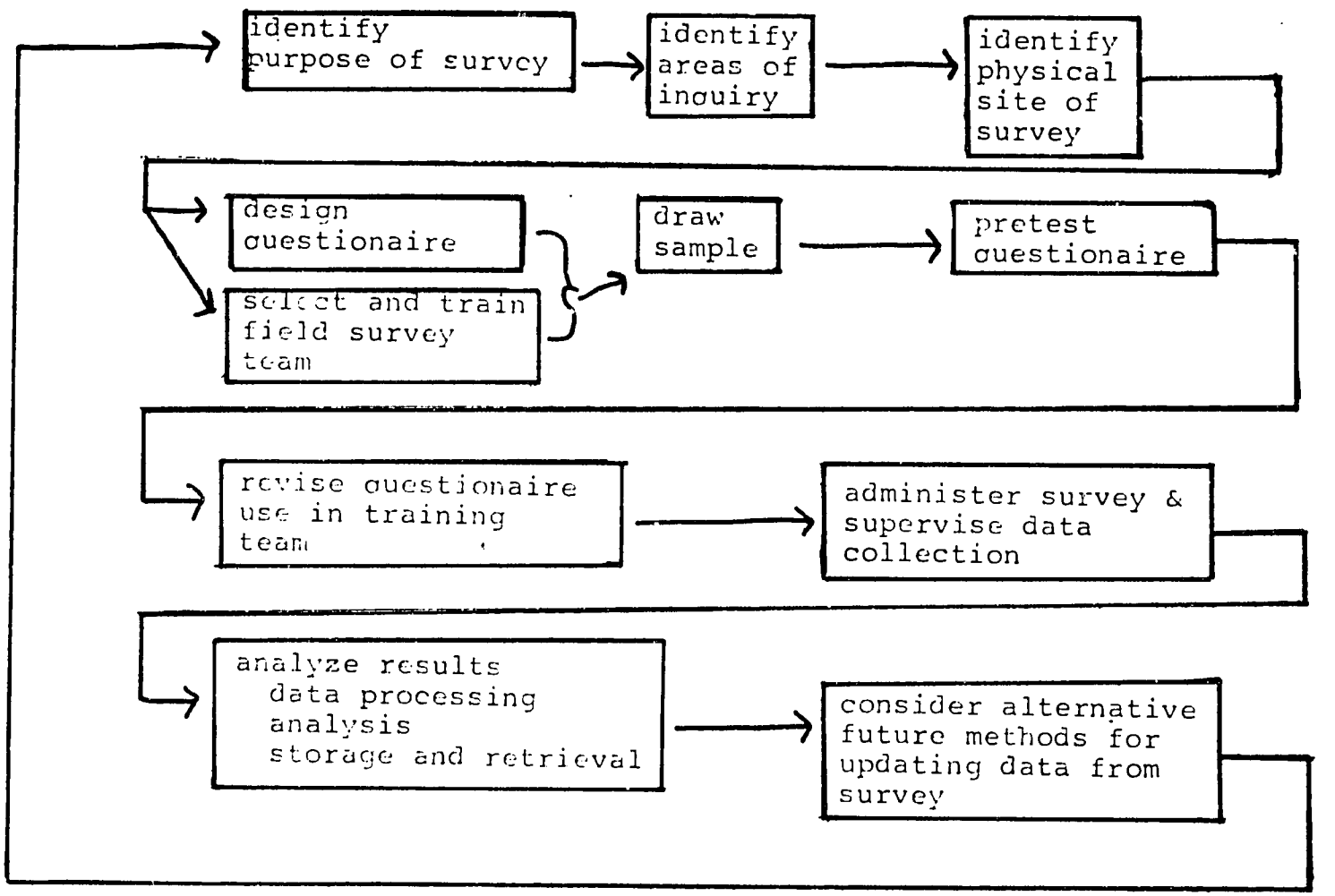
II. Managing the Survey Process

Since a household survey is a labor intensive data collection effort, it requires intensive and careful management. Below are laid out the steps in the survey process. Each of these steps makes different demands on the management skills of those directing the effort.

A. Establishment of the purpose of the survey indicates the manner in which the survey should be managed.

If the household survey is in a previously unidentified problem area--for example, squatter housing--the survey process from initial design of the questionaire to training of the field survey team is different from a survey undertaken to evaluate a well established, ongoing project or program.

B. The steps in any survey process are as follows:



C. Each of the steps in the process diagrammed requires elaboration.

Each of these steps can be done simply, or in varying degrees of sophistication. The degree of sophistication necessary is determined by the original purpose and the potential uses of the household data. There is much to be gained, however, from undertaking relatively straightforward data gathering in the area of housing and community development. Since there is very little data on many aspects of these issues, household interviewing can have more pay-off than is often anticipated. Inquiries

about the structure of demand and the kinds of housing and housing service preferences people have can be very illuminating and useful for framing policy choices.

D. National level survey research is expensive. Targeted local level surveys can fill in data needs and, if designed creatively, can be less expensive.

The most usual objection to household survey data is that it is expensive to collect and analyze. If storage and retrieval considerations are also included, as they should be, this cost factor is a constraint. Often, however, local level possibilities are more abundant than is commonly appreciated. The local university can be involved in data collection as survey endeavors should be explored. (For example, involving local civil servants in designing a survey of a local settlement area in conjuntion with a university survey team will be less costly, and may have many positive externalities. Policy possibilities which were previously not considered begin to move into the realm of the possible.)

III. Components in the Survey Process

Refer back to the process as diagrammed in II-B. Each of those components needs elaboration.

A. Identifying the purpose of the questionaire.

1. The purpose of a household survey is to discover and identify past changes in behavior. Under these circumstances the household survey is a particularly valuable source of data. Rather than speculating about behavior and motivation, the prime actors can be asked about behavior and preferences. Data is better than speculation for the discovery of preferences. Establishing patterns of actual behavior is more useful than knowledge of preferences.

2. If multiple groups are involved in the data collection process, discussion of possible competing purposes should be undertaken at the outset.

Sometimes more than two organizations are involved in the household data collection process. If each envisions different and potentially competing uses for the data, conflict can be avoided by negotitions at the outset about the general objectives for which the data is being acquired. The scarcity of data generally means that data is a rich resource. The general scarcity of data means that others will want access to it at different points. Ground rules on access should be determined by the purpose for which the data is being acquired.

B. Designing questionaires

Since questions which are to be asked of respondents must be direct and specific, framing those questions is difficult work. Care must be taken not to lead the respondent to

particular answers. Bias in the questions must be eliminated. Usually a series of questions must be designed along a line of inquiry if the results are to be informative. Questions must be phrased to guide the respondent through all possibilities of the issue under inquiry. Choices must be made about "open" questions in which the range of possible responses are up to the respondent, in contrast to "closed" questions in which the respondent chooses among alternatives: Sources on this aspect of household surveys are covered in the references and appended materials along with a sample of an actual questionaire.

1. Questionaires must be pretested.

Pretesting the questionaire is required and the questionaire should be revised in light of that pretesting. This step is not as essential if a pilot questionaire has been administered.

2. Involve the field staff in the pretest.

One can handle two functions at once if some of the field staff are involved in the pretesting of the questionaire, its revision, and then in the training of the rest of the field staff.

C. Sampling and Drawing the Sample

The quality of the sample is the single most important variable determining the quality of the data. The sample is the is the group of households to which the survey will be administered. A sample must be as accurate a reflection of the whole of which it is a part as possible. If the whole group has great diversity, then the sample must reflect that diversity. The extent to which one can generalize from the questionaire responses is a function of the sample. Sampling is the process by which that group of people who will be interviewed is chosen.

The first choice in a household survey is whether a simple random sample will be sufficient given the purposes of the survey, or whether the sample must be stratified. A random sample means that every potential respondent had an equal chance of being drawn with every other respondent. One of the difficulties is that sometimes one does not know the whole universe of possible respondents. For example, consider that a local government wanted to know about the potential demand for housing services in a squatter settlement, but that they did not know how many people lived in that settlement, and hence did not know how to draw a random sample. An aerial photograph can help to delineate the size of that universe. A random sample can then be drawn from the huts apparent on that photograph. If, on the other hand, there is concern about the diversity within the population by strata, for example, age and place of origin, then a stratified sample can be drawn once the parameters of those differences have been established.

D. Selecting and training the field survey team.

1. A plan must be laid out for the selection, training, supervision, and compensation of the field survey team. These are the people who will be interviewing respondents and collecting the data. Their training and supervision has far reaching consequences for the quality of the data collected. Supervision is necessary precisely because this form of data collection is labor intensive. Adequate compensation is not enough to insure care in the administration of the questionaire. The more this staff is also involved in the pretesting and revision of the questionaire, the more careful they may be in its administration.

2. Supervision of the field staff must be scheduled, planned and organized. If the interviewing team encounter supervisors in the field, motivation may be maintained. As each questionaire comes in completed, it must be spot checked for errors immediately. Supervision requires a daily schedule. Transportation factors are major considerations for both the field staff and the essential supervision.

3. Interviewing respondents is a skill. Training in interviewing techniques is important. And yet it should be remembered that interviewing affords the interviewer with an unparalleled chance for acquiring new information and learning about aspects of people's needs and expectations. There are many circumstances, therefore, under which an agency or group might want this experience for its own officials rather than for a separately recruited staff. Some innovative management training programs, for example, will incorporate empirical exercises as one method of "freeing up" the minds of those officials usually involved in the policy area to consider new possibilities. (For example, a US AID mid-career program incorpates, as one aspect of its training programs, that AID officials interview small farmers intensively in order to better understand the choices and options open to those farmers.)

E. Administer survey

Once the survey is actually being run, it is an "all-hands-on-deck" management situation. Supervisory staff must be at hand. Schedules must be coordinated and checked on a daily basis. Field staff needs constant supervision. And records, detailed records, must be kept of the respondents which have been reached, those who were not reached, and the status of the sample. Since the actual number of interviews will always be less than the total size of the sample, there should be procedure to follow for missing cases. It is important to monitor the daily progress through the sample.

F. Analysis of results

The analysis of the results of a household survey is another whole sequence within itself. Preparation of the results for processing, the tabulations of those results, and the decisions concerning storage and retrieval are integral parts of this process.

1. Pre-coding the questionaires will make data processing more possible. But one should not ever be deterred from undertaking a survey because of limited computer processing skills or facilities. Pencils and paper are frequently the most appropriate technology for the first attempts at discovering patterns of behavior and perceptions among a group of people.

2. A useful, quick and feasible rule is to think about the possible tables one might want to construct at the time that the questions are being drafted. For example, if one had designed questions concerning the relationship of income to access to shelter, and the relationship of shelter to potable water the following tables are suggested:

	income groups			
access to potable water				

	access to potable water	
quality of shelter		

The construction of the tables, however, calls forth a host of other issues which are integrally related to these two complex relationships.

	access to potable water		
occupation			

	quality of shelter			
occupation				

	access to adequate shelter			
dependency ratio				

3. If computer processing equipment is to be used, precoding the questionaire greatly eases the keypunching and tabulation of the results. Each question can then be cross tabulated with all other possibly useful combinations. From those cross-tabulations further analysis can be undertaken. Precoding requires that one keep in mind the space available on an IBM computer card and the column for the punching be noted in the margin of the questionaire. (see example in appendix.)

4. Hand processing for small samples is possible, and should not be dismissed. The need for the data should overrule the limitations of the available equipment. Intermediate equipment--such as a counter sorter--if available, could be used. Rudimentary labor intensive devices can also be used with good results.

5. How the data will be processed should be considered when one is designing the questionaire. Ease of reading the responses and ease of tabulation can be built into the questionaire initially.

6. Storage and future retrieval of the data should be planned. As data is a scarce resource, its future availability should be considered. The more care there is in storage and retrieval, the greater the possibility that future efforts can build cumulatively upon the initial data efforts.

IV. Feedback of Survey Results

One survey can, and should inform the design of future surveys. Indeed, when surveys are used as part of an on-going evaluation process the results of one survey leads directly to the next iteration in the process. They may be designed to be cumulative. Often in the process of analyzing one survey, a whole area of inquiry is raised which will need to be addressed in the future. All too often little provision is made for how and when the feedback of the results will take place.

A. One of the issues about feedback is that those involved in the analysis of results may be better statisticians than communicators. Handing accumulated tables to decision makers does not constitute "feedback". Some interpretation of the potential implications which one might draw from the tables is necessary. Attention to feedback as part of the process should, therefore, mean attention to the communication and interpretation of results to those concerned with policy choices.

B. One way in which governments and officials could add to their available data would be with more careful requirements for deposits of collections which have been acquired within their countries by visiting scholars. Protection must be granted to maintain confidentiality of the respondents. But the aggregated responses might be made available as a part of national archives.

V. Conclusion

Too little is known about a large range of issues on the availability and access of people within developing countries to shelter. There are a number of factors in the environment which impact upon shelter. In addition to the need to know about the distribution of the presently available shelter and its distrubution of the presently available shelter and its condition, little is known about the demand for related facilities, their current supply or delivery, and the possible match or mis-match between supply and demand factors. Household surveys are one of the prime methods for filling in the missing pieces of the policy puzzle.

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SUPPLEMENTAL READING TO HOUSING MARKET ANALYSIS

RURAL TO URBAN MIGRATION: SOME DATA FROM BOTSWANA

Coralie Bryant
Betsy Stephens
Sherry MacLiver

One of the most consequential recent developments in Africa is its rapid rate of urbanization. Over much of the continent, there is a movement from rural areas to urban centers and towns (Hanna and Hanna, 1971). There has been some social science research on this process (Caldwell, 1969; Mabogunje, 1968; Ross, 1975). Additional case studies reflecting original empirical research are essential to social scientists attempting to interpret the nature of the concomitant social and political change. Data generated by such empirical research are also needed by policy makers struggling to fashion policy strategies responsive to the changing urban needs.

On this most rapidly urbanizing continent, one of the countries with the highest rates of rural to urban migration is Botswana. Between 1971 and 1975, its capital, Gaborone, experienced an annual population growth rate of almost 15 percent. In December 1975, the Department of Statistics of the University College of Botswana conducted a major survey of migrants in Gaborone. In this article, we will report and discuss significant survey findings concerning the demographic and social characteristics of migrants, their motives for migrating, places of origin, the disposition of new arrivals in town, and the continuing pattern of rural urban linkages.

BACKGROUND

In 1966, at the time of independence, Botswana, about the size of France or Kenya, had only three "modern" towns with a combined population of around twenty thousand people. Gaborone, a small tribal village and colonial administrative center, was selected in 1964 as the site for the new capital which previously had been Mafeking, South Africa. Nearly all of the present population are migrants to the new town.

Although urbanization is a relatively new process in much of Africa, historically and culturally the Batswana have had a very distinctive settlement pattern and an unusual tradition of mobility.[1] In this respect urbanization in southern Africa generally is not easily comparable to that occurring in much of west or even east Africa. Villages are the focal point of tribal life and in the beginning, all tribal households were resident in the village. They plowed and ran their stock on adjacent lands. Over time, a combination of population pressures and exhaustion of

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the land forced the chiefs to allocate outlying areas for cultivation (called "the lands" by the Batswana), and further afield, to designate "cattle posts" for herding activities. Families moved to "the lands" during the agricultural season and back to the village after harvest, or at the behest of the chief. Today, as the power of the tribal authority wanes, there is evidence of some permanent settlement at the lands (Silitshena, 1972).

Since the end of the last century, there has also been an exodus of persons leaving to work in South Africa, predominantly on short-term contracts in the mines (Schapera, 1939; Wilson, 1972). The 1971 census found that approximately 25 percent of the males of working age were outside of the country.

At any given time, it is not unusual for members of an extended family to be resident in five different locations, although there is one village, or settlement, which they all call "home." The kinship bonds remain strong, and are particularly manifested by ties to the place of origin. Typically, grandmother lives in the village with the school age children, and they all move out to the lands during school holidays. The other women, the mother and aunt, and the pre-school children, often live most of the year next to their fields. Instead of attending school, one or two young boys in the family may be away at the cattle post. There is likely to be an uncle, or an elder brother, or husband, in the mines in South Africa. Finally, today, there is a good chance that some of the young adults in the family are living in an urban area within Botswana. These individuals, however, go "home" with varying regularity. Those in wage employment periodically send remittances, and they all participate in the life cycle of the family, especially funerals and weddings.

Because of these unique traditions, in many respects the assumptions and findings concerned with migration in, for example, West Africa, are not as immediately applicable (Caldwell, 1969; Perlman, 1976). In any case, all too often the dichotomized view of rural life juxtaposed with urban life styles is overdrawn; the rich and complex fabric of linkages to the villages needs to be recalled and reexamined.[2] Townspeople in Botswana are not isolated from their rural roots, but tend to be socially and economically inter-dependent with their kinfolk (Kervin, 1976).

Formerly Botswana was a British protectorate, almost totally dependent upon a rural economy of subsistence agriculture, cattle herding, and the export of labor. Since independence, the urbanization process has been prompted by important mineral exploitation, some industrialization, and an expanding government bureaucracy. Whereas more than 50 percent of the population still lives in settlements of fewer than five hundred people, an increase in the employment opportunities in the urban areas, and a widening differential between urban and rural incomes, added to the pull of the urban area (Botswana Central Statistics Office, 1976). Inequality in rural areas in terms of cattle ownership further exacerbates the growing disparity between rural and urban incomes (Osborne, 1976).

In addition, the expansion of educational facilities, and the general ambiance of urban facilities also had their impact with the net result of an exponential growth in migration to the urban areas in the past five years. At the same time, the population of the six major tribal villages is increasing, particularly with the expansion of modern district government headquarters, the introduction of small scale industries, and other attributes of the modern sector economy. These villages however, remain predominantly identified with the traditional rural life style, and are not yet thought of as "urban."

THE SURVEY

The nature of Gaborone, its small population (34,400), and its recent construction provided an ideal laboratory for migration research. The Department of Statistics of the University College of Botswana designed the questionnaire, drew the sample, trained the interviewers, and carried through on subsequent runs of the interviewing. Slightly more than 5 percent of the Motswana population were enumerated. The town was stratified according to housing categories, which reflected differences in key socio-economic factors.[3] The sampling units were clusters of three adjacent households each within the strata (the clustering having been done for administrative convenience). Units were selected randomly. The sampling frame was drawn on a town map that delineated individual plots within all zoned tracts. Sampling of squatter housing, however, presented a special problem. This area was not included on the detailed map. An aerial photograph was used and clusters of what appeared to be three households were demarcated. Selected clusters were subsequently verified on the ground, using recognizable landmarks such as trees, bushes, footpaths, dongas, and dwellings.

Altogether 930 adults in Motswana headed households were interviewed. The interview schedule included a total of 55 questions. Most interviews ranged in length between 30 and 45 minutes. Those supervising the survey trained as well as supervised the corps of Motswana student interviewers from the university who administered the questionnaires using Setswana. Only a few questions, denoted with an asterisk, were asked with a fixed choice response. Most questions were asked in free choice format.[4] Each completed questionnaire was carefully checked by two supervisors. Because the questionnaires had been precoded after extensive pretesting at several states of development, error was minimized.

DEMOGRAPHIC AND SOCIAL CHARACTERISTICS

The age-sex profile of migrants in Gaborone is significantly different from the age-sex profile for the country as a whole. For the country, the ratio of males to females is 71.8 to 100; in Gaborone, it is 102.5 to 100. Among those migrants arriving within a year of the survey, however, 55 percent were women, indicating that there is some change occurring. When Caldwell (1969: 13) did his study, he found that cities attracted more males than females; in Ghana's three largest towns there were one and one-half times as many adult males as females. Looking at age-sex ratios, Joan Nelson (1976) pointed out that a significant imbalance in the age-sex ratio may be a proxy indicator of temporary cityward migration. That is, given that some people come to town for specific purposes, they consider themselves to be sojourners, and intend to return to their village or quasi-rural areas. We do not yet know whether such might be the case in Gaborone until we have more data on return migration. There are, moreover, a number of reasonable hypotheses about the larger numbers of women who are apparently migrating in Botswana. One hypothesis is that women, who do not have the mine labor alternative, were responding to an abrupt increase in household employment opportunity (resulting from a dramatic increase in civil service salaries, and a marked influx of expatriates). Another possibility is that this migration is correcting for the earlier imbalance, and women are following mates to town. A combination of these possible explanations, as well as an examination of the many dilemmas encountered by the female migrants is currently underway.5

Recent arrivals include a preponderance of younger people. Overall, the mean age of the adult population in Gaborone is 31 years, and the median, 29 years.

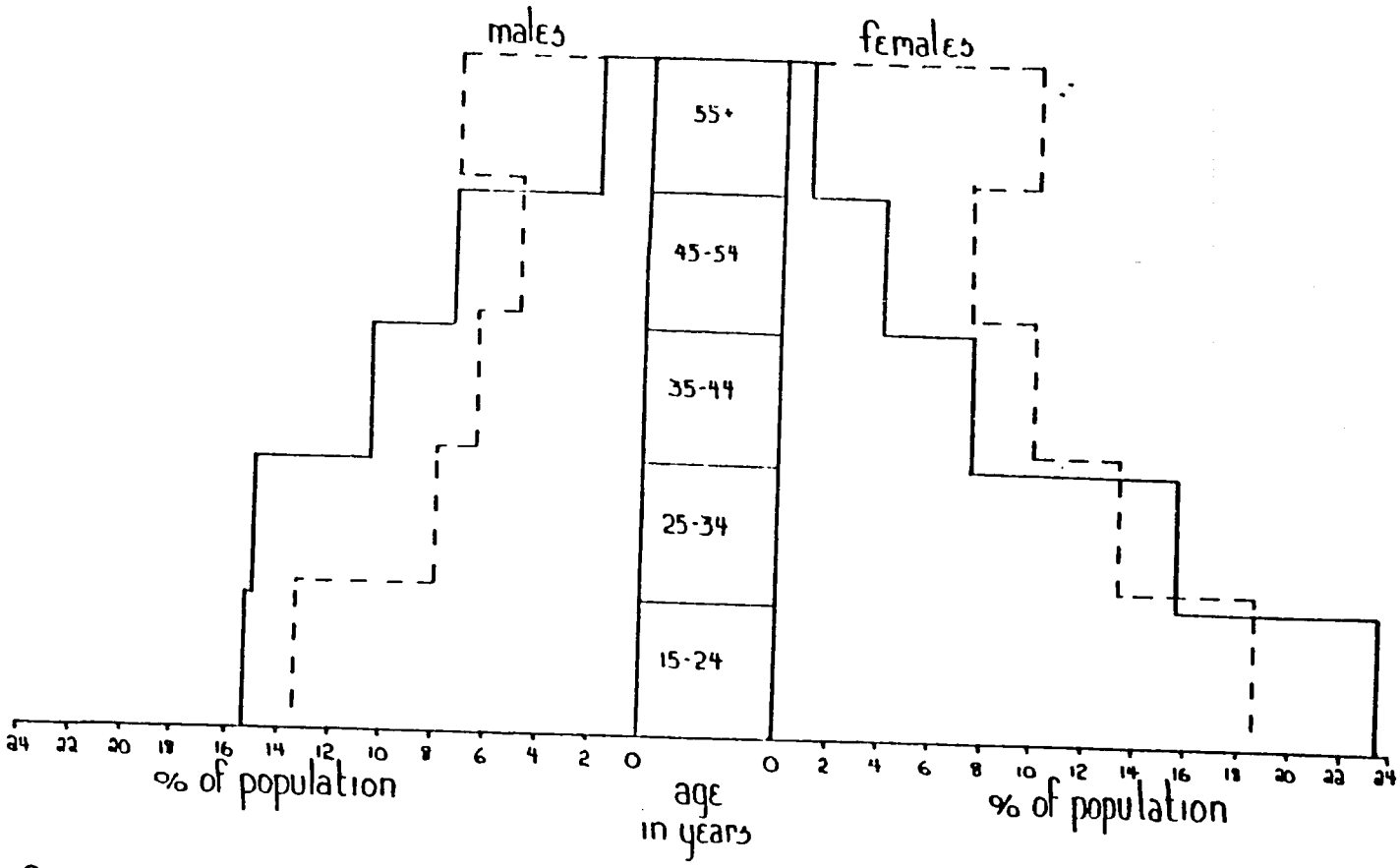

figure 1: age-sex pyramids of botswana 1971 & gaborone 1975

——— gaborone age distribution

- - - - national age distribution

BEST AVAILABLE DOCUMENT

In 1975, however, 69 percent of the migrants were between 15 and 24 years of age. This youthfulness of migrants appears to be associated with a significant increase the previous year in the national output of primary school leavers, and with the increased proportion in that year of females (who have consistently been younger than male migrants).

Assuming that elementary literacy and numeracy require a minimum of 3 years of formal education, educated adults comprise more than 60 percent of the population of Gaborone, as compared with around 52 percent nationally (Botswana Central Statistics Office, 1975). This difference is associated primarily with the younger age distribution in Gaborone. It seems probable that as the number of school leavers at all levels increases nationally, so will rural to urban migration flows. Many observers have noted the self-selection process inherent in migration (Findley, 1977; King and Byerlee, 1977). Migrants are frequently the better educated or trained individuals who become aware of urban opportunities, and for whom appropriate employment or further educational opportunities are non-existent in the home village.[6] Some might also point out that to the extent that an educational system is heavily oriented towards precisely those skills most marketable in urban areas, the system itself invites migration (Caldwell, 1969: 60).

The total fertility rate among women in Gaborone is 5.73, which is comparable to the reported national rate of 5.91.[7] Apparently Gaborone is too young to reflect an urban impact on birth and fertility rates. A disparity will most likely develop over time. Family planning services are more accessible and better known in the urban areas than in the country as a whole (Stephens, 1977a). Moreover, survey evidence shows a positive correlation between lower fertility and higher levels of education, wage employment, and decreasing child mortality, characteristics which have increasingly been associated with female migrants to Gaborone (Stephens, 1976).

The relationship between education and fertility is particularly interesting. Gaborone women who attended secondary school have fewer children than women with less education. On the other hand, women who have not been to school at all appear to have fewer children than those women with some primary education. The same trend is found in the population census. This phenomenon could plausibly be explained by a more strict adherence to traditional practices connected with childbirth among those with no modern schooling. Some traditional practices in effect extend child spacing. Perhaps, however, this fertility differential reflects the fact that this population suffers from lower nutritional and health standards, which are, in turn, associated with lower fertility and higher rates of peri-natal death. It is also possible that births, particularly those which resulted in infant deaths, were more frequently under-reported by women with no education.

MOTIVATIONS FOR MIGRATION

More than a decade ago, Little (1965) pointed to the lure of income in attracting migrants to urban areas. The literature on migration generally provides ample empirical support for the primacy of economic motives in the decision to migrate. "Migrants tend to move from places of lower economic opportunities to areas with higher potential opportunities" (Yap, 1976). The operative word is potential opportunities for even if a period of job searching goes on in the city, the migrant tends to perceive that the potential is there (Todaro, 1977). In the case of Gaborone, the assumption appears to be well founded. Evidence from the Rural Income Distribution Survey in Botswana indicated a median annual household income in cash and kind in the rural areas of P630.[8] That figure was calculated on the basis of

an average of six persons per household. In Gaborone, the median per capita cash income (not including income in kind) among the employed was P48 per month, or P576 annually—with a dependency ratio of just under 1.5 to 1 (total persons not working/persons working). During the last ten years there have been ever increasing employment opportunities in Gaborone and hence newcomers have been absorbed at an accelerating rate. The income benefits derived from migration have been significant.

Fully 21 percent of the adult Motswana population of Gaborone reported having arrived in 1975, suggesting a staggering 27 percent growth rate for that year. This growth rate is undoubtedly overstated because out migration was not measured. It could be that the increase in migration that year reflected or was associated with the upward revision of all public sector wages and salaries in mid-1974. This revision widened the gap between rural and urban incomes.

In an attempt to study both rural push and urban pull factors, respondents were asked at different points in the interview why they had left their home village, and why they had come to Gaborone. Predominantly economic reasons were cited, especially by male migrants, and push motives mirrored pull motives. Of the males, 83 percent, and 47 percent of the females, claimed they had moved to Gaborone to find a job, or to take one by prior arrangement. Forty-two percent of the women said they had left the home village to accompany a relative, although a large percentage of young single women are also coming to the urban area in order to support their children; accompanying a relative does not always mean following a husband, but accompanying a family member. Many of the women interviewed in women's subgroups referred to coming to Gaborone to join an older sister, or their mother who had preceded them in coming to Gaborone.

As found in other instances, the attraction of urban services in relation to other factors is not a significant part of the urban pull, with the single exception of educational opportunity. Among younger respondents, aged 15-24, 15 percent said they had left villages because of inadequate educational facilities; only 3 percent claimed boredom as a factor, whereas 2 percent said that work in the village was too strenuous.

It is frequently argued by development planners that urban migration might be deterred by economic opportunity in the rural areas (Osborne, 1976). In fact, the paucity of wage employment opportunity in the home villages was apparent in the responses; only 15 percent of the men and 12 percent of the women reported having had wage employment in their villages. Moreover, 68 percent of the respondents suggested that rural industry and jobs would make the rural areas more attractive to potential urban migrants. In reality, however, adequate enticement would probably have to be a combination of a narrowing of the rural-urban cash income differential and improved employment opportunity, along with other benefits concomitant with the bright lights of the city. Osborne (1976: 203-7) points out that half the rural population has less than the minimum required cattle for agricultural purposes, and 17 percent have neither cattle nor land. This deficiency means there is quite a sizable pool of potential future migrants. One can only underline his call for an integrated development effort to bring rural and urban living standards closer together.

The problem for national planners, however, is that almost any program improving opportunities in villages, will, in the first instance, increase migration (Yap, 1975). This migration is most likely to occur if the rural development program is capital intensive (Heisler, 1974; Findley, 1977: 133). Even if rural incomes rise, if the distribution of that income is highly unequal, migration will continue (King and Byerlee, 1977).

Since migration is a self-selection process, much empirical work done to date has repeatedly indicated that it is the more aspiring and imaginative young person who migrates (Nelson, 1969; Collier, 1976). Hence even strategies which improve services in the villages can increase migration, at least in the short run. As Caldwell has said, "The establishment of village crafts might well accelerate rather than retard the movement to urban areas" (1969: 60).

The effectiveness of alternative urban centers to counter the pull of the primate city depends upon the size of the country, historical growth patterns, and the economies of scale (Friendman. 1973; El-Shakhs and Obudho, 1974). In Botswana, the most effective alternative growth centers are Francistown and Selebi-Pikwe. Efforts to promote others are likely to be more costly than effective.

PLACE OF ORIGIN

Analysis of the source areas, after adjustment for population size in relation to distance from Gaborone, demonstrates the proclivity of migrants to move within a relatively proximate catchment area. For example, 44 percent come from within 50 kilometers of Gaborone and 61.4 percent from within 100 kilometers.

The majority of the migrants are from larger villages. On the other hand, one-fourth of the migrants claim allegiance to villages less than one thousand persons in size. Moreover, 80 percent of those migrants come from further than 50 kilometers from Gaborone, indicating a reversal of the expected relationship between size and distance of home village.

Altogether 44 percent of the migrants had moved somewhere else after leaving their home village and before coming to Gaborone. Of the respondents 65 percent migrated previously to work, 22 percent to join or accompany a relation, and 8 percent for education.

The probability of previous migration correlates positively with relative smallness of village of origin—suggesting a tendency toward step migration. If "step migration" is defined as moving from the place of origin to a more populous place before moving on to an even larger urban area, 50 percent of those previous migrants whose allegiance was to villages under five thousand population made interim moves to larger places in Botswana, and thus may be identified as step migrants. Another 19.2 percent of those from smaller villages worked in the mines in South Africa, and 28.9 percent moved outside Botswana to places of unknown size.

EMPLOYMENT

For our purposes in the survey, employment was broadly defined to encompass any gainful activity for which the individual earned at least P5 in either wage or self-employment. This level was purposely pegged low in order that we might learn more about people involved in activities in the informal sector. A word must be said about the current controversy over definition and implications of this phenomenon—the informal sector.

We accept the view that it is not the level of earnings which distinguishes the formal from the informal sector, rather that the formal sector is that employment which has some minimal degree of institutionalization and protection. A World Bank Study referred to the formal sector as that work which comes under some sort of institutionalized influence: under the umbrella of government legislation concerning working conditions, wages, and possibly, unionization (Mazundar, 1975). Much current research indicates that earlier assumptions about the informal sector were empirically justified—that it is a point of entry for new migrants on a

continuum which leads to regular formal sector work, and that it is distinguished merely by a difference in wages. The Gaborone survey found many of the characteristics which the revisionists have identified: that it is larger than many have thought, that it includes a higher proportion of women, and that it is not the major first step for the newest migrant.

Altogether 60.3 percent of the adults in Gaborone are in wage employment and 10.2 percent are in self-employment. Another 15.2 percent are unemployed by choice (in school, or non-working dependents), leaving an unemployment rate of 14.2 percent. Although the survey found a larger proportion of persons in self-employment than other research on the work status of urban labor in Botswana, it is undoubtedly still underestimated (Botswana Central Statistics Office, 1974). A wide range of informal sector activities was reported: brewing beer, and selling home brew, commercial beer, food, homemade utensils and clothing. Others provide services ranging from carpentry, tailoring, and transport, to traditional healing. A large number, particularly longer term residents, rent out rooms as either a primary or secondary source of income (MacLiver, 1977: 109).

Recency of arrival in Gaborone correlates positively with wage employment, while self-employment is clearly associated with longer residence in the town. It is particularly striking that among individuals who arrived within six months of the survey 61.5 percent were in wage employment, and only 25.7 percent unemployed, 3 percent were in self-employment, and the others were unemployed by choice.

The informal sector may be entered either by those who do not succeed in their search for wage employment, or, on the other hand, by established migrants who have accumulated capital and have identified entrepreneurial opportunities. In the peri-urban area, Old Naledi, there is considerably more participation in this sector than in the rest of the town: while only 50 percent are in wage employment, 14.3 percent are self employed (compared to 67.8 percent and 6.8 percent respectively for the rest of the town). Old Naledi, with a population of approximately ten thousand people was, prior to rezoning, a squatter area with no legal provision for commercial activity. Given its geographical location somewhat distant from both shopping and industrial employment centers, small scale operators provisioned residents with everything from tomatoes, potatoes and beer, to restaurants.

It is clear that entrepreneurial skills nurtured by the informal sector should be given every possible encouragement, rather than being hamstrung by the numerous zoning and licensing regulations which make most of these activities illegal[9] (King and Byerlee, 1977; Hart, 1973). If allowed to develop freely, the informal sector will evolve in response to need, and by self-generation. A small scale free unregulated market economy is particularly healthy for the poorest sector. Price and accessibility of goods and services will reflect a balanced relationship between supply and demand, and thus be within the reach of a greater proportion of the population. This in turn generates capital, and is at the same time a convenience for those customers with the least mobility. Furthermore, in Botswana, where there is little tradition of entrepreneurship, the informal sector is an important component of future commercial and industrial development (Stephens, 1977b).

HOUSING

Approximately one-third of all migrants live in Old Naledi, the squatter settlement. These people are the relative newcomers to the urban area; only 29 percent have been in Gaborone for more than 6 years. Many of them, however, appear to be relatively well established. They have used considerable initiative, staking out

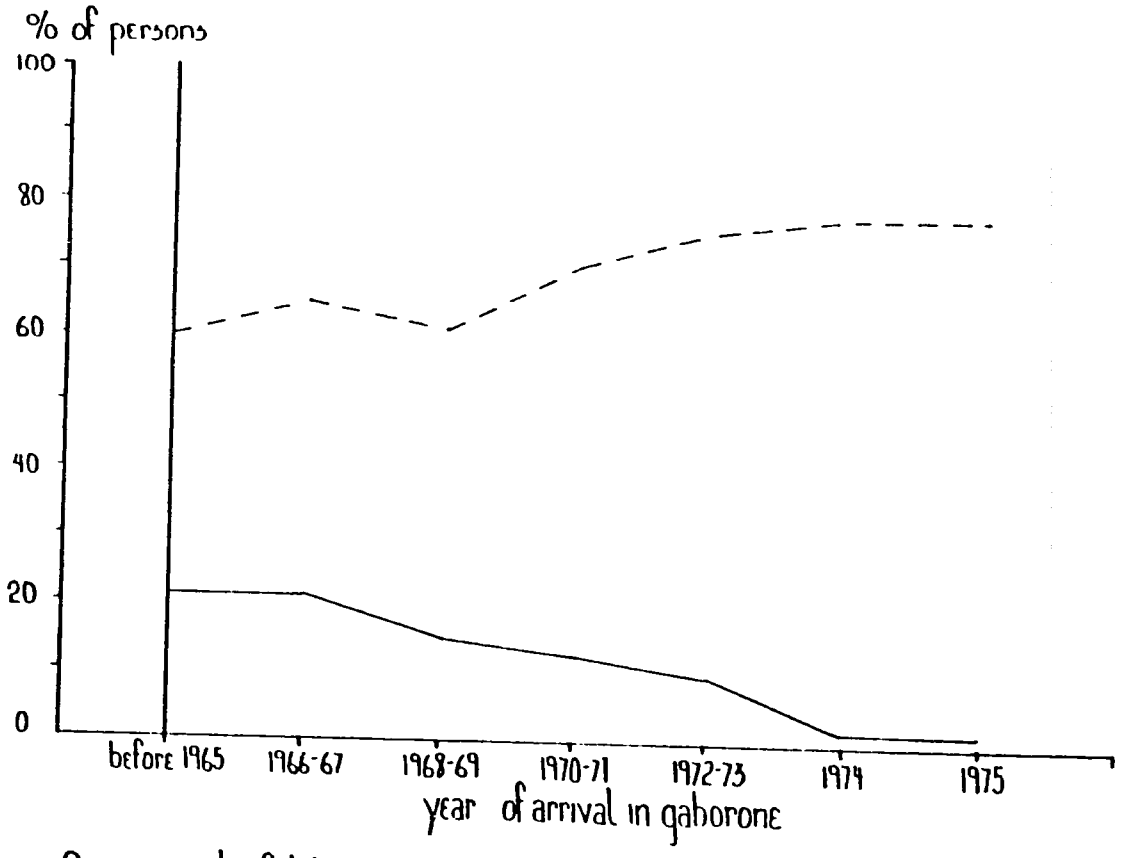

figure 2: percent of labor force in wage and self employment, by year of arrival in gaborone

——— self employment

- - - - wage employment

de facto claims to the land, building their homes with traditional methods, and establishing a *lolwapa* (homestead) in the town. The government has recently recognized Old Naledi officially as a residential area and is beginning to upgrade it with the provision of basic services, and formalized tenure (Bryant, 1976).

There are two other self-help housing areas. One of these is an older self-help housing area which allocated sites somewhat on a first-come-first-served basis (Bontleng), and a newer site and service area with entry restricted to lower income applicants. Additionally there are a large number of public housing units provided on a rental basis by the Botswana Housing Corporation. Some 37 percent of the migrants live in these three types of housing, of whom more than half moved to Gaborone at least six years prior to the survey. Those in established self-help housing (Bontleng) live in the most crowded circumstances of any residents, with 3.2 people per room. As pressure on housing has become more acute, they have added structures on already crowded lots in order to develop lucrative rental property. In fact, 20 percent of the people in this housing stratum are tenants. Nonetheless, the houses in this area are relatively substantial, frequently have kitchen gardens, water standpipes on the plot, glass windows, and, in general, are well maintained. Planners might also note that this self-help housing area appears to have more community life, an alive and functioning *kogtla* (traditional court), and other such factors that are missing from the newer site and service plots.

Migrants living in the publicly provided unit housing, on the other hand, were the most discontent about their housing problems. When asked what they felt was the single worst problem of living in Gaborone, they overwhelmingly indicated housing, whereas respondents in all other housing strata (including the squatter settlement) cited inadequate income. Unlike squatter or self-help housing, which are both owner occupied, unit housing is leased. Most unit structures are ten feet by sixteen feet and house one family, have limited or no facilities for cooking indoors, use pit privies, and allow for no privacy within the unit. When they are doubled, each structure, though slightly larger, has two families living in adjoining units with even less privacy. Improvements by residents are prohibited and, in any case. there is no incentive for residents to take an interest in maintenance. The units unfortunately resemble the mining housing, which the men recall with considerable disaffection. There is even some evidence of movement out of unit housing to an outlying area of Old Naledi, which has been named Botshabelo, which literally means place of refuge.

URBAN-RURAL LINKAGES

Urbanzation has only come recently to Botswana, and yet, as was stated at the outset, nowhere is the dichotomized view of rural life seen as juxtaposed with urban life less meaningful than in Botswana. There is clearly a complex web of rural-urban linkages apparent in the many responses to the survey questions concerning visits to the home village, goods bought and sold, and various exchanges made there. The very recency of urban growth means that the adult generation of city dwellers has its roots in the rural areas. Only 10 percent of the respondents report no current connections with their home villages. More than three-fourths of the population participated in traditional subsistence related activities before moving to Gaborone. Of those who had not participated in subsistence agriculture. most were under 25 years of age. In contrast to Caldwell's (1969) 16 percent who had visited the home village at least once a month, some 40 percent of the Gaborone respondents said they had visited home within the month prior to the interview.

Eighty-six percent of the men and 54 percent of the women still claim some

kind of property ties in the home village (a house, land which is cultivated, livestock, or business interests). In general, these interests do not imply freehold title, but derive from the privilege of tribesmen who are given rights to graze, plow, or build on tribal lands. The tribal authority has been superseded largely by government land boards, but land rights nonetheless represent an important link with the rural areas. As the newly proposed tribal land grazing laws begin to take effect as a kind of enclosure movement, this link may be weakened.[10]

One of the ways the strength of rural-urban links can be explored is in the exchange of cash and goods in-kind between home villages and Gaborone. Of the respondents, 17 percent claimed to have sent something to their home villages within the month prior to the interview (primarily sugar and clothing); 30 percent claimed to have sent money to the home village within the month prior to the interview. It may be argued that the urban migrant has a positive influence on the rural economy in terms of transfers of cash and kind as well as in the transmission of ideas and innovations. Of those who said they had sent money to the village, the mean was approximately P21; the median was just under P11. When one looks at the income characteristics of those sending money home, it is interesting that upper income groups appear to be sending money home as often as middle income groups, and more often than low income groups. It can be presumed, however, that these statistics are over-reported because of the conceptual problems of a limited time frame, and a tendency for transfers to be exaggerated by the donor, and understated by the recipient (see Botswana Central Statistics Office, 1976).

There is a certain amount of interdependence between home village and urban area. Seventeen percent of the respondents said they obtained something concrete within the last month—primarily domesticated or wild food. As there is no relationship between goods received and relative paucity of cash incomes, and as, in general, recency of arrival correlates negatively with goods received, there does not appear to be a systematic reliance on material support from the home village among the less well established migrants. There are, however, important concealed benefits provided by the home base which are difficult to quantify; the security of a place to go and live during periods of unemployment or in old age and the care and support of children and other dependents by the extended family (Ross, 1975: 29; Kener, 1976). Without this support system, it is unlikely that the towns would appear so attractive to migrants.

One way in which the migrants' commitment to urban life can be estimated is by measuring the attitudes toward back migration. Since an attitude question, of which there were few in the survey, is not the same as a question about actual behavior, it must be interpreted with care. Whether or not such an attitude will, in fact, result in the behavior concerned, calls for empirical justification at another point. Nevertheless, even though one is asking respondents for an abstract attitude, it does provide a subjective indication of the migrant's own attitude toward the permanence of his roots in the city in comparison with his perception of ties to the home village. Almost 21 percent of the respondents indicated no intention to return to their home village. It is interesting to contrast this figure with those of Laquian (1973: 108), who found a range of 70 percent in Bandung to 81.9 percent in Istanbul in response to a similar question. Although his eight country surveys included Nigeria, he unfortunately does not report the Nigerian figure.

One of the most salient differences in the responses to this question was the sex of the migrant. Apparently urban life means different things to a woman than for a man. Both Caldwell (1969: 103, 107) and Ross (1975: 41-42, 52) noted that the male urban migrant was highly respected in the home village whereas the female

urban migrant was the source of some suspicion. Whether or not this perception is a factor in their consideration, a higher percentage of the female respondents said they had no intention of returning to their home village. Of the circumstances under which they would return, more men said they would do so if a job were available, while more women said they would return in order to join or accompany a relative.

More than half of the women in Gaborone (57 percent) are single, widowed, or divorced. Town life is often better for an independent Motswana woman. In the rural areas they are bonded to a system which is likely to have left them with minimal lands, no draught animals, children to support, and no male labor assistance (Syson, 1971; Little, 1976). In town, on the other hand, many are self-employed, brewing or selling beer, or vending fruit, vegetables, and handicrafts. They enjoy the freedom from traditional responsibilities and social constraints in the village and are are better able to support themselves and their children.[11]

CONCLUSION

Although theories about urbanization and urbanism abound, there is a real and pressing need for empirical work which can be used to test such theories and provide data for decision makers forced to choose policies responsive to urban growth problems. Both phenomena are central to future development in Africa; the interplay of theory and policy are nowhere more immediate than within the subject of urbanization.

Our survey data provided part of the base of information concerning the characteristics of migrants coming into Gaborone. Further, the survey indicated that some previous theories could not be empirically substantiated: that the informal sector is the first stopping place of the new migrant, that publicly provided housing is the most equitable way to respond to housing needs, and that women are less likely to migrate than men. On these issues the responses indicated that behavior was not that which had been anticipated, and yet the patterns are more complex and subtle than current theories allow. The linkages to the villages, especially when they retain the force that they do even for middle and upper classes, leads one to agree with Ross (1975: 131) when he says, "thus Nairobi and the countryside are not seen by most people as two points on the rural-urban continuum. Rather they are two locations within the same social system, and a person can move back and forth between them without severing his ties with either."

It appears unlikely that the pace of urbanization in Botswana is likely to decline, particularly in view of Botswana's long history of temporary and semi-permanent movement off the land in the form of labor migration, and given the expansion of the urban economy. Barring the imposition of artificial controls on movement, which seem unwarranted, people will continue to migrate to town and probably in increasing numbers. Nor is it warranted to project exponential increases in urban growth into some indefinite future; rather the pattern is more likely to be that found in many other countries of less than a million in total population. The urban areas will grow—either both Gaborone and Francistown, or with Gaborone achieving primacy—until approximately 40 percent of the national population is urbanized.

Even if the economy constricts there will be a lag time before the impact of unemployment affects migration and slows its pace. The assumption that the town offers greater opportunity is well founded given significant rural-urban income differentials and all the concomitant benefits of town life: communications, education, services, greater freedom of choice, and even more accessible water

supplies. For the migrant, migrating is rational behavior using the economist's definition of that term (Yap, 1975).

The task ahead then is a systematic evaluation of the ways in which governments can begin to respond to this process as an opportunity rather than a threat. That is not to say that all and any rate of urbanization may contribute to development. Indeed, the rate of urban growth is the one variable which policies can affect. To the extent that it is, in large part, a function of the differential between rural and urban incomes, wage policies (especially for the civil service) should be carefully monitored. Rural and urban development planning should be integrated so that a balance is achieved which corresponds to national development goals. Self-help housing policies in particular can be an imaginative response to real service dilemmas, especially if plot use is not so western in orientation and so burdened with planners' predetermined standards that informal sector activities are regulated away. Self-selection factors in squatter settlements may mean the recreation of community within the settlement. These, however, are all policy questions for which further research is desperately needed. Again, as so often in the social sciences, theory runs ahead of empirical work and too little research addressing the costs and benefits of these policy alternatives had been done.

If adequately planned, urbanization could well be an asset for Botswana's development. At present only about 15 percent of the population live in urban areas. The increase in size of population concentrations in providing an ever larger and increasingly skilled work force in towns where the modern sector activities build the infrastructure necessary to attract investment. As towns grow, so does the domestic marketing making the additional production of import substitution commodities economically viable. Additionally, there is an increased amount of innovation generated in urban areas which can further diffuse change throughout the rest of the system.

Urbanization as a process, and probably urbanism as a way of life, are part of Africa's future, just as they have already become factors in the lives of Latin Americans and are in the process of becoming for Asians. On each continent and within specific countries there are variations and differences, and in the case of Botswana, the historical and cultural traditions provide a most useful base for integrating this experience into the pattern of the past. While there will be a few sharp discontinuities, there will be change. Accommodations to that change have, in the case of Gaborone residents, already begun.

NOTES

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1. The preferred form for references to the people and language of Botswana are as follows: Motswana—one person from Botswana, Batswana—the people of Botswana, and Setswana —the language of Botswana.
2. Caldwell (1969), like so many others, makes the assumption that there is a real cleavage between rural and urban life styles. Later in the discussion of his research he occasionally retreats from the idea of this dichotomy. The best review of this literature, even though the research is focused on another continent, is to be found in the work of Janice Perlman (1976: 58-88).

3. The six strata were: I–High Cost; II–Middle Cost; III–Low Cost, unit; IV-Low Cost, site and service and self help; V–Peri-urban; VI–Servants Quarters. Analysis of the pilot survey resulted in creating a separate stratum for servants quarters. They represent a significant number of dwellings and residents with distinctive characteristics.
4. Both Ross (1975) and Caldwell (1969: 18) used a combination of fixed choice and free choice questions in their survey research on migration.
5. As a subsidiary part of this project, Bryant (1977a, b) interviewed in depth some 35 women migrants in an effort to determine their perceptions of urban adjustment problems as well as their reasons for migration.
6. Caldwell (1969) noted the high correlation between literacy and migration. Perlman (1976: 83) writes, "migrants are positively selected with respect to age, education, ability, and ambition with regard to their community of origin."
7. The census adjusted this rate to 6.49, based on an analysis which showed fewer current births reported than expected, when compared with parity. Assuming similar under-reporting in Gaborone, an increase by equivalent factors in each age group would produce a total fertility rate of 6.32.
8. One pula is equivalent to approximately $1.15.
9. Our student interviewing team came to know one local "restauranteur" who had cleverly improvised flattened beer cartons into one wall onto which he had propped a makeshift roof. Within this area, he had gathered some stools and a bench and was running a "head and hoof" restaurant. (The heads and hoofs were gathered from the local abattoir.) He pointed out that most of the residents of the area do much of their provisioning from within the area and complained that so little thought had been given to allowing such small scale commercial activity to flourish. A more imaginative entrepreneur would be hard to imagine (cf. also Hart, 1973).
10. There is currently under discussion within the Ministry of Local Government and Lands a proposal for a major revision of the Tribal Land Grazing Law.
11. Given that nearly one-quarter of the male population between 15 and 44 is absent from the country (probably working in South African mines), the predicament of the women left to support children without paternal assistance is severe. As one woman respondent said in the group of interviews with migrant women, "Back home there was no one to help me if I wanted to plough, or rear cattle. As I am unmarried and have three children to support, I came looking for a job." Since traditionally many women have at least one child previous to marriage, there are significant numbers of children in female headed households. Migrant labor takes a toll on family life in rural Botswana.

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Household surveys for basic needs: some issues

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Introduction

The purpose of this article[1] is to discuss how household surveys might be designed so as to obtain the data that planners require in order to evolve basic-needs-oriented strategies of development and assess their effectiveness. It is not our intention, of course, to provide anything like a manual on household surveys, but rather to focus on the statistical implications of adopting a basic-needs strategy and to point out the conceptual and practical problems involved. Thus we shall begin by giving a brief outline of the concept of basic needs and assessing whether existing data (at both the national and the international levels) adequately elucidate the nature, extent and causes of poverty. Following this we shall discuss the suitability of household surveys as a means of obtaining data for basic-needs planning, measuring the extent to which such needs are satisfied and establishing causal relations. Here we shall be concerned mainly with the advantages and limitations of multi-purpose household surveys. Finally, an attempt will be made to provide some examples of the groups of questions that might be included in such surveys. Naturally, it is beyond the scope of the present article to offer a complete blueprint of these surveys, so we shall confine ourselves to providing some illustrative examples of what questions are relevant to various aspects of basic needs, and of how they can best be worded.

Statistical implications of a basic-needs strategy

Available statistics in most developing countries are still far from adequate for the purposes of basic-needs planning. This is hardly surprising since statistical systems are inevitably conditioned by the prevailing thinking on development, and the recent change of tack has necessarily implied a change in statistical requirements.[2] Thus we find that during the 1950s and 1960s (the period when most of the present statistical systems in developing countries began to take shape) the problem of development was seen as essentially an economic one, calling in particular for a rapid rate of growth of income per head. There was a wide consensus that economic growth was the measure of

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success, and the countries of the world were ranked in "league tables" according to the level and rate of growth of their income per head. It was generally assumed that the fruits of economic growth would more or less automatically "spill over" to alleviate poverty and improve national income distribution. Development policies aimed first and foremost at growth, and in the realm of statistics the principal effort was directed towards the collection of data needed for such policies and their elements: saving, investment, consumption, etc. The focus was therefore on economic statistics, especially national income statistics, and, within that field, on national averages with little or no study of the distributional implications of growth policies.

By the late 1960s and early 1970s it was becoming clear from the experience of many developing countries that it was no longer possible to rely on any general law that growth is inevitably accompanied by an equitable distribution of its benefits.[3]

The failure of growth-oriented strategies to reduce inequality and eradicate poverty led to an increasing awareness that major shifts in development strategies were urgently needed. A new paradigm began to emerge. It was gradually realised that development involves much more than merely raising income per head, and that what should be aimed at is the reduction of poverty, unemployment and inequality. The ILO's basic-needs approach is essentially a reflection of that important shift in the perception of development.

According to this approach, one of the explicit goals of development planning should be the satisfaction of an absolute level of basic needs. This is not the place to go into details about the philosophical, conceptual and practical problems involved in defining basic needs: the reader is referred to the growing literature on the subject.[4] Basic needs, as the expression is used here, are minimum requirements essential for decent human existence, including items of private consumption (food, shelter and clothing) as well as certain socially provided services (safe drinking-water, sanitation, public transport, and health and educational facilities). Over and above these material requirements are certain basic human rights which are not only ends in themselves but also means for the attainment of other goals. Thus participation, apart from constituting a basic need in itself, can also be seen as an efficient means of achieving material basic-needs targets.[5]

Without minimising the conceptual problems involved in the definition and quantification of basic needs, the definition used in the present paper is an operational one and will refer to the minimum requirements of an individual or of a household for the following items:

1. Nutrition
2. Clothing
3. Shelter
4. Health
5. Education
6. Water and sanitation
7. Transport
8. Participation.

The shift from a growth-oriented to a basic-needs-oriented strategy of development has serious implications for statistical development. One essential

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part of the task of designing, implementing and monitoring basic-needs strategies will be the collection of statistical data necessary for quantifying needs and measuring progress towards their satisfaction. National averages of income per head, consumption, saving, investment, etc., which may once have been adequate indicators of growth performance, are no longer sufficient. It is not suggested that these data are no longer needed; but it is essential to find out the distributional patterns these averages may have concealed and try to explain why these patterns are what they are.

The first task in implementing a basic-needs strategy is to identify the poor and to quantify poverty. Many poverty studies depend for quantification on a "poverty line", which corresponds to the minimum level of income that could buy a basket of goods and services necessary for human survival.[6] Using data from household expenditure surveys, different consumption baskets are identified for various levels of household expenditure. The value equivalent to the consumption basket that just satisfies certain stated minimum needs is taken as the poverty line and those who earn or spend less are deemed to be "poor". One common method of estimation is the so-called *dominant item* approach, in which the poverty line is defined by reference to the value of a basket of food that satisfies certain minimum nutritional requirements of an individual or a household. An alternative method is to define the poverty line as the equivalent of what is called a *basic-needs income* (BNI).[7] According to this method, one begins by identifying an acceptable level of a core bundle of basic private consumption needs such as food, clothing and shelter, and then one determines empirically the level of income at which the stipulated level of consumption is in fact met. The BNI arrived at in this way will be insufficient to meet *all* basic needs: it will leave unsatisfied the need for socially provided goods and services.

There is no doubt that the BNI approach represents a definite improvement over the dominant item approach as it is based on a core bundle of basic needs rather than a single item (food). However, the two approaches share a number of serious shortcomings. First of all, the prescribed consumption basket reflects the preferences of the marginal household, which depends on the mutually related influence of prevailing prices, income distribution and demonstration effects. Secondly, a "least cost" basket of minimum needs is often chosen that may not satisfy geographical, cultural or religious requirements. Moreover, in both approaches poverty is defined as insufficiency of income, income being thought of as indicating an individual's or a household's command over goods and services. Yet it is very doubtful whether income can be regarded as a reliable indicator of command over all goods and services, especially in developing countries. While income—even if all its components can be adequately evaluated—may be a good measure of command over items purchased for private consumption (food, clothing, housing, etc.), it is certainly inadequate as an indicator of access to socially provided goods and services which are free or subsidised (education, health, drinking-water and transport).

It would therefore probably be more appropriate to measure poverty in terms of the *access*, or *lack of access*, of individuals or households to a certain basket of basic goods and services than in terms of income alone. The implications of this shift of emphasis for the development of statistics are clear: the population must be divided into meaningful groups or strata and data gathered on the goods and services consumed by them. In other words, we shall need detailed distributional profiles of households showing their consumption of each item on the basic-needs list.

Further, it is not enough for purposes of basic-needs planning to identify the poor; we must also aim at explaining why poverty exists. It is only by establishing the links between the shortfall in basic-needs satisfaction and the sources of earnings of various households (their access to productive assets, extent of employment, unemployment and underemployment, and average earnings per unit of time) that we can understand the causes of poverty. A recent ILO study has shown that the main cause of poverty in rural Asia is the lack of access to the most important productive asset: land.[8] This type of inquiry will no doubt generate a need for new types of statistics: we shall require data on the distribution of assets (notably land) and on employment, wages, etc., not at the national level but as they relate to the main characteristics of various households.

Finally, we must mention the data requirements for monitoring progress towards basic-needs satisfaction. It is important to evaluate development policies and projects in terms of their effect on the poor. Many policies and projects that carry the "anti-poverty" label may ultimately benefit the rich rather than the poor. Agrarian reform and Green Revolution policies provide numerous illustrations of benefits designed to accrue to the poor being appropriated by the more powerful higher income groups. It is not enough in such cases to talk of the total value of services, high-yield variety inputs and credit dispensed to "farmers"; the distribution of these items to households in various landholding groups must be distinguished. Here again, it is *access* by various groups to a certain service rather than the *existence* of the service that is relevant for basic-needs policies.

The above examples are far from exhaustive. They simply illustrate the statistical implications of adopting a basic-needs strategy and emphasise the importance of reorienting statistical work, at both the national and the international levels, in order to fulfil the data requirements of such a strategy.

Household surveys as a means of collecting data on basic needs

It is clear from the above that, in order to map the nature, extent and causes of poverty and to measure progress towards the satisfaction of basic needs, what is required is specific distributional data such as are at present rarely compiled systematically in most developing countries. It is precisely here that the main advantage of household surveys lies: an appropriately designed

household survey and tabulation plan can supply data in the form of distributional matrices obtained by cross-classifying certain variables, such as consumption levels and patterns, education, length of life, mortality, and participation in decision-making, with another (or "key") variable such as household income.

Such data enable planners to evaluate shortfalls in the satisfaction of basic needs and to identify the poor. This is particularly true in the case of socially provided services, where

it cannot be concluded from the existence of facilities, such as schools or hospitals, that the relevant needs are being met. That in itself suggests that data gathered through sources other than household surveys are likely to be inadequate. It is insufficient to gauge the satisfaction of a basic need by a global ratio: say, number of hospital beds per 1,000 head of population, or number of teachers per 100 school-age children. In both cases it is use of and access to the facilities which is the relevant issue, and the constraints to access and use can be identified by means of household surveys.[9]

Furthermore, there are several important relations, fundamental to a basic-needs strategy, on which few or no data are available; only household surveys can help to provide them. First, and perhaps most important, is the set of relations concerned with the identification, analysis and explanation of the causes of poverty. Obviously, to explain why the present pattern and levels of consumption fall short of basic needs we would require data on the access of households to productive assets, the extent of employment and unemployment, and average earnings from labour (whether wage employment or self-employment). Some data on the ownership of assets may exist—for instance cross-section data on the distribution of land ownership are usually available from decennial censuses of agriculture—but these suffer from severe limitations: the data become available only after a considerable time and are limited to landowners, with no mention of the landless; it is usually impossible to establish the link between land ownership and such variables as farm income and employment; and finally, no information is available on the dynamics of land transactions. However, all the up-to-date information required could be obtained in a specially designed household survey.

Another set of relations of particular interest comprises those between various basic needs such as nutrition, health, education and income. For instance, knowledge of how improved nutrition affects health (and hence labour productivity and incomes) would give the planner a clearer idea of the resource requirements of a basic-needs strategy; a positive relation between these variables means that the total resource cost of satisfying a given basic-needs package would be less than the sum of individual elements, tackled separately.

Statistics now available throw very little light on any of the above-mentioned relations. Consider, for example, the most important and most widely used current source of data on income distribution: the household income and expenditure survey. Much effort has gone into developing the methodology of these surveys and a growing number of countries are con-

ducting them at more or less regular intervals.[10] The results of the surveys have been used by social scientists to map income distribution. In many cases expenditure has been used as a proxy for income. Poverty lines have often been estimated by reference to a minimum subsistence level of expenditure and the number of poor people has been defined as those who fall below that minimum. Dependence on these family budget surveys has obvious shortcomings. First, in the majority of cases, the basket of goods and services covered is limited to privately purchased items, while socially provided goods and services are omitted. Poverty lines based on these data may therefore be misleading. Secondly, few surveys provide data on saving (or dissaving) and accumulation by various households (though, admittedly, the reluctance of some persons to reveal such information makes it difficult to collect reliable data). Thirdly, and perhaps most important, the links between the level of expenditure and the sources of income (such as ownership of assets and employment), which are crucial for understanding the causes of poverty, can but rarely be inferred from household income and expenditure surveys, which seldom provide information on asset ownership and employment.

The foregoing discussion should in no way create the false impression that household surveys of the sort advocated here are unique sources of data on basic needs. Many attempts have been made to collect data on particular needs, as witness nutritional surveys developed by both the FAO and the WHO[11] and the health surveys developed by the WHO,[12] in which great efforts were made to define indicators, formulate questionnaires and process the results. There is no doubt that these surveys provide valuable information on the nutritional and health status of given societies, besides helping to identify "vulnerable groups" and to specify the main determinants of malnutrition and ill health. However, the value of data obtained from them is somewhat diminished by the fact that it is difficult in most cases to match nutritional and health status to fundamental household characteristics and the level of satisfaction of other basic needs. This can be remedied, however, either by adding more questions or by conducting the surveys as part of a multi-purpose household survey.

So far, we have been arguing the case for household surveys. Our argument focused on the fact that appropriately designed surveys enable us to construct distributional matrices of various basic-needs items, and to establish the relations between the items and between them and their determinants, notably ownership of productive assets, employment, and access to socially provided goods and services. Of course, miracles are not expected to follow the promotion of household surveys aimed at basic-needs problems. In the first place, these surveys cannot be expected to solve all data availability problems; for instance, data from household surveys mostly relate to a given point in time and it is hardly likely that satisfactory time series could be obtained simply by repeating surveys frequently; this will certainly limit the possibilities for studying trends and changes over time. Secondly, household surveys are costly and require high skills—two real constraints, especially for

developing countries. Finally, the results of household surveys will have to be complemented by data drawn from other national and local sources.

The scope of household surveys

Poverty is a complex phenomenon, and to understand it we need data of more than one sort. We first require micro data, at the household level, on the degree of satisfaction of various basic needs (material and non-material, private and socially provided) and we then have to try to explain the distribution thus revealed by relating it to the factors that enable people to satisfy their basic needs, i.e. to such factors as the ownership of productive assets, participation in the labour force and income from work. It is suggested, therefore, that a household survey designed to obtain the necessary data should include two major "modules": the first, which will be called the *basic-needs module*, comprising a number of sub-modules corresponding to conventional basic needs—food, clothing, shelter, health, education, etc.—and the second, the *household characteristics module*, including sub-modules on matters such as the ownership of assets, sources of income and labour force participation that will help to explain why basic needs are not fully satisfied. The proposed system would therefore look something like this:

Modules:	I. Household characteristics module	II. Basic-needs module	
Sub-modules:	1. Demographic characteristics 2. Employment characteristics 3. Ownership of assets 4. Sources of income	1. Nutrition 2. Clothing 3. Shelter 4. Health 5. Education	6. Water and sanitation 7. Transport 8. Participation

Obviously, the contents of each sub-module will depend very much on what we want to measure. To decide on this question we should first define the variables about which data need to be gathered; then select the indicators, quantitative or qualitative, that can describe these variables or changes in them; and, finally, try to develop survey questions which will yield the required data on such indicators.[13] Appendix 1 provides a schematic list of indicators for the basic-needs module.

By way of illustration, we shall select some of the sub-modules mentioned earlier and try to demonstrate the type of indicators we believe to be relevant and the kind of questions that can be asked in order to obtain data on them. Let us begin with one of the most crucial factors in explaining poverty: household income and asset holdings. Questions about these variables are usually excluded from surveys on the grounds that income concepts are complex, especially in the context of conditions prevailing in developing countries (where the concept of employment is not well defined and a substantial part of income derives from self-employment or from home production) and that questions on income may yield unreliable answers. When

questions on income are included in a survey, they frequently try to elicit a direct response and are sometimes even formulated in a naïve manner: "What was your income over the last year?" Obviously, this method cannot be expected to provide reliable answers since the respondent, even if he is willing to answer such a question, may not be able to remember his income, especially where there is no permanent employment as is frequently the case in rural areas and the informal sector. It is therefore suggested that questions on income should be worded in such a way as to guide the respondent through all the possibilities of income generation. This means that there will have to be a series of questions about possible sources of income: remuneration in cash and in kind; entrepreneurial income (including imputed rents from owner-occupied dwellings plus net rents from other structures and net proceeds from unincorporated enterprises); property income (essentially interest, dividends, land rents, etc.); and transfer receipts. Wherever the household head is engaged in a productive activity (farming, industry, handicrafts) an attempt should be made to estimate his income from a somewhat detailed production account. Questions on the ownership of assets are less intricate. One should aim to determine the entire stock of assets, whether in the form of money or transformable into money, owned by the household. The scope of assets to be enumerated can range from consumer durables to industrial establishments, but basically it should include such items as land; industrial, commercial or handicraft establishments; machinery and tools; real estate; and financial assets. It is also important to ask questions on the *change* over time in the position of these assets. For instance, the loss of land by small farmers to large farmers—a familiar phenomenon in densely populated developing countries—can only be discovered by posing a series of questions on the present position of land ownership and working our way backwards to trace any loss or gain during the past years together with its causes (sale, agrarian reform, confiscation, etc.).[14]

Another example that illustrates our approach is in the area of housing. Data on housing, generally collected through population censuses or housing surveys, tend to be limited to the availability of housing units and perhaps some measure of overcrowding (gauged by the number of persons to a room). Data on the quality of housing are generally lacking or include at most the percentage of houses with piped water and electricity. These macro data do not relate housing conditions to the income levels of individual households. If the aim is to assess the extent to which basic housing needs are satisfied, other aspects besides availability have to be considered. As suggested in appendix 1, housing should satisfy the needs for: *(a)* protection against the elements; *(b)* protection against overcrowding; *(c)* adequate access to housing infrastructure, such as sanitary facilities and drinking-water; *(d)* security of tenure, i.e. legal guarantees against eviction; and *(e)* access to housing, as measured by the ratio of rent to monthly income or by the ability to become a house-owner or obtain building rights, and the ability to obtain a loan for the purchase of a house.

A series of questions can be drawn up to cover these various aspects, taking into consideration, of course, the specific conditions prevailing in the country or region surveyed. Appendix 2 shows our attempt to develop a housing sub-module.[15]

The two examples discussed above should be regarded as illustrations of the orientation of a household survey designed to gather information on basic needs. As mentioned earlier, the development of the system of modules suggested deserves a separate and more concerted effort by all parties concerned.

* * *

Before concluding, it is important to recall a few points. First, there are many aspects of household surveys we have not even attempted to touch on since they are beyond the scope of an article such as this. Notable examples are: the design of samples, the definition of variables, and the administration of the surveys. Secondly, we had no intention of creating the impression that household surveys are going to solve all data problems. In fact, we believe that while they are essential for supplying data on a micro level, they must be complemented by other surveys and statistics that provide a wider coverage or collect data that are not best gathered from households, such as production statistics, administrative data, and data on the supply of socially provided goods and services. Finally, we would repeat our earlier point that while the modules suggested for inclusion in household surveys can be regarded as a coherent system providing data on core variables essential for meaningful analysis, these modules are divisible both over time and in terms of sample size; constraints of cost and available expertise might mean that they have to be carried out in several rounds, with the focus shifting from one aspect of basic needs to another. We could perhaps go further and suggest that statistical offices in various countries might wish to arrange these modules in a hierarchy reflecting their statistical priorities and introduce them over a longer period of time, or opt for a simplified version of the questionnaire to supply the most urgently needed data. Whatever the option, we feel that the promotion of household surveys of the type advocated here is an essential prerequisite for a better understanding of the nature, extent and causes of poverty.

Appendix 1. Indicators and data requirements for basic needs

[illegible]	[illegible]
Food:	
Energy	Kilocalories consumed per person per day
Protein	Grammes of (animal) protein consumed per person per day
Other nutrients	Milligrammes of other nutrients consumed per person per day
Clothing:	
Protection against elements and cultural satisfaction	Number of various items of clothing (or square metres of cloth) consumed per person per month or per year; number of items of footwear consumed per person per month or per year
Housing:	
Protection against elements	Type of building materials; quality of construction; length of life of building
Protection against overcrowding	Space per occupant; number of persons per room
Access to infrastructure	Type of sanitary facilities; type of source of clean water
Security of tenure	Type of rental arrangement
Access to housing	Monthly cost of housing
Fuel:	
Heating, cooling, lighting	Amount of oil, charcoal, electricity, etc., consumed per month
Health:	
Length of life	Life expectation at birth and selected other ages
Healthiness of life	Death rates by cause of death; incidence of diseases
Access to health services	Number of various types of health facilities (including personnel)
	Outlays per household for health care
	Frequency of visits to health facilities by type of facility and reason; distance from and time required to reach nearest facility
Education:	
Functional literacy, numeracy	Literacy and numeracy rates of population (by age group)
Understanding of environment	Distribution of population by type of schooling completed
	Participation in informal education activities
Access to education	Enrolment rates
	Household expenditure on education
	Distance from and time required to reach education facilities
Water:	
Drinking	Litres used per day
Maintenance of sanitary environment	Ditto

Basic needs	Indicators
Access to water	Distance from nearest source of water supply by type
	Outlays on water
Transportation:	
Mobility	Distance from and time required to reach services and place of work
Access to work and services	Outlays on transportation
	Existence of roads and public transport
Participation:	
Participation in decision-making	Attendance at meetings of organisations involved in decision-making related to welfare of household
	Membership rates of such bodies
Access	Existence of bodies in which households can participate by type (political, economic, social)
	Eligibility conditions for participation in them

Appendix 2. An illustrative example of a housing module to be included in a household survey questionnaire for basic-needs purposes

Questions to be answered by the head of the household and/or through observation by the interviewer:

1. What type of housing unit * is this: a house, apartment, hut, tent . . .?
2. What is the quality of construction of the [housing unit]?
3. What is the estimated length of life of the [housing unit]?

Questions directed to the head of the household:

4. How many rooms in your [housing unit] are used by your household exclusively, or shared with other households, or used for other purposes?
5. What area of the [housing unit] is used by your household exclusively?
6. Is your drinking-water obtained from: running water in your own [housing unit], public standpipe or . . . ?
7. How far do you have to walk to get drinking-water?
8. What price do you pay for drinking-water?
9. What kind of toilet system does your household use: water closet, latrine or . . . ?
10. What kind of garbage collection system does your household use: municipal collection, communal dump or . . . ?
11. What kind of facilities does your household use for lighting, heating, cooking, bathing?
12. How much energy or fuel does your household use per month for lighting, heating and cooking (by quantity and value)?

* In subsequent questions the appropriate designation should be substituted each time that the expression " [housing unit] " appears.

13. Does your [housing unit] provide adequate protection against noise, cold, heat, rain and floods?
14. With respect to the immediate environment of your [housing unit], does your household suffer from noise, smoke or any other particular inconveniences?
15. Do you own or rent your [housing unit] or is it provided free?

Owners

A.1 What is the estimated value of your [housing unit]?

A.2 What would have been the monthly rent had you not owned it?

A.3 Regarding the land on which your [housing unit] stands, do you own it, have the right to build on it or have any other tenurial right? If so, what price did you pay for this right?

A.4 Do you have a written tenurial contract with regard to the land?

A.5 Can you be evicted from the land on which your [housing unit] stands? If so, describe under what conditions.

A.6 Please explain why you have not purchased ownership/building rights to land. (Prices too high, impossible to obtain ownership/building rights, other reasons.)

A.7 Did you have repair and maintenance work undertaken on your [housing unit] during the past 12 months by other than household members? If so, what were the costs involved (including fixed payments for repairs, maintenance)?

A.8 Did you have repairs and maintenance work undertaken by household members? If so, what was the estimated cost had the work not been done by household members?

A.9 What was the cost of purchased inputs (including hired labour)?

A.10 Did you have additions or improvements made to your [housing unit] over the past 12 months? If so, what were they and what were the costs involved?

Owners with a housing loan

A.11 If the loan was obtained for the purchase of your [housing unit], what was the amount you paid in deposit and what percentage of the cost did this form?

A.12 If the loan was obtained for improvement of your [housing unit], what percentage of the costs did the loan cover?

Renters

B.1 Is your landlord: a private individual, a local housing authority or . . . ?

B.2 At how long a notice can your landlord raise your rent?

B.3 Can your landlord evict you from your [housing unit]? If so, at what notice and for what reason?

B.4 Do you have a written rental contract?

B.5 How much do you pay monthly (or weekly) in rent?

B.6 Does this rent include any services? If so, specify (heating, repairs, other).

B.7 Can you explain why you have not purchased a house or ownership/building rights to land? (Prices too high, impossible to obtain building rights, other reasons.)

Free renters

As questions B.1, 2, 3, 4 and 7 and—

C.1 Are you required to undertake any services in lieu of rent? If so, specify.

Notes

[1] Earlier versions of this article were submitted to a special meeting of the ACC Sub-Committee on Statistical Activities (Geneva, 22 June 1977), to the ASEAN Seminar on Data Collection regarding Employment, Underemployment and Unemployment (Djakarta, 25 July-3 August 1977) and to the OECD's Study Session on Multipurpose Household Surveys in Developing Countries (Paris, 14-18 November 1977). The authors benefited greatly from comments by their colleagues at the ILO as well as in other agencies, to whom they are greatly indebted.

[2] For an elaboration of this point see B. Dasgupta and D. Seers (eds): *Statistical policy in less developed countries*, IDS Communication 114 (Brighton, University of Sussex, 1975).

[3] The fact that the unprecedented growth of average income per head in the Third World over the past two decades was in most cases associated with growing inequalities, unemployment and poverty has been amply documented. See, inter alia, I. Adelman and C. T. Morris: *Economic growth and social equity in developing countries* (Stanford (California), University Press, 1973); and ILO: *Employment, growth and basic needs: a one-world problem* (Geneva, 1976), pp. 20 ff. For specific examples on rural poverty see idem: *Poverty and landlessness in rural Asia* (Geneva, 1977); and on urban poverty, R. Webb: *On the statistical mapping of urban poverty and employment*, World Bank Staff Working Paper No. 227, Jan. 1976.

[4] See, for example, D. Ghai et al.: *The basic-needs approach to development: some issues regarding concepts and methodology* (Geneva, ILO, 1977); M. J. Hopkins: *Basic needs approach to development planning: a view* (Geneva, ILO, 1977; mimeographed World Employment Programme research working paper; restricted); R. Jolly: "The World Employment Conference: the enthronement of basic needs", in *Overseas Development Institute Review* (London), No. 2, 1976; P. Streeten: *Basic needs: an issues paper* (Washington, IBRD, 1977); and J. Tinbergen (co-ordinator): *Reshaping the international order*, A report to the Club of Rome (New York, E. P. Dutton, 1976).

[5] E. L. H. Lee: "Some normative aspects of a basic needs strategy", in Ghai et al., op. cit., pp. 60 ff.

[6] The first studies in measuring poverty were made in Britain in the late nineteenth century. See B. Seebohm Rowntree: *Poverty. A study of town life* (London, Macmillan and Co., 1901). For more recent work in developing countries see, for example, P. A. Ellison. P. N. Pillay and C. G. Maasdorp: *The "poverty datum line" debate in South Africa: an appraisal*, Occasional Paper No. 4 (Durban, University of Natal, 1975); J. S. Minhas: "Rural poverty, land redistribution and development strategy: facts and policy", in *Indian Economic Review* (Delhi), Apr. 1970; P. K. Bardhan: "On the incidence of poverty in rural India of the sixties", in *Economic and Political Weekly* (Bombay), Annual Number, Feb. 1973; V. M. Dandekar and N. Rath: "Poverty in India", ibid., Jan. 1971; I. Rajaraman: *Constructing the poverty line: rural Punjab, 1960-61*, Discussion Paper No. 43, Woodrow Wilson School, Princeton University, Mar. 1974.

[7] For an elaboration of this concept see A. R. Khan: "Basic needs targets: an illustrative exercise in identification and quantification with reference to Bangladesh", in Ghai et al., op. cit., pp. 80-81.

[8] *Poverty and landlessness in rural Asia*, op. cit.

[9] R. Turvey in an unpublished memorandum on "Statistics of poverty and basic needs" (1976).

[10] The methodology of these surveys is explained in detail in United Nations, Department of Economic and Social Affairs: *Handbook of household surveys: a practical guide for inquiries on levels of living* (New York, 1964; Sales No. 64.XVII.13). A new version of this manual is currently being prepared. See also ILO: *Scope, methods and uses of family expenditure surveys*, Report III, Twelfth International Conference of Labour Statisticians, Geneva, 1971. The ILO has also published the principal results of household surveys carried out over the past two decades in *Household income and expenditure statistics*, No. 1, 1950-1964 (Geneva, 1967), and No. 2, 1960-1972 (Geneva, 1974 and 1976).

[11] On the methodology of these surveys see, inter alia, FAO: *Manual on household food consumption surveys*, by Emma Reh (Rome, 1962); idem: *Food and nutrition planning*, Nutrition Consultants Reports Series No. 35 (Rome, 1975); and WHO: *Methodology of nutritional surveillance*, Report of a Joint FAO/UNICEF/WHO Expert Committee, Technical

Report Series 593 (Geneva, 1976). The surveys are being carried out in a number of developing countries including Brazil, Mali, Peru and Tunisia.

[15] For a general outline of the new WHO approach see V. Djukanovic and E. P. Mach (eds.): *Alternative approaches to meeting basic health needs in developing countries*, A joint UNICEF/WHO study (Geneva, WHO, 1975).

[16] A vast amount of work has already been done to develop various socio-economic indicators which are extremely relevant for our purposes. See, for example, United Nations, Department of Economic and Social Affairs: *Towards a system of social and demographic statistics* (New York, 1975; Sales No. E.74.XVII.8.); UNRISD: *The level of living index*, Report No. 4 (Geneva, 1966); idem: *Contents and measurements of socio-economic development: an empirical enquiry* (Geneva, 1975); FAO: *Planning and evaluation of applied nutrition programmes*, by M. C. Latham (Rome, 1972); WHO: *Methodology of nutritional surveillance*, op. cit.; UNESCO: *Current social indicators in the field of education* (Paris, doc. CES/AC.23/21, 1976); and OECD: *Measuring social well-being*, A progress report on the development of social indicators (Paris, 1976).

[17] For an example of how this can be applied to rural areas see the questionnaire developed by S. Radwan and E. Lee for their survey of rural Egypt: *Problems of poverty and employment in rural Egypt* (Geneva, ILO, 1977; mimeographed).

[18] In developing this sub-module the following documents have been drawn upon: D. Freedman and E. Mueller: *A multi-purpose household questionnaire: basic economic and demographic modules* (Washington, IBRD, 1977); United Nations, Economic and Social Council: *World Housing Survey 1974* (New York, 1976; Sales No.: E.75.IV.8); J. H. Johnson, J. Salt and P. A. Wood: *Housing and the migration of labour in England and Wales* (Westmead, Saxon House; Lexington (Massachusetts), Lexington Books, 1974).

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Chapter 3

Survey Design

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The design of a survey is a prearranged program for collecting and analyzing the information needed to satisfy the study objectives at the lowest possible cost. There is no ideal survey design in the abstract, divorced from the particular goals of the research. Some investigators planning their first survey may regard the cross section at a single point in time as the only practical option, given their inexperience, or the most appropriate because it is the most [illegible] Many possibilities are open, and even the routine cross-section [illegible] variations, though some options may be out of the question for physical, clinical, or financial reasons. The design finally chosen should be consciously tailored to the overall objectives of the study and the exact types of information needed, and should also take account of the various methods to be used in gathering this information, such as a personal interview, a mail questionnaire, or a telephone interview.

RESEARCH OBJECTIVES

Most sample surveys pursue one or more of the following objectives: exploration or clarification of the dimensions of a problem; description of groups

individuals, events, or phenomena; causal explanation; hypothesis testing; evaluation; predicting or forecasting future events, and the development of social indicators. The designs required to attain each of these objectives may be similar or different, depending on the exact kinds of information that they require from the survey. A design appropriate for description may be too superficial and costly for the clarification of a problem through exploration, and too simple for causal analysis. Let us briefly consider each of these objectives.

Exploration

Flexibility is a virtue in survey research as elsewhere. There are times when we may be totally interested in a problem, but simply not know enough about it to design even a rudimentary descriptive study. In these cases it is better to clarify the problem itself before taking to the field. Selltiz et al. suggest a number of functions that may be served by an exploratory study:

> . . . increasing the investigator's familiarity with the phenomenon he wishes to investigate in a subsequent, more highly structured study, or with the setting in which he wishes to carry out such a study; clarifying concepts; establishing priorities for further research; gathering information about practical possibilities for carrying out research in real life settings; providing a census of problems regarded as urgent by people working in a given field of social relations [1959, p. 51].

The sample survey is usually not the most appropriate vehicle for pursuing essentially exploratory research. The informational payoff is too low given the high costs and imposition upon the public. One can, of course, embark on a nationwide or even cross-national study based upon ten or twelve questions pitched at this level: "What sorts of things upset you most these days," or "What do you think is the main thing wrong with this country?" or "How do you think children should be raised?" However, such "open-ended" questions are deceptively simple and relatively wasteful unless the range of responses is known in advance. One reason is that the interviewers must be instructed on the level of information that constitutes an *adequate* response. Individual respondents will cover the full range from the laconic to the garrulous, so that a policy must be set on when to probe and when to stop (see Chapter 6). If interviewers in California reach one decision and those in New York another, or worse, if it is left to the discretion of each person, the resulting information will be extremely difficult to code. Usually it is more productive to conduct a few informal, unstructured interviews with knowledgeable persons before attempting a large, cross-section sample.

This procedure was followed in a four-year study at the Michigan Survey [illegible] Mary McLaughlin,

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when A is present B must also be present, at least under specified conditions. Second, the cause must precede the effect, or at least the effect should not precede the cause. Third, all other possible explanations of the effect must be ruled out.[1] To illustrate, if we hypothesize that shift work causes marital dissatisfaction, the research would show that work schedules and marital satisfaction are correlated; that dissatisfaction increased after a man moved to an evening, night, or rotating shift; and that this heightened dissatisfaction was not produced by factors related to shift assignment such as age, seniority, education, [illegible] in fact, that some workers [illegible] shift assignment from their existing marital problems. [illegible] there was little evidence of negative effects of shift work on marital satisfaction. This finding underscores the importance of establishing the time order of the events under consideration. If marital dissatisfaction exists before a worker moves to a [illegible] shift and is not aggravated after the change, it is difficult to make a case for the causal impact of job hours on this condition.

In survey research, there are two approaches, or styles, to causal explanation, some depending upon the practical opportunities open to the researchers, others on philosophical definitions of explanation. One, to be discussed shortly, is formal hypothesis testing. Another, which is almost always combined with hypothesis testing, is the use of experimentation involving survey methods. For some investigators, on the other hand, the essence of explanation lies in developing a rich and informed qualitative picture of the events under study, rather than in testing preconceived hypotheses. Data from survey interviews, particularly those including a number of open-end questions, might thus be treated as a source of qualitative as well as quantitative insight into the problems under study. Indeed, there are many survey researchers who feel that the most compelling explanations are those which effectively draw together numerical data and qualitative materials.

Hypothesis Testing

The testing of hypotheses is one of the most frequently used approaches to causal explanation. It is particularly favored by those whose prime criterion of explanation is a logically interrelated set of hypotheses leading to accurate prediction. An hypothesis is, in essence, an empirically testable statement, that is, one which can be refuted or supported by empirical data. Most often it is expressed in the form of a proposition stating a causal relationship, such as: the movement of a worker from a day to a nonday shift will cause an increase in marital dissatisfaction. For those who place a high value on the development of axiomatic theory, an hypothesis should be derived from a set of postulates and assumptions about the sphere of behavior in question, such as working hours and marital satisfaction.

[1] A thorough discussion of causality, which is beyond the scope of this book, would require numerous qualifications and extensions of these three statements. For a relatively brief and useful discussion of causality and social research see Selltiz et al., pp. 80-85. For more comprehensive treatments see Blalock (1964, 1971).

When one's predilections for theory building, the statement of hypotheses has great practical value in planning and designing the sample survey. The main advantage is that it forces the investigator to be clear about what he expects to find through the study, and raises crucial questions about the data that will be required in the analysis stage. As a practical exercise in planning, therefore, it is often helpful to spell out the predicted or expected [illegible] among the major variables in the study including their relative periods or the time order among them. If the study directors of an explanatory survey cannot set forth at least a few hypotheses of this type, the research may require further conceptualization before it is ready for concrete discussions of design.

Evaluation

The sample survey is increasingly being used, often in conjunction with other methods, as a tool for evaluation research. This research can be defined as the assessment of the process and/or consequences of deliberate and planned interventions. The most common application involving surveys is with social programs such as Head Start in the United States, organized efforts to help couples plan their families, and organization development programs in many countries.

Edward Suchman points out three elements that must be present for an evaluation to take place:

> (1) an objective or goal which is considered desirable or has some positive value; (2) a planned program of deliberate intervention which one hypothesizes is capable of achieving the desired goal; and (3) a method for determining the degree to which the desired objective is attained *as a result of* the planned program [1972, pp. 53-54].

We would add that in some evaluations, particularly those launched by the auditing agencies of governments, the emphasis is as much on the *process* as the *product* of planned programs. In assessing a program of foreign assistance, for example, the General Accounting Office of the U.S. Government (an agency which rarely uses sample surveys) may be as much concerned with the degree to which the program under scrutiny adheres to proper procedures in spending money as in the final outcome of the expenditures.

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and Warwick, 1965). During the first year the investigators worked at defining and clarifying the various ways in which an afternoon shift, night shift, or rotating shift might affect the worker and his family. Interviews were held with [illegible] who helped to articulate the dimensions of the problem. [illegible] combined structured questions with [illegible] probing. [illegible] they were turned over to the [illegible] psychologist and sociologist [illegible] of shift work. Out of their exploratory probing were translated into [illegible] structured questionnaire items and the study moved to several [illegible] sites.

Description

The aim of descriptive surveys is to arrive at a precise measurement of certain phenomena, such as political party preference, neurosis, racial prejudice, or divorce. This type of survey is often the subject of an invidious comparison with exploratory studies, with one caricatured as "fact grubbing" and the other caricatured as "development of theory." Such a dichotomy is misleading. Descriptive and explanatory surveys are often identical in their operations, distinguished more by intent and use of the data than content. One man's description is grist for the next man's theory, as happens when an essentially descriptive study of attitudes in one country is replicated in another to test the effects of culture or social structure.

An essential task shared by descriptive and explanatory studies is conceptualizing the phenomenon in question. If a psychologist wishes to determine the frequency of neurosis in the United States population, he must first clarify what he means by the term. This task will rapidly take him into the realm of theory, for he will have to decide on *theoretical* grounds if neurosis consists of a set of presently observable behaviors, or only those presently observable behaviors produced by early experiences. If he decides on the second alternative, he may have to abandon the survey and seek out a method that is better equipped for assessing childhood experiences and their effects. The problems of definition in this example are the same whether one wishes to describe or explain neurosis. The relationship between description and explanation in survey research has been aptly summarized by Herbert Hyman:

> The descriptive survey is thus a training ground for the development of skill in conceptualization of the phenomenon and in the treatment of the findings in relation to error factors, both essential to effective analysis of explanatory surveys. But there is still another feature of the descriptive survey which is especially valuable for ultimate work in the design and analysis of explanatory surveys. Out of the findings of such surveys often comes the basis for the formulation of fruitful hypotheses about phenomena, or at least for some reduction in confusion about phenomena [1955, pp. 77-78].

Description, in other words, can lay the groundwork for the pursuit of other objectives, including explanation and hypothesis testing, evaluation, prediction, and the development of indicators.

Causal Explanation

A sample survey may take as its main goal the causal explanation of a phenomenon or situation. Both the terms "explanation" and "cause" have had a stormy history in philosophy as well as the social sciences. At the simplest level, to explain something means to make sense out of it, to make it comprehensible. But there the trouble begins, for there are no fixed criteria as to what constitutes comprehensibility. Some sociologists and historians, such as Dilthey and Weber, place strong emphasis on the role of understanding or *verstehen* in providing adequate explanation. Others, including many adherents of logical positivism, hold that the true test of explanation lies in prediction. In their view a phenomenon, such as suicide or murder rates, is not explained until it is set within the context of a predictive theory, including a logically related set of hypotheses. Hence, it often happens that what makes sense to one social scientist, and thus satisfies his or her standards of explanation, may remain quite incomprehensible to another. For present purposes, we would only note these different views of explanation, and urge the potential user of survey research to be clear about his or her own criteria (cf. Sjoberg and Nett, pp. 288-293).

The word "cause" has been no less troublesome in philosophy and the social sciences, particularly since David Hume's demolishing attack on the very notion of causation. Nevertheless, the concept has persisted, and is often linked to that of explanation. For many social scientists the most convincing evidence of explanation is the establishment of a causal relationship between two or more variables. For example, the study of shift work mentioned earlier (Mott et al., 1965) sought to explain how an employee's work schedule affects, i.e., is causally related to, several aspects of his attitudes and behavior, including difficulty in carrying out his obligations as a husband and father, marital happiness, job satisfaction, and physical health. The resulting survey of industrial workers in the United States was designed to obtain a variety of evidence, both quantitative and qualitative, which would allow the establishment of causal links.

To establish a causal connection three conditions must be satisfied. First, the assumed cause and effect must be associated with each other—

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when A is present B must also be present, at least under specified conditions. Second, the cause must precede the effect, or at least the effect should not precede the cause. Third, all other possible explanations of the effect must be ruled out. [illegible] that shift work causes marital dissatisfaction, the [illegible] that [illegible] marital dissatisfaction [illegible] after a [illegible] interviews, [illegible] it [illegible] indicate [illegible] that [illegible] marital problems. When these were removed from the analysis, there was little evidence [illegible] marital dissatisfaction. This finding [illegible] a monday shift, and [illegible] difficult to make a case for the causal impact of job hours on this condition.

In survey research there are various approaches to causal explanation, some [illegible] to the researchers, other [illegible] is [illegible] hypothesis testing [illegible] experimental or involving survey methods. For some investigators, on the other hand, the essence of explanation lies in developing a rich and nuanced qualitative picture of the events under study, rather than in testing a preconceived hypothesis. Data from survey interviews, particularly those including a number of open-ended questions, might thus be treated as a source of qualitative as well as quantitative insight into the problems under study. Indeed, there are many survey researchers who feel that the most compelling explanations are those which effectively draw together numerical data and qualitative materials.

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Evaluation

The sample survey is increasingly being used, often in conjunction with other methods, as a tool for evaluation research. This research can be defined as the assessment of the process and/or consequences of deliberate and planned interventions. The most common application involving surveys is with social programs such as Head Start in the United States, organized efforts to help couples plan their families, and organization development programs in many countries.

Edward Suchman points out three elements that must be present for an evaluation to take place:

> (1) an objective or goal which is considered desirable or has some positive value; (2) a planned program of deliberate intervention which one hypothesizes is capable of achieving the desired goal; and (3) a method for determining the degree to which the desired objective is attained *as a result of* the planned program [1972, pp. 53-54].

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From the standpoint of survey design, a great deal will depend on the precise objectives of a given evaluation study. The following distinctions suggest different objectives with crucial implications for design.

1 *Formative versus summative evaluation.* Evaluation research is *formative* [illegible] that it attempts to provide a diagnostic basis for revising, [illegible] *Summative* evaluation, by contrast, [illegible] program [illegible] and their terminal outcomes, and the process by which the outcomes were achieved. While the former places great emphasis on feedback from active programs, with the possibility of shifting course [illegible] the latter focuses mainly on assessment at a given [illegible] Results are extrapolated to the future (e.g., continuation or [illegible] theories, etc.) [illegible] Both [illegible] summative evaluation more likely [illegible] as a primary purpose. Given these [illegible] differences, the design of a formative evaluation survey would call for data collection at several points in time, and would make it difficult to conduct a tightly controlled experiment aiming to measure the precise effect of an intervention.

2 *Evaluation of effectiveness versus process.* The most common type of evaluation [illegible] emphasizes effects—that is, the extent to which the intervention achieved its [illegible] objectives. One of the greatest challenges in designing an [illegible] to measure effects is to create the conditions which will allow for the attribution of causality to the program. For example, if a government introduces a massive family planning program, and the country's fertility subsequently declines, it is not necessarily true that the fertility decline was an effect of the interventions. The same decline may have occurred if the government had done nothing, or more likely, may have occurred more slowly or at greater personal cost. Other studies are more concerned with the process or means by which the intervention was accomplished. An organization development program might be evaluated, for instance, by showing how many executives participated in problem sessions or sensitivity training or by reporting the major topics discussed and interactions that developed; rather than by documenting changes in productivity or some other measure of performance. For purposes of evaluation, the process would be treated as the product.

3 *Short-term versus long-term evaluation.* Evaluation studies also differ in their temporal focus. Some are concerned only with the impact of an intervention on immediate targets, while others relate it to long-range goals. The time horizons of the evaluation have obvious implications for design. In many respects the short-term assessment presents fewer problems, but runs the risk of excessive narrowness. An evaluation of a national family planning program after one year, for example, may provide optimistic results by giving undue weight to "early acceptors"—those with a strong inclination to

use family planning who had lacked only the means to do so. If the same studies were extended over a period of five or ten years the results might be far less positive. On the other hand, studies which attempt to project programs far into the future come closer to the goal of prediction than evaluation.

Evaluation research involves many more intricacies than can even be alluded to in this short discussion. The interested student is invited to consult [illegible] literature in this field, which now amounts to a subdiscipline in the social sciences.[2] One question, however, is particularly salient for the design of an evaluation survey. This concerns the precise variables that are to be examined in assessing the outcome of a program—*what* is to be evaluated. This, in turn, requires a clear conception of the goals or values the program is attempting to promote. Suchman writes:

> The problem of defining the values underlying a program is perhaps the most [illegible] and difficult aspect of evaluative research. For one thing, values differ for different people. The values of program personnel may differ from those of their clients or of the public. Furthermore, different program personnel and different segments of the public may have conflicting values among themselves, as witness the current controversy over "middle class" professional values as opposed to the "lower class" values of the poverty class [1972, pp. 67-68].

The question of what is to be evaluated raises fundamental problems of design, as well as of politics and ethics. Concretely, should the evaluation researcher accept the criteria of success provided by the program administrators, or should he or she apply independent criteria as well? If the intervention was aimed at a variety of social groups, such as blacks, Chicanos, and Native Americans in the United States, should their criteria of success be incorporated as well? These are questions which should be faced squarely in the planning stage, but they will also have critical implications for design. For example, an educational program designed for poor children might be evaluated on the basis of standardized scores obtained from tests given before and after the intervention. This design would typically reflect the criteria of success held by school administrators and perhaps other professionals in the field of education. But it would also be possible to broaden the scope of the research by obtaining the qualitative reactions of the children's parents to the program, covering such questions as the child's apparent attitudes toward learning, relations with other children in the family, self-respect, and other more elusive criteria. The second design, which might be termed multiperspective evaluation, would obviously be much more com-

[2] See, for example, Rossi and Williams (1972); Williams (1971), and Zurcher and Bonjean (1970). The collection edited by Weiss (1972) provides a helpful overview of the [illegible]

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plex than the first, but might also provide a more sound basis for evaluating the educational program.

It should also be emphasized that the choice of criteria involves basic political decisions. Almost any action program will appear better on some criteria than on others. As suggested in Chapter 2, there may be very strong pressures from the sponsors to choose those criteria that will cast the program in the most favorable light [illegible] the program's performance [illegible]. Similar pressures may arise from the investigator's own [illegible], particularly if he is sympathetic to the program or the sponsoring agency (cf. Weiss, 1972, Warwick and Kelman, 1973). In designing an evaluation survey, therefore, it is essential for the independent researcher not to become an unwitting victim of cooptation. The best defense against a [illegible] biased toward the interests of one or another party in groups is extensive consultation with all interested parties, particularly the program's opponents.

Prediction

Another common objective of survey research is to provide the basis for predictions about some future event or situation. The most familiar example is the public opinion poll used to forecast election results. In this case, a survey of attitudes and expected behaviors on the part of a sample of respondents forms the basis for statements about the probable voting patterns of an entire electorate. Other predictions simply involve the extrapolation of descriptive data about the present to a specified point in the future. In demographic forecasting, for example, information about the present size, age distribution, and [illegible]-specific fertility and death rates of a country's population are used to estimate the total population at some future date, such as the year 2000. There are also various other modes of prediction (Bell, 1964).

One issue that should be of particular concern in designing a predictive survey is the impact of the survey itself on the behavior to be predicted. There is no doubt, for example, that preelection polls in the United States and other democratic nations are often used as a vehicle for influencing the outcomes of elections. In *Silent Politics* (1972), Leo Bogart catalogues the many ways in which polls can not only inform but shape public opinion and related electoral decisions. For instance:

> 1 They provide candidates for office with intelligence about where they are strong and where they are weak.
>
> 2 They offer guidelines as to what candidates should and shouldn't say to win voter approval.

> 3 More questionable use of preelection research is the carefully timed, [illegible] release of polls to influence convention delegates with demonstrations that Candidate X couldn't possibly win, whereas candidate Y might.
>
> [illegible] but more important effect of polls as an influence on elections [illegible] about when they create the impression that the outcome is a sure thing three or four months before the election itself. What this does to demoralize party workers and to drive away potential contributors to party [illegible] is a classic example of self-fulfilling prophecy [1972, p. 27]

The use of polls takes on particular political and ethical significance in closely contested elections where the survey results may sway the independent or undecided voters. Needless to say, the sample design as well as the way in which the questions are written will have a great deal to do with the outcome of the poll. During the 1968 United States presidential elections, George Wallace became so frustrated with preelection surveys that he cried: "[illegible] every poll. They are trying to rig an election."

There are many other problems in using survey or census data to predict the future. One is that the factors accounting for a trend uncovered in the survey may themselves change over time. This problem is particularly evident in the field of population projections, where unexpected shifts in attitudes and socioeconomic conditions may produce marked changes in fertility. The recent history of population projections in the United States is [illegible] example of the precarious nature of demographic forecasting. Another difficulty is the self-detecting prophecy. This occurs when the survey results lead to a change in public or elicited awareness which, in turn, reduces the likelihood of the predicted behavior. For example, after being told by a survey that drug use is increasing in high schools, a community may take positive steps, through legislation, law enforcement, education, or other means, to reverse the trend. Another example comes from short-term economic forecasting. A survey may show that families are becoming increasingly concerned about the future in ways that make them cautious of making major new purchases. These findings might convince policy makers to take offsetting action to revive consumers' willingness to maintain their previous spending rates. Nevertheless, with proper design, awareness of reactive effects on the environment, and due recognition of the limits of forecasting, the simple survey can be a helpful tool in making predictions.

Developing Social Indicators

Beginning in the 1960s a group of social scientists, legislators, and others launched a movement for the development of "social indicators." The aim, in general, was to provide the social and political equivalent of such familiar economic indicators as unemployment rates or the wholesale price index (cf. Bauer, ed., 1966). While there has been considerable ambiguity from the

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beginning as to just what differentiates a social indicator from the more ordinary statistic, the consensus seems to be that an indicator must be a "socially significant" measure repeated at regular intervals. "In other words, social indicators are time series that allow comparisons over an extended period and which permit [illegible] trends as well as unusually sharp fluctuations" (Sheldon and Freeman, 1972, p. 166).

In these discussions the sample survey is often proposed as one of the most promising sources of indicators. Through repeated surveys, it might be possible to obtain time series on such measures as the health and educational attainment of the population, the security, job satisfaction, leisure activities, crime, satisfaction with governmental services, and the adequacy of the transportation. The survey, as noted in Chapter 1, is indeed an appropriate method for gathering information on many of these subjects.

As in the case of evaluation research, however, the indicator movement has strong political overtones. Which sphere of activity is chosen as an indicator and how it is defined and measured will reflect socio-political values (Henriot, 1970). The design of the samples and the timing of the repeated surveys are also not likely to be matters of indifference to politicians and interest groups.

> In fact, when used for purposes of setting goals and priorities, indicators can be regarded as roots into a complex political mosaic. That they are potentially powerful tools in the development of social policy is not to be denied. But they do not make social policy development any more objective . . . In a situation where all sides have equity of resources to gather, interpret, and communicate indicator information, it could be argued that social indicators can serve to develop a more rational decision-making process in social policy development. But this is unlikely to be the case very often, and in instances of unfair competition indicators are essentially a lobbying device [Sheldon and Freeman, 1972, p. 167].

Here and elsewhere both the designer and the consumer of survey research should be alert to the political ramifications of the content as well as the methodology of a given study. Precisely what constitutes a social indicator is not self-evident and should be subject to careful scrutiny.

STUDY OBJECTIVES AND SURVEY DESIGN

Few surveys have but a single objective. Many try to gather data that can be used one way for description, another for causal explanation, and perhaps a third for evaluation or prediction. Similarly, the design of research on social indicators must include not only the definition and construction of the indicator in the first survey, but also the design of subsequent surveys in a time series. The challenge in survey design is to devise a program of data collection which fulfills the greatest number of central objectives without exceeding the resources available.

As should now be apparent, there is no one to one fit between the study objectives reviewed thus far and the various types of survey design. Ideally, for example, an evaluation should be carried out by a carefully controlled experiment in order to obtain solid evidence on causality. However, for political and ethical reasons such experimentation with human subjects is often impossible. Hence, the best design available, under the circumstances, may be the quasi experiment (Campbell and Stanley, 1963), or even an ex post facto analysis. The following discussion considers two major categories of survey design which can be applied to a variety of objectives: the single cross section and designs for assessing change.

The Single Cross Section

This design involves the collection of information at a single point in time from a fraction of the population selected to represent the total. Within this design the researcher must determine whether to use mail questionnaires, telephone interviews, or personal interviews at each selected household, or to tailor the study to his objectives in other ways. The results can be used, with varying degrees of confidence, for describing the population under study, for trying to trace causal connections, evaluating an action program, predicting a future state of events, or for the development of one or more social indicators.

The shift work study cited earlier was a cross section at a single point in time designed primarily for explanatory analysis. The aim was to trace the impact of nonday working hours on the worker's health, attitudes, leisure-time pursuits, and family relationships. The difficulty with this design, and all other cross sections at only one point in time, was that it did not provide direct, time-ordered evidence on causality as would be available from an experiment. Instead, in seeking out causal connections the study directors had to rely on respondents' recollections of key conditions and other indirect information, such as comparisons of the responses of men on shift work with those on daylight schedules. Thus, while there were no before and after measures showing that men *changed* when they moved from a day to an afternoon or night shift, the findings did show significant differences between day and shift workers on health and social relationships. These findings strongly supported the attribution of causal influence to working hours.

The most critical limitation of the single cross section, as suggested by the example, is the absence of independent measures from different points in

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time. Nevertheless, social science methodologists have been able to devise helpful and sometimes ingenious means for inferring causality from single cross-section data. The most obvious means is to divide the sample into meaningful subgroups and then to seek out similarities and differences. For example, [illegible] of the effect of education on [illegible] the levels of [illegible] persons with different levels of education. [illegible] levels would, other things being equal, provide evidence of the causal consequences of education. In Chapter 11 we will review some statistical techniques which will help to account for those things that we can expect *not* to be equal in order to obtain a more refined test of the impact of education [illegible].

Several variations may be introduced to enhance the meaningfulness of the cross-section [illegible] at a single point in time. The first consists of *parallel samples* covering several different "target populations" in the same study. This approach is well illustrated in Frey's study of Turkey:

> The final [illegible] sampling unit was to be the individual villager, or peasant, and not the family or [illegible]. This [illegible] because the study was constructed so that we would [illegible] three separate samples rather than merely the one sample of the peasantry. Our teams traveled to 498 villages, completing in each case a separate [illegible] of information about the village as a whole, thus giving us, after [illegible] adjustments, a comprehensive data on a sample of Turkish villages. Moreover, in addition to the designated set of interviews with the sample of villagers in each of these villages, our teams also were instructed to obtain a series of elite interviews in each sampled village. These additional interviews were [illegible] with the village headman (*muhtar*), with the village priest (*hoca*), and with the legal wife of each, regardless of whether such individuals turned up in the regular sample. Thus, the investigation was constructed so as to yield (1) a regular sample of Turkish peasants, (2) an elite sample of certain formal village leaders and their spouses, and (3) a sample of the village communities of the country. The findings on the two added samples were obtained at very low marginal cost and markedly increased analytic opportunities [1963, p. 339]

Another variation is *oversampling* certain subgroups in the population in order to obtain enough cases to carry out a separate analysis. For example, if an investigator wishes to carry out a cross-sectional study of Toronto, Ontario, and at the same time compare the Portuguese minority with other citizens, it would be necessary to use a higher sampling fraction in known Portuguese districts than elsewhere. An equal probability sample would produce so few cases that detailed analysis of this minority would be impossible unless the total sample size was very large, e.g., 10,000-15,000. This procedure is discussed in Chapter 4.

A third option lies in the use of *contrasting samples* in addition to or in place of sampling from the entire population. This is basically an extension of the principle of oversampling but is applied to those groups which are likely to show the greatest differences on the central variable of the study. A contrasting [illegible] was used by the Survey Research Center in a study of public attitudes toward the proximity of atomic energy installations. The sample consisted of communities located very close to these installations and those at a considerable distance. The advantage of this approach is that it will often sharpen the differences seen in the results. The drawback is that such sharpness may be achieved at the expense of generalization to the entire population (unless a regular cross section is included as well).

In [illegible] approach, both descriptive and explanatory analysis as well as evaluation can be improved by combining the usual cross section with an intensive study of *natural clusters* such as schools, factories, hospitals, or army units. For example, a national survey of the attitudes and values of college students might include two interpenetrating parts: (1) a probability sample of 2000 individual students drawn from a master list of persons registered at all colleges and universities in the country, and (2) a probability sample of 20 colleges and universities for use in an intensive analysis of institutional or contextual effects on attitudes and values. The interviews in the second sample might collect several types of information not available through the first, including sociometric data on the network of interpersonal relations in the school, and quasi-anthropological data on the norms, social pressures, and general academic climate in the student community. This latter type of information was most helpful in establishing apparent causal connections in a study of Bennington College (Newcomb et al., 1967), though this study focused on only one school. The "Coleman report" on the equality of educational opportunity in the United States approximated this design by collecting data on the overall characteristics of schools as well as their students (Coleman et al., 1966).

Designs for Assessing Change

The sample survey may be used to describe, explain, evaluate, or predict change. Explanatory and evaluative studies of change fall broadly into two categories: *experimental* analyses attempting to appraise the effects of an event which occurs between the first and later measurements, and *nonexperimental* causal analyses aimed at showing the dynamics of change when the variables in the study have not been systematically manipulated. Experiments may be *natural*, as when an economist studies the effects of an economic recession through repeated measurements, or *arranged*, as in a before-after study of the effects of a public information campaign. Nonexperimental studies are by far the more frequent. Examples include studies of changes

in spending and saving habits among consumers, shifts in voting, and changes in attitudes among students during the college years. The major design options for studies of change include successive independent samples, panel studies, and other combined designs.

Successive Samples. Successive samples involve the selection and interviewing of two or more samples drawn at different times from the same population. For example, a study might use different samples of United States citizens in 1965, 1967, 1969, 1971, and 1973. When data from these have been collected at several points in time, rather than just once, they are said to form a *time series* and may be used for *trend analysis*. This design may be summarized schematically as follows:

Successive Samples from the Same Population

Time 1	Time 2	Time 3	Time 4
Sample A	Sample B	Sample C	Sample D, etc.

The successive sample design is most appropriate when: (1) the aim of a study is primarily to describe changes in the attitudes and behavior of a population, (2) when the surveys are used to carry out a largely descriptive analysis or evaluation of the effects of a natural or arranged intervention, such as a war, a change in business conditions, an election campaign, or a governmental change program, and (3) when a population is to be interviewed repeatedly over a long period of time. This design was used by the Survey Research Center in two long and well-known series: (1) the national study of consumer attitudes and behavior begun in 1946, and (2) studies of voting behavior, with the first in 1948. Other examples include a study by the Survey Research Center on changes in public attitudes toward atomic energy and atomic bombs following the Bikini tests in 1946, and an evaluation of the impact of a publicity campaign about the United Nations on the residents of Cincinnati, Ohio (Star and Hughes, 1950). In evaluation studies such as these, it is possible to use two equivalent samples from the same population, with the "event" whose impact is under study occurring in the intervening period.

Another advantage of successive but independent samples is the avoidance of the conditioning or contaminating effects of a prior interview. This can be a drawback in surveys that interview the same sample of individuals at different points in time (panel studies). There is evidence that after a first interview people are more aware of the subject matter covered in the study, such as atomic energy, and may develop a different set of attitudes than others in the population. This is seldom a problem when interviewing successive samples at specified time intervals.

Successive samples also may suffer from several limitations, particularly in explanatory analysis. One that is shared by all repeated surveys, including the panel study, stems from possible changes in the influence of interviewers across the several periods of data collection. Both experimental and practical evidence suggest that the attitudes and expectations of interviewers can influence the results of a study (cf. Rosenthal, 1966). As Campbell and Stanley point out:

> If the same interviewers are employed in the pretest and posttest, it usually happens that many were doing their first interviewing on the pretest and are more experienced, or perhaps more cynical, on the posttest. If the interviewers differ in each wave and are few, differences in interviewer idiosyncrasies are confounded with the experimental variable. If the interviewers are aware of the hypothesis and whether or not X (the experimental intervention) has been delivered, then interviewer expectations may create differences (1963, pp. 37–38).

An optimal solution that is rarely feasible involves the use of different but equivalent (same sex, age, training, race, etc.) interviewers in each wave of the study. Whether or not this policy is adopted it is usually advisable to keep the interviewers ignorant of the major hypotheses in the study. Sometimes, of course, this is impossible.

A second and major limitation of the successive independent sample design is its inability to account for gross changes (as contrasted with net changes). For example, if the Cincinnati study showed that 30 percent of the citizens favored the United Nations before the publicity campaign and 40 percent after (these are not the actual figures), we would know only that the net change was 10 percent. Without further information it is impossible to determine the gross changes behind this figure. It could be that the final 40 percent consisted of the original 30 plus an added 10 percent, with the rest showing no change, or the campaign might have had the bizarre effect of producing a 40 percent conversion rate, while alienating the original 30 percent, in which case the gross change would have been 70 percent rather than 10 percent. With data from independent samples, the investigator can only speculate about these questions.

Third, with surveys based on successive, independent samples it is difficult to account for the dynamics of change. Let us assume that we use this design to measure shifts in voting intentions prior to a national election, with one survey six months and the other one week before the election. If there is a change in the proportion intending to vote Democratic between surveys one and two, we can compare the differences between the two surveys in the proportions expressing Democratic intentions by age, race, education, region, and other traits. In this sense, the successive sample design can shed

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light on the characteristics of the changers. However, without panel data, individual changers and nonchangers cannot be described directly, nor can they be related to knowledge and perceptions of major events that occurred between the two times or other potential explanatory conditions, such as watching television and [illegible] party [illegible].

Finally, when successive samples are used in measuring experimental changes, as with time series [illegible] to control the influence of factors in addition to the [illegible] variable. A shift of attitudes in favor of the United Nations [illegible] quality or opinion from other uncontrolled conditions, such as a "bandwagon effect" to persist change in population attitudes [illegible] (or nothing to do with the experiment), or from various incidents in the [illegible] environment, such as a thaw or decline in cold war tensions [illegible] can be predicted by use the study questions and probes [illegible] in order to assess the respondent's awareness of the [illegible] to provide some basis for estimating their impact. Without appropriate controls, the investigator cannot rule out or make adjustments for the effects of extraneous variables.

Panel Studies. A panel survey is one which collects information on overlapping sets of questions from the same sample on two or more occasions. The sample in question may consist of individual respondents, families, dwelling units, or other units, though the term "panel" usually refers to individuals. This design is contrasted with successive samples in the diagram below:

	Time 1	Time 2	Time *n*
Successive	Sample A	Sample B	Sample *n*
Panel	Sample A	Sample A	Sample A

Panel studies enjoy several advantages over successive samples and the cross section at a single point in time:

1 The panel technique permits the investigator to estimate the extent of gross change in the population. This is an important advantage even in descriptive studies which try to show how many individuals enter and leave a given category within a certain period. Students of religion, for example, may wish to estimate not only the net change in membership for a denomination over the past five years, but also the turnover—the number of former members who have left and the number of new members who have joined. The panel provides this information.

2 Panel data are particularly useful in answering questions about the dynamics of change, such as: Under what conditions do people shift their

party affiliation? Are there peculiar factors at work in this election, such as the role of religion in the 1960 Kennedy-Nixon campaign? What is the role of interaction with friends in changing political attitudes? Information on both the characteristics of changers and the factors likely to account for change provide important insights into the dynamics of change. As noted earlier, some of this information can be obtained from successive, independent samples, but it is far less complete than with panel studies.

3 [illegible] each interview, it is possible to accumulate more information about each respondent than in the single cross section or successive samples. Many such items change very little or not at all with the passage of time, so that a comprehensive case history of each panel member can be built up. These data can be cross-tabulated with the more limited data secured in a single interview for a better understanding of the phenomena being studied" (Morten, 1950, p. 98).

4 As in the case of successive samples, the panel can be used to measure the degree and direction of change following the introduction of an experimental variable. In addition to the advantages already noted regarding change, the panel technique permits a more intensive understanding of the process of change, especially when the respondents are followed over a relatively long period. Studies of attitude change can determine whether initial shifts hold up in succeeding years, whether there are peaks and troughs in the variables studied, and whether individuals who did *not* change at first begin to do so over time. This advantage is illustrated in a restudy of Bennington students who graduated from college around 1938. In the first study, Theodore Newcomb (1943) measured attitude change in the student body annually from the freshman through the senior year. In the follow-up research carried out between 1959 and 1962, Newcomb and his coworkers (Newcomb et al., 1967) contacted over 90 percent of the graduates of the earlier period and repeated many of the same or equivalent measures. In this way, they were able to determine whether changes during the college years generally persisted into adulthood (as they seemed to), and under what conditions persistence or change was most likely in the intervening years.

5 Repeated contacts with the respondent may help to reduce initial suspicions and reservations about the survey so that in later interviews he or she provides more information than previously. The reverse side of this benefit, however, is the "conditioning effect" to be discussed shortly.

Though the panel survey represents a great improvement over the cross section and successive samples in explaining change, it has four drawbacks:

1 It is often difficult to develop a sample of respondents who agree to be reinterviewed. Individuals who are normally quite cooperative in responding to a single cross section may resist being contacted two, three, or more times. Losses at the beginning reduce representativeness, for it is likely that those who refuse to participate are different from those who agree. The

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former may be less literate, busier, with larger families, and show less interest in surveys (Moser, [illegible], p. 112).

2. A further problem is *sample mortality*. Panel members die, move, become ill, or lose interest in projects which once excited them. Cox (1965) estimates that in a sample of United States families, about 20 percent will have changed addresses in a year's time. If these respondents cannot be followed, the sample base will drop to 80 percent in the second year and still lower in [illegible] years. [illegible] whatever losses may exist in the sample [illegible] can produce extremely serious problems of representativeness and validity in the data, especially since the movers are likely to be different from the rest of the sample on many characteristics. Some survey organizations have tried to reduce sample mortality through a concerted effort to follow movers to their new addresses. Others have attempted to develop a "team sense" among panel members through such devices as [illegible] short, prizes or other rewards for persistence. These latter techniques may [illegible] in cutting losses, but they are rarely feasible in studies with a limited budget, and can produce even further conditioning effects.

3. The problem of conditioning or contamination through measurement has already been noted in connection with successive samples. The essential problem is that the more individuals are subjected to repeated measurement, the more likely they are to develop a "guinea pig" reaction (see Campbell and Stanley, 1963). This conditioning, contaminating, or educational effect may take at least two forms. First, as noted earlier, participation in the panel may increase the respondent's awareness of the issue or problem area covered by the survey. For individuals in many countries, the United Nations is both a vaguely perceived ideal of international communication and a spatially remote organization. An hour or more of questioning about its functions and effects may not only produce baseline information about the respondent's initial attitudes, but also heighten his consciousness of the UN and make him more attentive to news about its work. One experiment on the effects of panel membership suggests that this influence may not be great (Lazersfeld, 1941). However, this study would have to be repeated on a broad range of issues before the problem of conditioning could be discounted. Second, the respondent's initial statement of attitudes, opinions, or beliefs may lead him to be more consistent than he usually is. An individual who says, initially, that the UN is useless may hold to this view even in the face of information that might otherwise have produced an attitude change. The greater the pressures toward consistency produced by the initial interview, the less representative the panel member may be of his more vacillating counterparts in the larger population, and the lower the generalizability of the findings on change.

4. As the panel moves into its later stages, with three or four repeated interviews, some members may find the process increasingly bothersome and lose interest in the substance of the study. The same can happen with the interviewers. The result may be a reduction in the quality and depth of the [illegible] or stereotyped responses,

unthinking repetitions of earlier answers, and shorter interviews. These responses may be, in effect, latent dropouts who do not wish to offend or displease the interviewer by stating their disaffection openly.

Special problems arise when the panel technique is used to evaluate experimental changes, such as a movie, an informational campaign, or some other stimulus. These problems are less serious when the investigators randomly assign those who will be exposed to the experimental condition (such as the movie) and those who will be assigned to the control group. But in many cases, especially in natural experiments, such assignment is impossible so that the investigators must use a later interview to determine who has and has not been exposed to a stimulus such as a movie. This approach is very appealing because of its methodological simplicity and convenience, but it can also be very misleading. One simply cannot assume that those who have exposed themselves to a movie or some other self-selected stimulus are in all ways similar to those who have not had the exposure. It is quite likely that those respondents who choose to listen to a television program on the United Nations are, on the average, more interested in the UN than those who do not, and perhaps more ready for a change in attitudes. For this reason, great care must be exercised in using the panel design as a quasi experiment.[3]

Combined Designs. Some of the difficulties in sample design discussed thus far can be resolved by combining the principle of successive samples with that of the panel technique, or using other variations tailored to the needs of the study. Two possibilities that deserve serious consideration when conditioning effects are expected to be important are the panel with one control group and the panel with two control groups.

Panel plus One Control Group. We have already seen that one of the most serious drawbacks of the panel method is the effect of the initial interview on later measurements of change. One way to determine indirectly whether or not there has been a conditioning effect is to carry out the second (or "after") interview with the panel and with an equivalent sample not previously interviewed. This design is summarized below:

Panel plus One Control Group

Time 1	Time 2
Sample A	Sample A
	Sample B

[3] The problem of self-selection in exposure to an experimental influence is discussed in detail in Campbell and Stanley (1963).

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By comparing the average responses of Samples A and B at Time 2, the investigator can infer the extent of the conditioning effects produced by the interview at Time 1 and make appropriate adjustments in the interpretations.

Panel plus Two Control Groups In surveys used to evaluate the impact of [illegible] a further problem arises in separating the effe[illegible] change [illegible] may be the result of the movie, the conditioning provided by the first interview, or some interaction between the two. One way of determining the relative impact of the experimental variable consists in introducing into the design a control group which, like the panel, is interviewed at Time 1 and Time 2, but which is not exposed to the experimental stimulus, in this case the movie. This design is an improvement on the panel [illegible] it still does not permit the investigator to assess the effects of [illegible] which allows for an assessment of both the experimental variable and conditioning effects. In the case of the panel, a control group which is not premeasured but which is exposed to the experimental variable, and another control group which is neither premeasured nor exposed to the experimental variable. This arrangement can be represented as follows:

Panel plus Two Control Groups

Time 1	Exposure to experimental stimulus	Time 2
Sample A	Yes	Sample A
	Yes	Sample B
	No	Sample C

This design permits the investigator to answer three basic questions. First, by comparing the results for Sample A before and after the introduction of the experimental stimulus, he can judge whether or not it had the expected effect. Second, by comparing the results of Sample A and Sample B at Time 2, he can estimate the extent to which the reaction of panel members to the experimental stimulus was influenced by the measurement at Time 1. If Sample B is significantly different than Sample A, it is likely that the initial measurement of Sample A did affect the outcome of the experiment. Third, a comparison of the difference between Sample A at Time 1 and Sample C at Time 2 with the difference between Sample A at Times 1 and 2 provides some information on general shifts in population attitudes that have nothing to do with the experimental stimulus. If the resources of the survey are large enough, even more complex designs can be introduced to assess the relative effects of the experimental stimulus, preconditioning, and general changes in [illegible]

Other Combinations Another combined design was used successfully with the national consumer surveys conducted by the Michigan Survey Research Center from 1960 to 1962. Experience with earlier studies of consumers' economic behavior suggested that the conditioning effects of participation in a panel were limited to greater consciousness of economic activities and better recall on the part of the panel members. In the new design the same sample of [illegible] was maintained for each of the three annual surveys, except that the sample was updated each year with addresses representing new construction, new occupancy, and the conversion of buildings to dwelling use. The procedures called for interviews with those who had recently moved into sample addresses, and reinterviews with former respondents who had not moved. The result was a complete cross-section each year which shared the advantages of successive samples as well as a panel design. The complete cross-section covering recent arrivals as well as nonmovers provided trend data on attitudes, income, and other financial indicators. The panel component, on the other hand, provided data on savings through a comparison of the holdings reported by the same respondents in interviews held two years apart. Since the questionnaire for the movers-in was shorter because of the absence of the savings questions, it was possible to ask them a special [illegible] expectations on migration and family formation.

The technique of having different question sequences for different sets of respondents was also used to good advantage in recent surveys in Peru. The overall design called for general surveys in several metropolitan areas not previously studied. The samples covered adults, and the main questions had to do with labor force participation and underemployment. Because many adult females had little work experience, only a few of these questions were applicable. Instead, since most had borne one or more children, the questionnaire included a sequence of items on the fertility history and related attitudes of female respondents. Given that the women who were actively employed were younger and had no or few children, the two question sequences typically offset each other in their demands on respondent time. This general approach can often be applied with great advantage in other types of survey design.

Finally, we might mention the possibility of splitting a large survey into successive samples covering six months or a year. Rather than gather data on a sample of 2,400 in a one-month period the researcher can divide the sample into 12 independent monthly samples of 200 households. As Kish states:

> The sum of repeated surveys over the entire period can lead to better statistical inference than a single, concentrated *one-shot* survey. *Probability selection of time segments from an entire interval permits statistical inference from the sample* [illegible]

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A prime advantage of repeated samples is that they provide explicit information on phenomena known to vary by season, such as employment and unemployment, and also on the effects of unusual events such as international incidents, storms, or disasters. Nevertheless, the one-time survey concentrated in a period of one or two months will probably remain the most popular [illegible] allows [illegible] analysis and presentation of the data, [illegible] the employ[illegible] of interviewers over a long period.

In sum, a survey can be designed to satisfy one or more of the following objectives: exploration of a problem, description, causal analysis, hypothesis testing, [illegible] analysis, the evaluation of an intervention, and the development [illegible]. Normally, however, a more simple and less expensive method is suitable for exploratory analysis. The chapter argues that the distinction among some of these objectives may be more apparent than real and that most surveys can be designed to pursue more than one objective. Particular attention is devoted to the costs and benefits of the cross-sectional design at a single point in time versus designs geared to assessing change, including successive, independent samples, panel studies, and combined designs.

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Chapter 4

Sampling and Estimation

The foundation of a good sample survey is the sample. A *sample* is some part of a larger body specially selected to represent the whole. *Sampling* is the process by which this part is chosen. While not every survey that uses proper sampling methods will provide adequate data, a study that does not will be seriously impaired from the outset. For a sample to be useful, it should reflect the similarities and differences found in the total group. A person who is studying a factory with 15 work groups cannot assume that one of these groups will be representative of all the others. In most factories work groups differ in age, attitudes, productivity, the ethnic background of their members, and other qualities. A representative sample of workers or work groups should capture the diversity of the whole.

In designing a survey sample, it is best to assume that people are different from one another in attitudes and behavior, even if the extent of differences is unknown and an object of study. Thus, in the example cited, the safest course is to assume that the 15 work groups in the factory show significant differences on any given characteristic, and to sample accord-

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ingly. This chapter argues that the most reliable way to assure a representative sample is to use chance procedures for choosing the units to be studied. These procedures and the logic behind them will be laid out in some detail. Nonchance procedures are [illegible] used in survey research, but they may introduce unknown or unanticipated bias into the findings. As a result, the data based on the sample may differ systematically from the information that would have been obtained from the entire group. Worse yet, unless there are independent [illegible] a check on the findings, the biases may never be detected [illegible] survey results themselves are the only source of information about the subject under study, so that there are no other [illegible] to consider.

An example will illustrate the dangers of using nonchance sampling procedures, or of mixing them with chance procedures. A study of women began with a chance selection of dwellings in the study area. However, bias arose when nonchance procedures were allowed in selecting the respondents. If the women in the selected dwellings were not at home when the interviewer called, next door neighbors were substituted. At first sight, this may seem like a perfectly reasonable procedure, especially in a study with a limited budget and a tight deadline. The results, however, revealed a decided bias in the respondents actually chosen for interviews. Working and socially active women were seriously underrepresented by a sampling method favoring those who stayed at home during the day. Hence a seemingly innocuous departure from chance procedures was highly damaging to the results of the study.

Another important point is that a sample is never adequate or inadequate in itself. It must always be judged by its usefulness for a given purpose. Sometimes it makes little difference which part of the whole is selected for the sample. The host at a dinner party tastes the first glass of wine to determine if the entire bottle is suitable for his guests. A medical technician takes a blood specimen from any convenient area of the body. These "samplers" assume that the wine is *sufficiently* similar throughout the bottle and the blood *sufficiently* similar throughout the body to yield samples that are useful for their purposes. In other words, they assume a high degree of *homogeneity* or sameness in the whole from which the sample is drawn. In point of fact, the wine at the top of the bottle may be slightly different in taste from that at the bottom, and the blood drawn from an infected area may not be exactly the same as specimens from other parts of the body. But for the purposes for which the host sips the wine and the medical technician draws the blood, the samples chosen are representative enough to be useful. Under conditions of high homogeneity, almost any sample is as good as any other. Unfortunately, in samples involving people such homogeneity can never be taken for granted. The procedures involved in sampling individuals

and social groups are thus considerably more complicated than those for wine and blood.

BASIC TERMS AND CONCEPTS

In survey research the sample is selected to be counted, measured, or questioned in order to obtain data from which to make inferences about the total group under study. Three interlocking processes are involved: *sampling*, the process of selecting a part from the whole; *measurement*, the intermediate step of counting and making quantitative [illegible] and *estimation*, the process of making inferences about the total group from sample data. Sampling and estimation together make up the *sample design*, the main theme of this chapter. Measurement is treated elsewhere in the book, especially in Chapters 6 and 9. In the following pages we will define and illustrate the basic terms and concepts involved in sample design, introduce some basic symbols and equations, and later move to problems of practical application.

Population, Elements, and Universe

A *population* is any complete group, whether of people, houses, farms, or pigs. *Elements* are the individual units making up the population. While a population typically refers to a finite group, the term *universe* covers events or things that are without numerical limit, such as all possible rolls on a pair of dice. Following this convention, all dwelling units in the Tokyo metropolitan area, as of a certain date, and all workers at Factory Z during the study week would be populations. This discussion focuses primarily on the sampling of populations.

Probability

Probability is the proportion of times that a particular outcome may be expected to occur out of many repetitions of the event. It is usually expressed as a decimal fraction from 0 to 1. Zero indicates that an event will not occur at all, 1 that it will occur with certainty. In flipping a fair coin, the probability of a head on any flip is the number of heads that might come up (one possible outcome, head) over the total number of possible outcomes (two, head or tail), or 1:2 = 0.50. For a two-headed coin, the probability of a head is 2:2 = 1.00, or certainty, and of a tail 0:2 = 0.00, or impossible. When there are several possible outcomes, the probability of an event occurring in a particular way is the quotient of the number of ways the event can occur in the designated way divided by the total possible ways for the event to occur. For example, a *seven* has a higher probability of occurrence than a [illegible] on a roll of a pair of dice. The reason: there are six ways for a seven to

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occur (1-6, 2-5, 3-4, 4-3, 5-2, 6-1) but only five possibilities for a six to appear (1-5, 2-4, 3-3, 4-2, 5-1). With 36 possible outcomes from the roll of a pair of dice, the respective probabilities of a seven and six are 6:36 and 5:36. These elementary notions of probability form the basis for much of the theory and practice of sampling.

Probability and Nonprobability Sampling

Probability sampling is a process of sample selection in which elements are chosen by chance methods such as flipping coins, drawing numbered balls from an urn or through tables of random numbers. There are several variations in probability sampling, but all share a common trait: the selection of the units for the sample is carried out by chance procedures and with known probabilities of selection.

Nonprobability sampling includes all methods in which units are not selected by chance procedures or with known probabilities of selection. Sometimes they are also called *nonrandom* sampling methods. In this context, however, the word *random* may be confusing. In its technical sense, random implies chance selection. But in popular usage it has come to embrace everything from a true probability sample to a haphazard or diverse collection of people. Our preference is to use *random* only in its technical meaning, as in the later discussion of simple random sampling. The following are the most common types of nonprobability samples:

1 *Haphazard collections.* These are samples made up of individuals casually met or conveniently available, such as students enrolled in a class or people passing by on a street corner. Such samples generally do not permit generalization beyond the collections themselves and are seldom of scientific interest.

2 *Judgment sampling.* In this case, sample elements are chosen from the population by interviewers or other field workers using their own discretion about which informants are "typical" or "representative." The instructions, for example, may call for interviews with a representative mixture of successful businessmen, campus radicals, non-elective politicians, or any other target group. A critical weakness of this method is that different interviewers may have a different notion of what constitutes a "successful businessman," or even a "businessman." And even if the definition of the target group is reasonably clear, the procedures used in drawing a sample may vary so much from one judge to the next that there would be no comparability in the samples chosen. Quota sampling basically grew out of attempts to refine and eliminate the more gross errors in judgment sampling.

3 *Quota sampling.* This is a process of selection in which the elements are chosen in the field by interviewers or other field workers using prearranged categories of sample elements to obtain a predetermined number of cases in each category. The quotas are established on the basis of known characteristics of the population to be studied. For example, a recent census may show that of the total population in a certain city, 30 percent lives in District X. The simplest kind of quota sampling would operate by specifying that 30 percent of the sample would come from that district with the actual selections made by the interviewers in the field. In fact, quotas [illegible] are established on the basis of census and other [illegible] data. But there are practical limits imposed by the types of information available. In practice, quotas are usually based on a few characteristics such as residential type, household type, age, sex, educational level, employment status, and rent level or house value. A typical assignment to an interviewer might be to interview 16 employed males in a certain suburb, choosing half from the areas containing better homes and apartments and half from the poorer areas. The instructions might further specify that half of the 16 should be under thirty-five years of age, and the other half thirty-five years or more. One immediate difficulty is that the interviewer must decide on which homes to choose in the better and poorer areas. The instructions may give general suggestions about how to obtain representativeness, but unless strict probability methods are followed there is ample room for arbitrariness. Next, the interviewer must determine the age, sex, and employment status of the people in the selected homes and eliminate those who do not meet the criteria. Here, too, the process of selection and elimination is likely to vary from one interviewer to the next.

The weakest link in the quota sampling chain lies in the selection of individuals to fill the quotas. We simply do not know if the people chosen fully represent the similarities and differences existing among the elements in a given category. The interviewers' selections are likely to be biased toward the more accessible or attractive elements of the population. They may choose disproportionate numbers of those who are close to the research center, those who are at home during the day, individuals who would seem to be cooperative, or households without dogs. Interviewers may feel that if one element in the category is as good as another, why not pick those that cause the fewest headaches? Payment "by the interview" may place a premium on such convenience factors.

Proponents of quota sampling will argue that this method produces reliable generalizations about the population represented even if it lacks a solid theoretical basis for them. They will also argue that because interviews typically cannot be completed for all sample cases selected by probability methods for reasons such as illness and refusals, the resulting cases do not qualify as a probability sample. The advantage of probability sampling, however, is that even with a 10-20 percent noncompletion rate it is still possible to arrive at reasonably good estimates of sampling error. With quota samples, even with the full quota of interviews completed, there is no theoretical basis for calculating the range of error to be expected in the estimates produced. The completion rate also is of dubious value in evaluat-

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ing the results of interviewing for a quota sample since the interviewers' reports of the number of homes or potential respondents contacted in order to obtain the quota of completed interviews cannot be checked or controlled effectively by the study directors.

4 *Expert sampling.* This is a process in which elements are chosen on the basis of informed opinion that they are representative of the population in question. For example, a specialist on secondary education in the United States may decide that four schools across the country are partly represent the range of variation [illegible] Other experts may decide that, on the basis [illegible] the voting returns of a single district are a sufficient basis for making predictions about election results for the entire nation. While these selections [illegible] they provide a very risky basis for generalization. Judgments based on past performance, for instance, may be invalidated by shifts in critical conditions between past and present. Expert samples often provide interesting case studies and may generate important hypotheses, but they are not reliable bases for statistical estimation.

5 *Purposive samples.* These are selections from certain subgroups in the population, chosen for their usefulness in testing hypotheses. In a study of the adaptation of rural migrants to urban conditions, for example, it may be important to test the reactions of individuals living in older, more established communities and those in very new areas. The sample could be designed to yield enough households in both the old and the new areas to allow such comparisons to be made with statistical reliability. The validity of this approach depends on the methods used to draw the purposive samples. It is often possible to apply strict probability methods at each stage in the sample design. Haphazard selections, on the other hand, suffer from the limitations indicated for other nonprobability methods.

Values, Estimates, Error, and Bias

The next few concepts refer to measurements taken on either a population or a sample. Let us begin with a simple example. A social scientist wishes to study age distributions in the population of her country. Because there has been no census in the country for eight years, and because of some doubts about the validity of information in the last census, she decides to analyze data from a recent national probability sample. In the case of age the *population value* is the value that would result from the measurement of the item (age) for every element in the population. However, even in a complete census of the population there would be measurement error. Some individuals may not know their age, others may lie about it, and still others may be omitted from the census. The population value must thus be distinguished from the *true value*—that which is being measured and is therefore without error. The *population estimate* is an inference about the population value [illegible] the country in [illegible], the population value and

the population estimate, but it must be treated with care, for it is subject to both bias and sampling error.

Bias refers to systematic error leading to a difference between the population estimate (or the population value) and the true value. Bias may result from various kinds of errors in measurement, estimation, or other sources. Its critical quality is that it is systematic error—it pushes the estimate in one or another direction. An age estimate may be biased downward, for example, if there is a tendency for respondents to portray themselves as being younger than they are.

Sampling Error and Standard Error

Even without bias and other measurement error, an estimate derived from a sample is not accurate in the same way as a complete enumeration or census. In our example, a probability sample of individuals might have an average age exactly the same as the population from which it was selected. Assuming that the population value is available, both might come out to 24.3 years. This correspondence between the population estimate and the population value is likely to be a coincidence. It would be similar to an exact 50:50 split between heads and tails on 100 tosses of a coin. If the sampling process could be repeated to select many samples of the same size from the same population, the age distributions in these samples would vary. Each sample would produce an estimate of the mean (average) age for the population, but some would be higher than 24.3, some lower, and some the same value, with the differences arising from the chance composition of each sample. These differences between the population estimates from different samples and the population value are called *sampling error*, usually expressed as the *standard error*. The standard error is a measure of the variability, around the population value, of the population estimates from repeated samples. In simple terms, it gives us a clear notion of how far and with what probability an estimate based on a sample departs from the value that would have been obtained with a complete census. In practice, of course, the researcher usually has only one sample to work from, and therefore only one population estimate available for a given variable. However, the expected relationships between population estimates and population values are well established in probability theory. The techniques for working out these relationships will be reviewed shortly.

Lists, Frames, and Sampling Units

The remaining definitions deal with the materials actually used in drawing samples. A *list* is an inventory of the units in a population or a subpopulation with a direct, one-to-one correspondence between each item listed and the unit it represents. The simplest example is a list of all members in a [illegible] union, in which each member is identified by

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name. If the listing units are population elements, it is an *element list*. Sometimes the listing units may be groups of elements found in convenient, identifiable, and unambiguous natural groups, such as apartments in an apartment building or homerooms in an elementary school population. In such cases, the inventory would consist of a *cluster list*.

Sampling units are those elements or groups of elements which form the basis of sample selection. They may or may not be identical with the listing units. When a complete list of population elements is available, it is often most convenient to draw a sample directly from this list, in which case the sampling and listing units would be the same. For example, the sampler may choose every 5th name on a complete list of union members; in other cases, several listing units such as houses, may be combined to form a single sampling unit. For instance, where houses are quite far apart, the study directors may decide that it is necessary, for identification purposes, to list each one separately, but that to save on travel costs for interviewing, houses will be selected into the sample in contiguous clusters of four.

A *sampling frame* consists of the materials and procedures used fully to account for the population when complete element lists are not available. A sampling frame often will consist of maps, sketches, lists, aerial photographs, and instructions on the manner in which they are to be used. It is basically the operational procedure and materials used to account for the population in drawing the sample.

SIMPLE RANDOM SAMPLING

The special form of probability sampling called *simple random sampling* (srs) is an excellent starting point for more detailed discussion. Because srs has the least complicated formulas for sampling and estimation, it provides a useful base for comparing and explaining other forms of probability sampling. Hansen, Hurwitz, and Madow (1953) provide the following rigorous definition:

> A procedure of sampling will be called simple random sampling if, in a sample of size n, all possible combinations of n elementary units that may be formed from the population of N elementary units have the same probability of being included. [Vol. I, p. 110.]

It may also be said that simple random sampling is *a process of sample selection in which the units are chosen individually and directly through a random process in which each unselected unit has the same chance of being selected as every other unit on each draw.* An important theoretical issue is whether an element is to be eligible for selection into a sample only once or is to be [illegible] for possible reselection into the sample. These options

The usual practice in sampling from finite populations is to sample without replacement, that is, with an element eligible to be selected only once.

SRS Selection

The main practical requirement for the application of srs is that each element in the population be clearly and unambiguously identified. This is necessary to permit the independent and direct selection of the individual elements, often through a list that uniquely identifies each element.

If the elements are people, there must be sufficient information about each person to allow him to be identified individually. This condition is generally met only when lists are available which inventory the population, such as registration lists of university students. When this information is available and complete, all of the units in the list can be numbered sequentially and the sample can be chosen by applying a chance selection process to the range of numbers corresponding to the list. The selection might be made by a mechanical process such as numbered balls in an urn or, more commonly, through a table of random numbers. In sampling without replacement it is usual to obtain as many different random numbers from a random number table as cases are desired for the sample, excluding numbers which are outside the range of numbers corresponding to the population. Those elements are selected that correspond to the random numbers that were obtained.

This procedure is illustrated in Table 4-1, which shows a hypothetical population of 12 families and their monthly incomes. We will estimate the mean level of monthly income of this population by sampling with different samples sizes, and show how the estimates will vary according to size.

Table 4-1 Monthly Income of 12 Families

Family number	Monthly income
1	$ 500
2	450
3	375
4	475
5	1350
6	900
7	675
8	325
9	550
10	1300
11	225
12	775
Total monthly income	$7800
Mean monthly income	$ [illegible]

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In order to estimate from a sample of two families, we could number each family from 1 to 12, put balls numbered from 1 to 12 in an urn and then choose two in a blindfolded selection. Alternatively we might use a table of random numbers, a portion of which is reproduced as Table 4-2.

First we need agreement on how to read the numbers in the table. Since our highest number is 12 we will read them in pairs, with 01, 02, . . ., 12 representing the 12 families. We will agree to read them as a book, that is from left to right and then to the left on the next lowest line, although another system might also be used equally well. Then we need a random start, which is the circled pair, 32. Since it is outside of our range of interest we continue with other numbers discarding those outside the relevant range. The first selected number to fall within our range, 10, enters *family 10* in the sample.

We would then continue to read the random number table until we arrive at a second previously unselected number within the range, 02. This selects *family 02* as the second family for the sample of two elements from the population of 12.

With families 10 and 02 as the sample, we can proceed to calculate the mean monthly income of this sample, the sample mean, which is $825. By comparing this figure with the complete list of the population and their income in Table 4-1, we can see that this sample mean differs from the population value ($650) by $175.

This, however, is not the only sample of size two that could have been selected by srs from the population of 12. Table 4-3 shows the distribution of mean income for all of the possible different samples of size two, four, and six that could be selected from a population of 12 families.

Table 4-2 Excerpt from Tables of Random Numbers

98	09	62	48	26	45	24	02	84	04	44	99	90	68	96	30	00	47	34	07	35	44	13	18	80
33	18	51	62	32	41	94	15	09	49	89	43	54	85	81	88	69	54	49	94	37	54	87	30	43
80	95	10	04	06	96	38	27	07	74	20	15	12	33	87	25	01	62	52	98	94	62	46	11	74
79	75	24	91	40	71	96	12	82	96	69	86	10	25	91	74	85	22	05	39	00	38	75	95	79
18	63	33	25	37	98	14	50	65	71	31	01	02	46	74	05	45	56	14	27	77	93	89	19	36
74	02	94	39	02	77	55	73	22	70	97	79	01	71	19	52	52	75	80	21	80	81	45	17	48
54	17	84	56	11	80	99	33	71	43	05	33	51	29	69	56	12	71	92	55	36	04	09	03	24
11	66	44	98	83	52	07	98	48	27	59	38	17	15	39	09	97	33	34	40	88	46	12	33	56
48	03	47	79	28	31	24	96	47	10	02	29	53	68	70	32	30	75	75	46	15	02	00	99	94
69	07	49	41	38	87	63	79	19	76	35	58	40	44	01	10	51	82	16	15	01	84	87	69	38
09	18	82	00	97	32	82	53	95	27	04	22	08	63	04	83	38	98	73	74	64	27	85	80	44
90	04	58	54	97	51	98	15	06	54	94	93	88	19	97	91	87	07	61	50	68	47	66	46	59
73	18	95	02	07	47	67	72	62	69	62	29	06	44	64	27	12	46	70	18	41	36	18	27	60
75	76	87	64	90	20	97	18	17	49	90	42	91	22	72	95	37	50	58	71	93	82	34	31	78
54	01	64	40	56	66	28	13	10	03	00	68	22	73	98	20	71	45	32	95	07	70	61	78	13

Table 4-3 Distribution of Average Monthly Family Income of All Possible Samples, by Sample Size 2, 4, and 6

Average Monthly Income	$n=2$	$n=4$	$n=6$
Under $300	1	-	-
$ 300-$ 399	7	12	1
$ 400-$ 499	11	67	66
$ 500-$ 599	12	102	193
$ 600-$ 699	9	101	290
$ 700-$ 799	8	103	240
$ 800-$ 899	7	64	122
$ 900-$ 999	6	32	12
$1000-$1099	3	13	-
$1100-$1199	1	1	-
$1200 or more	1	-	-
Number of samples	66	495	924
Average monthly income, all samples	$650	$650	$650

Source: Table 4-1, Monthly Income of 12 Families

Thus, there are 66 combinations of two elements, 495 of four elements, and 924 combinations of six elements. Notice that the sample means from the smallest sample size cover a much wider range than the others, and that the means from samples of sizes four and six distribute more narrowly, with proportionately more closer to the value of the population mean. This demonstrates one of the fundamental and most useful principles of sampling and estimation, namely that, other things being equal, the distribution of sample means of larger samples varies less than that of smaller samples. The example in Table 4-3 thus provides a small-scale illustration of sampling error.

The mean of all possible sample means of a given size is called the *expected value* for that sampling method. When it is identical with the mean of the population, the sampling procedure is said to be *unbiased*. Remember that *bias* does not refer to the actual difference between the mean of a particular sample and the population value, but to the difference between the expected value for that sample size and method, and the population value.

The utility of a small sample for estimating the population mean is questionable. The possible range of sample means is great and the fact that few fall close to the expected mean is disconcerting. Table 4-3 also shows that the range of sample means is smaller with larger sample sizes, and that the concentration near the population value is also greater with the larger sample sizes. In this example, which shows samples from a very small population, the greater concentration with larger samples results both from the

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larger absolute sample size and the larger proportion which each successive sample size is of the population. It will be shown later that in sampling from large populations, the *absolute size of the sample* is usually of much greater importance in practical applications than the proportion which the sample is of the population.

Notation and Simple Relationships

Thus far we have reviewed the general notion and the basic concepts of sampling as well as the fundamentals of simple random sampling. To move beyond this elementary level into a working knowledge of sampling, it is necessary to introduce some mathematical tools. Our aim is to present enough definitions and equations to permit a fairly precise discussion of sampling error, estimation, and other key concepts and relationships in sample design. For a more thorough treatment, the reader should consult one of the standard texts, particularly Kish (1965). For practical advice in designing a sample, it is always advisable to seek the assistance of an experienced sampler.

We begin with a system of mathematical shorthand or *notation* which provides a convenient means of presenting relationships. The symbolic representation of a finite population size is indicated by N, while n indicates the sample size. These symbols are used in the equation for the *sampling fraction*, the rate of sample selection, f:

$$f = \frac{n}{N} \tag{1}$$

For example, if we select a sample of 300 from a registered student body of 5400, the sampling fraction would be:

$$f = \frac{300}{5400} = \frac{1}{18}$$

If the population size is known, the equation can also be used to estimate the size of a prospective sample based on a given sampling fraction. For instance, what size sample would be obtained with a sampling fraction of 1/20 and a population of 5400 registered students?

$$\frac{1}{20} = \frac{n}{5400} \qquad 20n = 5400 \qquad n = 270$$

Normally upper case letters refer to the population and lower case letters to the sample. Individual elements in the population are identified by

subscripts to N, as with $N_1, N_2, \ldots, N$. Individual sample elements are identified through similar subscripts to n: $n_1, n_2, n_3, \ldots, n$. Because it is awkward to refer to all the individual elements in this way, the subscript i is used as a shorthand. Thus, when i is added to N or n, it refers to each and every element in the population or sample:

$$N_i = N_1, N_2, \ldots, N$$
$$n_i = n_1, n_2, \ldots, n$$

Another useful shorthand device is the capital sigma, Σ, the conventional symbol for summation. Applied below to the population and the sample respectively, these symbols should be read, "The summation (of whatever follows) over all the population cases N, or sample cases n, with i taking all the values from 1 through N, or 1 through n."

$$\sum_{i=1}^{N}(X_i) \quad \text{and} \quad \sum_{i=1}^{n}(x_i)$$

The symbol X or x in the parentheses would usually stand for some attribute or characteristic of the elements, such as height, weight, or income. This notation can be illustrated concretely with one attribute discussed earlier, family income. The monthly income of each of the 12 families comprising the population N can be represented as Y_i and the monthly income of the families in the sample as y_i. The *total* monthly income, over the population and the sample respectively, can be written:

$$\Sigma(Y_i) = Y \quad \text{and} \quad \Sigma(y_i) = y \tag{2}$$

Often the notation above and beneath the capital sigma (i taken from 1 through N or n) is omitted and must be inferred from the context.

One of the most commonly sought statistics in survey research is the *mean* or arithmetic average of an attribute. For example, the mean family income of our sample comprised of families 2 and 10 was obtained by summing the income of these two families ($450 + $1200) and dividing by the number of sample cases ($1650 ÷ 2 = $825). An overbar, ¯, over the symbol for an attribute denotes a mean. The addition of a prime, ′, identifies it as an estimate of the population:

$$\bar{x} = (\Sigma x_i)/n = \frac{1}{n}(\Sigma x_i) \tag{3}$$

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Population Estimates

An important feature of data from simple random samples is that they permit us to estimate population values. For example, to estimate the mean income of a population, we need only the mean income of a simple random sample from that population. This sample mean is an unbiased estimate of the population mean:

$$\bar{x} = \bar{X} \tag{4}$$

Thus, even if we do not have income data for the whole population, information from a simple random sample will provide an estimate of it. This is one of the greatest advantages of probability sampling. We saw earlier that population estimates seldom are identical with the population value, but that they cluster about this value and are related to it in predictable fashion. The next section deals with ways of describing how population estimates cluster about the population value.

The Reliability of Estimates

The greatest intellectual hurdle to the acceptance of sampling concerns the reliability of estimates. The potential user of survey research will often ask how one can possibly take a sample of 2000 people in a country of over 200 million people and arrive at a reliable estimate of the number of multiple-car families, potential voters who favor one or another candidate, and so forth. These are good questions which are taken seriously by sampling specialists. We will now show how it is possible to calculate the reliability of means as an example of how statistical information derived from a sample can be used.

We indicated in Equation (4) that the mean of an srs sample is an unbiased estimate of the population mean. To understand how much confidence one should have in such an estimate we need to develop a more precise definition of sampling error. For this it is necessary to introduce the concept of the *normal probability curve*, known more simply as the *normal curve*. This is a bell-shaped distribution which is highest at its center and symmetrical around the mean. Experience has shown that the distribution of many natural events, such as height and weight for individuals, approximates this bell-shaped distribution. In the case of height, for instance, there are many men who measure between 5 ft 8 in and 6 ft 1 in, fewer between 5 ft 3 in and 5 ft 8 in or 6 ft 1 in and 6 ft 6 in, still fewer less than 5 ft 3 in or more than 6 ft 6 in. If we were to do a careful study of height, in almost any country the distribution would probably approach that of the normal curve—many in the middle, fewer as the figures move away from the middle. Further details on the normal curve will be added later. For the moment, it is enough to know that it is a useful theoretical distribution for dealing with the extent to which estimation from samples is reliable.

Even though most surveys use only one sample and, therefore, obtain only one sample mean for a certain attribute, it is important to think of the sample means that might have been obtained by repeated samples. A key principle of probability sampling is that the distribution of all possible srs sample means approximates the normal curve. That is, if we were able to draw repeated samples of the same size from the same population and plot the means obtained on some variable, the distribution of these sample means would resemble the bell-shaped normal curve. This point is illustrated in the example of family income shown in Table 4-3. The last column in this table shows the distribution of average income for the 924 possible samples of six elements from a total population of 12 families. The figures indicate that the largest number of sample means—290—are within the interval containing the population value of $650. The next largest clusters—230 and 193—are for the two categories of income closest to the mean, while the smaller numbers are for categories still further from the mean. While this distribution does not very closely approximate a smooth bell-shaped curve, because of the small sample size and the broad income categories used, similar distributions from real surveys usually come close enough to the normal distribution to permit use of its statistical properties. It is worth noting that, except for small samples of about 30 or less, *the attribute to be estimated* (such as income) *does not have to be normally distributed in the population in order for the distribution of sample means to approximate the normal curve.* In the example cited, this means that it is not necessary for family income to be normally distributed in the population for the distribution of sample means of income to approximate the normal curve.

The relationship between the distribution of an attribute in the population, its distribution in a single sample, and the theoretical distribution of all possible sample means can be illustrated with the attribute of age. Figure 4-1 shows the age distribution of the male labor force in a country (the population), the age distribution in a single sample drawn from that population, and the theoretical distribution of sample means for three sample sizes.

The age distribution of the population (Figure 4-1*a*) is bimodal, that is, it has two peaks with a dip in the middle. The reason is that the country suffered severe wartime casualties in one cohort of its male population. We include this feature to emphasize that the shape of the distribution of age is largely irrelevant to the shape of the distribution of sample means for age. Thus with few men below 14 or over 65 years in the labor force, the mean population value ($\bar{X}$) is 38 years.

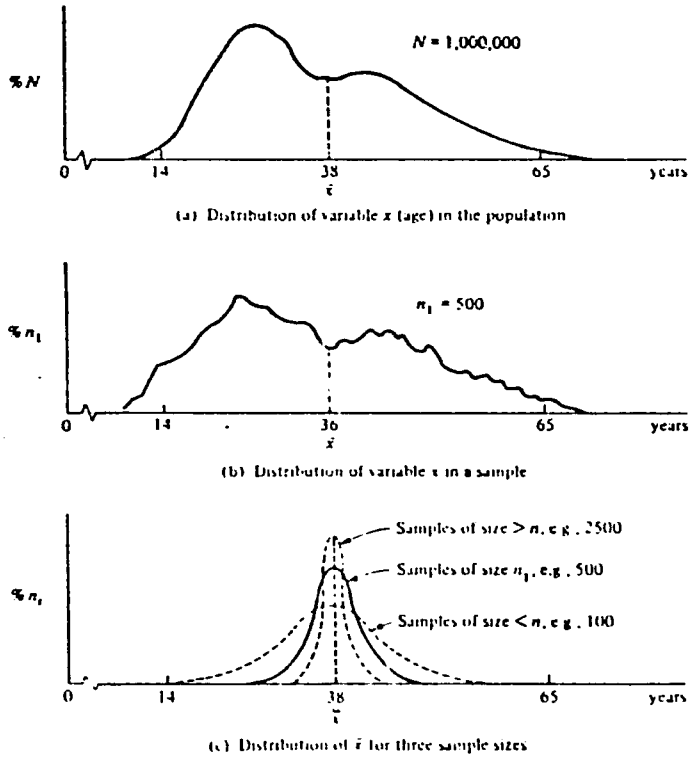

Figure 4-1 Age distribution of the male labor force in *(a)* the population; *(b)* a single sample, and *(c)* for three sample sizes.

Figure 4-1*b* shows the age distribution obtained from an srs sample of 500 from the same population. This distribution closely resembles that of the population, but also shows chance differences. The mean of the sample ($\bar{x}$) is 36 years, two years lower than the population value. It would be only a coincidence if they were identical. Although not portrayed, other srs samples of size 500 from the same population would resemble that portrayed in Figure 4-1*b*, but would differ slightly reflecting chance variations.

Figure 4-1*c* provides a graphic illustration of the influence of sample size on the reliability of population estimates. The solid line indicates the distribution that would result if the mean ages from all possible srs samples of size 500 from the population under study were plotted on the same hori- [illegible] It is a normal curve with the mean ($\bar{x}$ mean

of sample means) equal to the mean of the population, or 38 years. Figure 4-1*c* also portrays the distribution of mean ages that would be obtained from repeated samples of size 2500 and from repeated samples of 100 cases. Notice that the mean age for these three sampling distributions is the same, and that each has a bell-shaped distribution. However, the variation around the population mean—the width of the curve—increases as sample size decreases from 2500 to 500 to 100. In other words, the larger the sample size, the smaller the "spread" of the sample means around the population mean of 38 years. This point has critical implications in calculating the reliability of population estimates, for the smaller the expected spread of the sample means, the smaller will be the chance of error between the population estimate and the population value.

Variance and Standard Deviation

Two mathematical expressions of the variability of distributions are used in the estimation process. One is called the *variance;* the other is its square root, the *standard deviation.* Just as the mean or arithmetic average describes the central tendency of a distribution, the variance and standard deviation express the variability or spread of data around the mean. These are described for readers who are not familiar with them.

The variance is the average of the squared differences between the value of the attribute for each of the elements and the mean value of the attribute. Consider the following simple example, a sample of five men from the population indicated in Figure 4-1. We are interested in their mean age and the variance of age around the sample mean. The ages of these five men are: 31, 33, 35, 37, and 39. The mean of this distribution is 35 years. The variance would be calculated as follows:

Age (x_i)	Difference from mean ($x_i - \bar{x}$)	Difference from mean, squared ($x_i - \bar{x}$)²
31	−4	16
33	−2	4
35	0	0
37	2	4
39	4	16
		40

Mean ($\bar{x}$) = 35

Sum of squared differences from mean = 40

$$\text{Variance} = \frac{\text{Sum of squared differences from mean}}{n} = \frac{40}{5} = 8$$

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Separate symbols are used to distinguish among the variance of an attribute in the population and in a sample, and the estimated variance of an attribute in the population. The variance of an attribute in the population, such as the age distribution shown in Figure 4-1*a*, is defined as:

$$\mathrm{VAR}_X = \frac{\Sigma(X_i - \bar{X})^2}{N} = \sigma^2 \tag{5}$$

σ^2 is another common symbol for this variance. The variance of an attribute in a sample, VAR_x, such as the distribution shown in Figure 4-1*b*, is defined as:

$$\mathrm{VAR}_x = \frac{\Sigma(x_i - \bar{x})^2}{n} \tag{6}$$

An equivalent and more convenient formula for computation is:

$$\mathrm{VAR}_x = \frac{\Sigma(x_i)^2}{n} - (\bar{x})^2 \tag{6a}$$

The estimate of the population variance, s^2, makes use of the sample variance, VAR_x:

$$s^2 = \frac{n}{n-1}\,\mathrm{VAR}_x \tag{7}$$

The final step is to show the relationship between s^2, the *estimate* of the population variance, and VAR_X, the population variance. This is:

$$s^2 = \frac{N}{N-1}\,\mathrm{VAR}_X \tag{8}$$

For most practical purposes, s^2 can be considered an unbiased estimate of VAR_X. For a population as small as 500, $N/(N-1)$ affects the estimate by only about 0.2 percent, and by considerably less for larger populations.

The *standard deviation* is simply the (positive) square root of the variance. Equations (9) and (10) give mathematical expression to this fact for the population and the sample:

$$\textit{Population:}\quad S.D._X = \sqrt{\mathrm{VAR}_X} = \sqrt{\frac{\Sigma(X_i - \bar{X})^2}{N}} = \sigma \tag{9}$$

$$\textit{Sample:}\quad S.D._x = \sqrt{\mathrm{VAR}_x} = \sqrt{\frac{\Sigma(x_i - \bar{x})^2}{n}} = s \tag{10}$$

The discussions and equations thus far have described the variance of a variable in the population and in a sample, their interrelationships, and the estimation of the population variance from the sample variance. The corresponding standard deviations can be readily calculated by taking the square root of the variance in question. Now we will return to the central question of this section: how to determine the reliability of the estimate of population mean based on a single sample. This takes us back to the hypothetical distribution of sample means discussed earlier.

We have seen from Table 4-3 and from the three curves in Figure 4-1*c* that the larger the sample size, the smaller the variation in the distribution of means from all possible samples of that size. This is the basis for asserting that larger samples are more reliable. In order to be more precise about the reliability of an estimate from any one sample, or to make comparisons of reliability between samples, we must be able to estimate the variance and standard deviation of the means of all possible samples of the same size and type as the one that concerns us. Fortunately, this task is less complicated than it might first appear. Sampling theory provides equations for estimating the variance and standard deviation of these means based on the data from only one sample. The standard deviation of this particular distribution is so basic that it has received a special name, *the standard error*.

The standard error or, more correctly, the standard error of the estimate, is the key to the measurement of the reliability of the estimate of a population statistic—in our example, the *mean* of an attribute such as age. *The standard error of the mean of an attribute is the standard deviation of the distribution of sample means.* Because very few studies are in a position to carry out repeated samples to determine this standard deviation on an empirical basis, it is usually necessary to use the sample itself as the basis for an estimate. The general formula for the standard error and the formula for the estimate of the standard error from sample data are as follows:

$$\text{Standard error} = \sigma_x = \sqrt{\frac{N-n}{N}\,\frac{\sigma^2}{n}} \tag{11}$$

$$\text{Estimate of the standard error} = s_{\bar{x}} = \sqrt{\frac{N-n}{N}\,\frac{s^2}{n}} \tag{12}$$

To obtain the corresponding variance it is necessary only to square the standard error.

The Normal Curve

We turn now to consider the normal curve more fully in order to show how

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theoretical distribution which describes the expected distribution of sample means and many other chance occurrences. All normal curves share two common features: they are completely identified by their mean and standard deviation, and they can be reduced to a standard form (see Figure 4-2). The mean of a normal curve identifies its highest point and the vertical line about which this bell-shaped curve is symmetrical. The standard deviation establishes the breadth or narrowness of the curve around the mean.

The conventional standard form of the normal curve has three characteristics: (a) the area under the curve is assumed to be 1.000 (with more or fewer zeroes according to the precision desired); (b) the mean is at zero; and (c) the unit of measurement along the x-axis is the standard deviation. These properties also are shown visually in Figure 4-2.

Table 4-4 is a compact version of the typical standardized normal table presented in statistical textbooks with more decimal places. The table shows the proportion of the area under the normal curve corresponding to different ranges along the x-axis stated in standard deviation units from the mean. Since the normal curve is symmetrical around the mean, the table is presented for half the curve, leaving the other half to be inferred.

The row and column heads of Table 4-4 represent distance from the mean in standard deviation units, the rows in whole standard deviation units, the columns in tenths. The body of the table shows the proportion of the area under the normal curve in relation to the distance from the mean expressed by the row-column combination. To determine the area under the curve within one standard deviation to the right of the mean, we would first locate the appropriate row-column combination in Table 4-4. This would be 1.0, the intersection of the unit of 1 and the tenths of 0. The table shows that the area corresponding to the segment of the normal distribution from 0.0

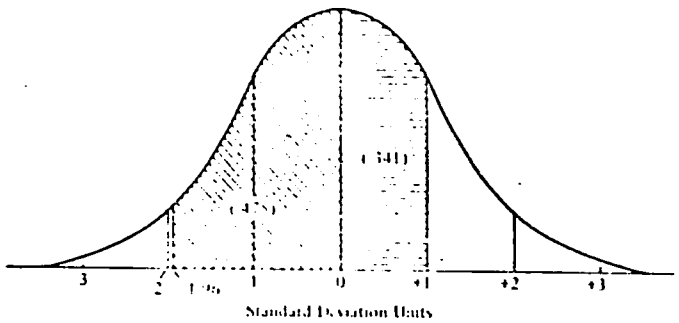

Figure 4-2 The normal frequency distribution or normal curve.

Table 4-4 The Standardized Normal Table

Standard deviations from the mean, in units	Standard deviations from the mean, in tenths of units: .0	.1	.2	.3	.4	.5	.6	.7	.8	.9
	Area under One-half of the Normal Curve*									
0 .	.000	.040	.080	.118	.155	.192	.226	.258	.288	.316
1 .	.341	.364	.385	.403	.419	.433	.445	.455	.464	.471
2 .	.477	.482	.486	.489	.492	.494	.495	.496	.497	.498
3 .	.499	.499	.499	.500†	.500†	.500†	.500†	.500†	.500†	.500†

*Area under the normal curve and over the vertical line is used in one direction from the mean to the distance indicated in the row-column combination. For example, in the table it shows that about 34 percent of the area is contained between the mean and one standard deviation on one side of the mean (.341 times 2) and that about 50 percent falls within ± 0.7 standard deviation of the mean. An interval of about 2.0 standard deviations around the mean encloses 95 percent of the cases.

†Less than 0.5; but rounds to 0.500 at three decimal places.

(the mean) to 1.0 is 0.341. This means that about 34 percent of the cases in a normal distribution will fall between the mean and one standard deviation to the right of the mean.

To calculate the area under the curve within one standard deviation on *either* side of the mean, we would double the proportion. Thus, about 68 percent of normally distributed events will fall within one standard deviation of the mean. Similarly, by doubling the proportions presented in the body of the table, we find that about 95 percent of normally distributed events will fall within an interval two standard deviations above and below the mean, and 99 percent within 2.6 standard deviations of the mean.

In probability terms, one could understand from the above that there are 68 chances out of a hundred that a randomly selected event (such as a sample mean) from a normally distributed population of such events would fall within one standard deviation of the mean population value of such events. This property of the normal curve becomes very practical when the researcher wishes to determine the reliability (standard error) of a population estimate based on a single sample.

The earlier example of the age distribution will illustrate how to transform the standard error measured in *years* into the standardized units that appear in the standard table. Suppose we wish to represent in standardized form the distribution of the means of all possible srs sample means of age from samples of size 200, and that the mean (of means) of this distribution is 38 years. This mean is represented in the standard form by the 0 point on the horizontal axis. If the standard deviation of the sample means, the standard error, is 2 years, one standard deviation above and below the mean is 40 and 36 years, respectively.

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To find the standardized value of any measurement expressed in original units, subtract the mean from the value to be transformed and divide by the standard error (all expressed in original units). For example, to find the standardized value of 34 years in the example above, subtract the mean (38 years) and divide the remainder by the standard error (2 years) to obtain the result, −2. That is, 34 years in standardized form is −2, or 2 standard errors below the mean. In original units:

$$\frac{(\text{Value, to be transformed}) - (\text{mean})}{\text{Standard error}} = \text{standardized value}$$

$$\frac{34 \text{ years} - 38 \text{ years}}{2 \text{ years}} = -2$$

The process is reversed to convert a standardized value to original units: multiply the standardized value by the standard error, and add the mean. To illustrate, the standardized value, +1, is equivalent to 40 years:

[(+1)(2 years)] + [38 years] = 40 years
[(Standardized value) (standard error)] + [mean] = value in original units

Population Estimates and Confidence Intervals

We are now ready to apply the basic logic and equations of sampling to a concrete problem. Our task is to estimate the population mean and its reliability for this survey question: "Do you feel that you have adequate contact with your teachers on matters pertaining to your courses?" This question was asked of a 1:20 srs sample drawn from a population of 5400 students. Thus $N = 5400$, $n = 270$. Treating a "yes" response as 1 and a "no" response as 0, the sum of the answers to the question can be represented as $\Sigma(x_i) = 162$; dividing this by n gives a proportion of .60. For the following calculations .60 will be treated as the mean (average) response. Applying the equations reviewed earlier, we arrive at the following figures:

Table 4-5 Student Attitudes toward Contact with Teachers

	(Q. 14. . . . adequate contact with teachers?)			
n	Yes	No	D.K.	Proportion "yes"
270	162	108	-	0.60

Equations to estimate the population mean:

(3) Sample mean $\bar{x} = (1/n)\,\Sigma(x_i) = (1/270)\,(162) = 0.60$

(4) Estimated population mean $\bar{x}' = \bar{x} = 0.60$

Equations to estimate the standard error of the estimate:

(6a) Sample variance $\text{VAR}_x = \frac{\Sigma(x_i)^2}{n} - (\bar{x})^2 = \frac{162}{270} - (.60)^2 = 0.60 - 0.36 = 0.24$

(7) Estimated population variance $s^2 = \frac{270}{269}(.24) = 0.241$

(12) Estimate of the standard error $s_{\bar{x}} = \sqrt{\frac{5400 - 270}{5400}\,\frac{0.241}{270}} = \sqrt{0.00085} = 0.03$

The mean of "yes" answers, more commonly called a proportion, was thus found to be .60 or, if multiplied by 100, 60 percent. The standard error of this estimate was calculated at 0.03, or 3 percentage points. This finding has important implications for the population estimate.

On the basis of an srs sample of 270 cases, the population value was estimated at .60. It would be a coincidence if the population figure were exactly .60, for the estimate from one sample of 270 is only one of many that might have been made from other srs samples of the same size. All these other samples would also yield sample means, and these means would tend to distribute themselves in the form of a normal curve around the population value. This distribution of sample means has a standard deviation, the standard error of the estimate. From our sample it was estimated to be 0.03, or 3 percentage points. With this information we can turn to the normal curve to determine the variability to be expected in these sample means.

According to the normal table, 68 percent of a normally distributed variable—in this case, estimates of "yes" answers from srs samples of 270—can be expected to fall within one standard error of the population value. In our example the interval equivalent to one standard error around the population mean is 0.60 ± 0.03, or the interval of 0.57 to 0.63. Thus, there are about 68 chances in 100 that the population value lies within this range. Put

another way, the chances are 68 out of 100 that our estimate of the population value does not differ from the population value by more than 0.03, or 3 percentage points. We thus have a good notion of the reliability of the estimate.

We are now ready to introduce two basic and related terms concerning the reliability of population estimates: the confidence interval and the confidence level. The *confidence interval* is the range around the population value within which estimates from samples can be expected to lie at a given confidence level. The *confidence level* refers to the probability that a given statement is correct. More simply, it has to do with the chances one is willing to take on his estimate. The fewer the chances he is willing to take, the broader the confidence intervals needed. If a researcher works at the 95 percent confidence level, he is willing to accept five chances in 100 of being wrong. At this level it is necessary to use a confidence interval of almost two standard errors around the mean. In the previous illustration this would be 0.60 ± 2 standard errors (0.03) = 0.60 ± .06. Thus there would be 95 chances in 100 (the confidence level) that the population figure of "yes" answers would lie between 0.54 and 0.66 (the confidence interval). For the 99 percent confidence level the confidence interval would stretch to 52.3 – 67.7. The greater the assurance of being correct, the broader the confidence interval. Although there is no strictly logical or mathematical basis for this practice, social scientists frequently use the 95 percent confidence level in presenting confidence intervals for their estimates.

Sample Size and Sampling Error

The next question concerns the factors that contribute to unreliability or sampling error. If we wish to *decrease* the size of confidence intervals for a given estimate, how should we go about it? What changes can be made in the sample design?

Usually the most important factor in reducing the standard error is the *absolute size* of the sample, i.e., n. Newcomers to the field sometimes advance the common-sense hypothesis that sampling error depends primarily on the *proportion* of the sample to the total population. They might argue, for example, that a 5 percent sample of a national census will be five times more reliable than a 1 percent sample, a 10 percent sample twice as reliable as a 5 percent sample, and so on. While this argument may seem plausible, it is erroneous.

The relative importance of the absolute sample size and proportionate size in reducing the standard error of the estimate can be demonstrated by a

close look at Equation (12). This equation is reproduced as it first appeared, and then rewritten to show its three distinct components:

$$\text{(12) Estimate of standard error } s_{\bar{x}} = \sqrt{\frac{N-n}{N}\,\frac{s^2}{n}} = \sqrt{\frac{N-n}{N}}\,\sqrt{\frac{1}{n}}\,(s)$$

The three components are: (1) a factor representing the influence of relative or *proportionate* sample size, $(N-n)/N$; (2) the factor $1/n$, which represents the influence of *absolute* sample size; and (3) the square root of the sample variance (s). According to Equation (12), the standard error of the estimate is the product of the square root of the sample variance multiplied by the factors representing the proportionate and absolute sample sizes. Since those latter two factors are always less than 1, the standard error will be *less than* the value of the square root of the sample variance. An inspection of this formula will show that increases in the absolute size of the sample do more to reduce the standard error than do comparable increases in the proportion that the sample is to the total population. The practical implication is that in most surveys the absolute size of the sample is of much greater relevance than its proportionate size.

The general principle just stated is illustrated concretely in Table 4-6. The left half of the table shows the values of the corresponding multiplying factors for ascending values of proportionate sample sizes from .01 to .95.

Table 4-6 Effect of the Proportionate and Absolute Size of Sample in the SRS Formula for the Standard Error

Proportionate size			Absolute size		
Sampling fraction f	$\frac{N-n}{N}$	$\sqrt{\frac{N-n}{N}}$	Sample size n	$\frac{1}{n}$	$\sqrt{\frac{1}{n}}$
.01	.99	.99	30	.033	.17
.05	.95	.97	50	.02	.14
.10	.90	.94	100	.01	.10
.20	.80	.89	250	.004	.06
.40	.60	.77	500	.002	.04
.50	.50	.70	1,000	.001	.03
.60	.40	.63	2,500	.0004	.02
.80	.20	.44	5,000	.0002	.01
.90	.10	.32	10,000	.0001	.01
.95	.05	.22	25,000	.00004	.01

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The right half of the table shows the multiplying factors for absolute sample sizes ranging from 30 to 25,000. The picture that emerges is clear; even with a sampling fraction up to half, the corresponding multiplying factor does not get below .70, while with an absolute sample size as small as 100 cases, the corresponding multiplying factor is .10. In other words, the extremely high relative sample size tends to produce a standard error only about 70 percent of the sample variances, whereas even a small absolute sample size tends to reduce the standard error to 10 percent of the sample variances. The absolute size clearly carries more weight than does the relative sample size.

Another important conclusion can be drawn. Additions to the absolute sample size have a greater payoff in reducing the standard error than increases in the proportion of the sample in the population. For example, increasing the sample from 1 percent to 10 percent of the population reduces the proportionate size factor only about 5 percentage points, from .99 to .94. By contrast, increasing the absolute sample size from 50 to 250 reduces the corresponding multiplying factor by over half, from .14 to .06. Thus, except for samples from a very small population, it is the absolute size together with the sample variance which have the greatest impact on the size of the standard error of the estimate.

Table 4-6 also illustrates another basic precept of probability sampling: the principle of diminishing returns with increases in absolute sample size; that is, the reductions in sampling error decrease as the absolute size of the sample increases. Consider, for instance, the reductions produced by doubling the sample size from 50 to 100, 500 to 1000, and 5000 to 10,000. The multiplying factor ($1/\sqrt{n}$) decreases by .04 in the first case, .01 in the second case, and only .004 in the third, despite the fact that the absolute increases in the second and third cases are much larger than in the first.

A final point to be remembered about sample size concerns the subgroups to be analyzed in a given survey. The standard error is determined in good part by the size of the group actually being analyzed, rather than the total sample size. A national survey may be designed with a sample size of 2000. When analyses are carried out on the entire sample, the levels of error are likely to be quite acceptable, for example, .02 or .03 around a percentage. The picture changes, sometimes dramatically, if the analysis shifts to subgroups in the total sample, such as geographic regions, ethnic groups, or occupational categories. Analysts sometimes forget that the standard error of an estimate for one of these subgroups depends on the absolute size of the sample for that subgroup. The more the subgroups to be analyzed, and the smaller the groups, the larger the sample needed to have sufficient cases to keep the sampling error within tolerable limits.

VARIATIONS ON SIMPLE RANDOM SAMPLING

Thus far we have focused heavily on simple random sampling. From both a theoretical and pedagogical standpoint, this is the basic sampling process, and one whose logic is applied to all other methods of probability sampling. Often, however, its stringent requirements cannot be met in a given study. There may be no complete and up-to-date listing of all persons who live in a city, community, or other unit of study. Such lists are rare, especially in the rural and marginal urban areas of less developed countries. Moreover, sometimes information about the population, perhaps from a recent census, can be used to improve on a simple random sampling design, reduce costs, or provide greater convenience in field work. These real-life considerations in survey research often make it necessary or desirable to modify the methods of simple random sampling.

A common reason for introducing variations is to meet the requirements of *area sampling*. This is one of the most frequent and useful applications of sampling for social researchers. Area sampling was developed during the late thirties when survey specialists realized that human populations could be sampled without having huge population lists. An economical alternative was to arrive at a sample of *people* by first sampling *geographic areas* and then subsampling for *dwellings* within the selected areas. The reasoning behind this innovation was straightforward. Except for a minor group of transients, people could normally be identified with a place of residence, and the place of residence with a physical location or area. The individuals who lived at the selected dwellings could then be identified through brief screening interviews at the selected dwellings. An area sampling frame, moreover, could be used repeatedly. Additional samples could be produced by varying only the random selection of dwellings within the sample areas. The method also provided access to widely different populations, such as women of childbearing age, heads of households, school-age children, or persons in the labor force. All that was needed was a change in the procedure for sampling individuals within the selected dwellings. A detailed example involving area sampling of households will be presented in the following chapter. With appropriate modifications, the area sampling technique may also be applied to business establishments, agricultural crops, ground use, and other problems.

We will now consider five modifications of simple random sampling: (1) stratification; (2) clustering; (3) systematic selection; (4) unequal probabilities of selection; and (5) multistage sampling. These modifications, in various combinations, yield an enormous variety of probability sampling methods to meet different survey objectives.

Stratification

In the field of sampling, *stratification is the process of dividing the population into subgroups or strata in order to carry out separate selections in each.* There are two main reasons for using stratification: to control the representativeness of the sample, and to permit the application of different selection procedures in different strata.

Representativeness We argued earlier that a good sample should represent the differences that exist in the population. In the present context, *representativeness* refers to the similarity between the sample and the population in the proportion of cases falling into each of the different strata. Stratification can often improve representativeness on those variables on which it is based, such as age or sex, and on closely related variables.

To illustrate the uses of stratification, we can return to the hypothetical survey of 270 students from a population of 5400. Assume that the application of simple random sampling gave us a total of 140 lowerclassmen and 130 upperclassmen in the sample of 270. Because of sampling error, it is quite likely that the proportions of lower- and upper-class students in the sample do not correspond exactly to the same proportions in the population. Let us further assume that the registration records making up the sampling list show exactly 2900 lowerclassmen and 2500 upperclassmen. If we had stratified the list by upper- and lower-class standing (in effect, made two lists) and then applied the 1:20 sampling fraction separately to each group, we would have obtained subsamples of 145 lower- and 125 upperclassmen. The differences between these figures and those obtained through simple random sampling could arise from normal sampling error. Stratification of the list by class standing would thus produce some gains in representativeness *for that variable.* It is most unlikely, on the other hand, that this stratification procedure would have much effect on the representativeness of the sex composition of the sample. If, as is the case, the upper- and lowerclassmen were divided about equally among men and women, there would be no relationship between sex and the stratifying variable, class standing. On the other hand, this stratification procedure might well improve the representativeness of the sample with regard to age. Because upperclassmen are generally older than lowerclassmen, there would be a correlation between age and the stratifying variable, and thus a better chance of improving the representativeness of the former.

What could be done to increase the representativeness of the sample on sex distribution? To make improvements here without losing ground on class standing, a double stratification could be used. Four strata in the form of four separate lists could be formed: men and women in the two lower years, and men and women in the two upper years. Srs selection procedures could then be applied separately to each of the strata. The result would be an accurate representation of class standing as well as sexual composition in the sample. Thus, if 22 percent of the population falls into the category of *male, lower-class standing,* the sample also would have 22 percent in the same category. In this way, stratification can improve on the representativeness typically obtained with a straightforward application of srs to the total population list. However, this double stratification procedure would not correct for chance variation in the sample on such qualities as the proportions of freshmen versus sophomores in the lower-class group, or juniors versus seniors in the upper-class category. Nor would it usually have much impact on the representativeness of the students' major fields of interest, political party preference, religion, etc., unless one of these variables was correlated with one or both of the stratifying conditions.

Sometimes a researcher wants to improve representativeness on a certain variable, but can find no direct measure to use in stratification. Suppose, for example, that we wished to improve the precision of our student sample with regard to social class background. The concept of social class, to begin with, is subject to many definitions in sociology and political science. But even if one clear definition were available, it is unlikely that any single empirical condition would serve as an adequate index of social class. Under these conditions, it may be advisable to use *proxy variables* in stratification, i.e., variables which are closely associated with the preferred stratifying variable and on which information is available beforehand. In the student sample, proxy variables for social class background might be chosen from parents' education and occupation, residential areas, or requests for scholarship aid. The closer the proxy variables are to the main stratifying variable, the greater the gains in representativeness on that variable.

Different Procedures The second main reason for the stratification of a sample is to allow different selection or interviewing procedures to be used in the various strata. In many surveys, especially in the developing countries, there are wide variations across sample strata in geography and topography, the availability of maps and materials, customs, language, or simply convenience in administration. Any of these conditions may be sufficient reason to stratify the sample so that different procedures can be applied. In the 1970 national probability sample of Peru, for example, it was convenient and, at times, necessary to develop strata and substrata in which selection was based on a complete listing of the population within them. In other strata, more complex procedures were used, such as multistage area sampling, a process

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to be discussed later. Similarly, separate strata were formed for different cultural and linguistic areas in Peru, such as the Quechua and Aymara regions.

Separate strata also may be formed to allow small but significant subgroups, such as ethnic minorities, to be oversampled (unequal probabilities of selection). In a survey of Chicago, for example, it may be theoretically or practically important to study the Italian subgroup in that city. In a small sample relying on equal probabilities of selection, the number of selected cases from the Italian subgroup may be too small to permit reliable analysis. Under these conditions, the areas of the city where persons of Italian descent tend to live might be treated as a separate stratum and oversampled. Similarly, it might be practical to form a separate stratum of a large, homogeneous subgroup of the population and then undersample it. The problems involved in using different sampling fractions for different strata will be reviewed in the discussion of unequal probabilities of selection.

We might note in conclusion that elaborate schemes of stratification in survey research are often not worth the effort. Sometimes social researchers are so anxious to improve the representativeness of their samples on key variables that they produce designs that are unworkable in practice. Two observations might be made in this regard. First, stratification is most useful when the stratifying variables are simple to work with, easy to observe, and closely related to the dimension of concern: the greater the number of stratifying variables and the greater the difficulties they pose in the field, the less satisfactory the results for the sample and the greater the headaches during analysis. At best there may be only slight gains in representativeness and at worst the sample may be less representative than a simpler design because of difficulties in complying with overly complex procedures.

Second, the design should recognize an important difference between stratification and analysis. Variables that are crucial to the analytic purposes of a survey need not, and often should not, be used for stratification. Social class might be one of the most critical analytic variables, but the difficulties of classifying sample elements by this criterion may make it a very bad choice for stratification. The information from the survey itself should provide an excellent basis for subsequent classification of individuals on complicated variables such as class. This task can be done well only at the analysis stage when the relevant questionnaire responses are available.

Cluster Sampling

Cluster sampling is a procedure of selection in which the elements for the sample are chosen from the population in groups or clusters rather than singly. The clusters used are often preexisting natural or administrative groupings of the population, such as factories, schools, or political subdivisions. They may also consist of areas and the elements in them, formed by drawing lines around recognizable features of maps or aerial photographs. The basic idea of cluster sampling can be illustrated with a hypothetical study of the health of school children in a certain city. The population in question is made up of all children registered in school districts within the city limits. One approach to the study would be simple random sampling. The researchers could use administrative records to prepare a list of all children attending or registered in public and private schools. A simple random sample could then be drawn from the population list through the techniques indicated earlier. The result, however, would be a sample spread over the entire city. While this sample might present few problems in some types of research, in a study of health it might prove most inconvenient as well as costly to hold medical examinations, laboratory tests, x-rays, etc., in several dozen widely scattered schools.

An alternative would be to take a sample of entire schools, and then measure the health of all students registered in those schools. The schools in this example would be clusters—groupings of sample elements selected together. This sampling procedure would have the advantage of reducing costs and simplifying field work. At the same time, it would probably result in greater sampling error than a simple random sample including the same number of elements (students). Another possibility would be a compromise between simple random sampling and such large clusters as whole schools. The first stage would be to select *schools*, with a larger number chosen than in the previous cluster sampling. The second step would be to carry out a probability sample of *students* within the selected schools to arrive at the desired number of elements. This procedure is known as multistage sampling, and will be treated later as a separate modification of simple random sampling.

The major advantages of cluster sampling are increased convenience and reduced cost. Several specific benefits can be cited. First, the selection of elements in clusters usually simplifies the interviewing process. This is particularly true in studies aiming for state, regional, national, or even international coverage. In such studies it is quite common to have the final selection of elements made within clusters called *primary sampling units* (PSUs). Counties, electoral districts, or similar political subdivisions are widely used for this purpose, with perhaps 60 chosen to represent the many hundreds or thousands in which the total population is found. A sample requiring interviewing in only 60 rather than several hundred areas facilitates the recruitment and training of locally based interviewers and reduces the time and costs involved in travel. The result may be a greater output per day than would be the case in a more scattered sample. Second, the use of clustering also facilitates the supervision of the interviewing and the general adminis-

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tration of field work. We will argue later that the quality of survey data is closely related to the care exercised in field supervision. If several interviewers can work together in a single geographic area, it is much easier for the supervisor to maintain morale, ensure that uniform interpretations are being made, and to control the quality of the interviews. Under these conditions, it is also easier for the central research staff to coordinate the entire survey than if field operations were spread over several hundred disparate sampling points. Third, the greater workload and the simplified administrative structure will often result in reduced costs for salaries, travel, office supplies, postage, telephone calls, and related expenditures. For the same reasons the field work, including the preparation of sampling materials (lists, sketches, etc.), may be completed more quickly than with a simple random sample of approximately the same size.

The principal drawback to cluster sampling, when compared with simple random sampling, is the likelihood of increased sampling error. We noted earlier that, in general, as the size of the sample increases, the size of the standard error decreases. This rule applies, however, only when each sample element is selected independently of every other element, as in simple random sampling. In cluster sampling the elements are, by definition, selected in a group rather than independently. The effect of clustered selection on the standard error will depend on the similarity between the elements in the cluster and those in the population. In many cases, sample elements selected in clusters will not show the same variation as an equivalent number selected independently. People who live in the same block or the same apartment complex may be more like each other with regard to a certain characteristic, such as income, than people in the population at large. As a result, sample cases selected in clusters may not have the same effect in reducing sampling error as the same number of cases selected by simple random sampling. Thus, a study might need a clustered sample of 2000 cases to produce the same standard error as an unclustered sample of 1000. This point has important practical implications when the researcher is calculating the costs and benefits of one sampling method versus another.

The relationship between clustering and sampling error may be summarized as follows. If all the elements in the cluster (e.g., a city block) were identical with regard to a certain characteristic (e.g., income), and totally different from the elements in other clusters, the sampling error would be extremely high. Clustering, in this case, would tend to make the clustered sample equivalent in size to a simple random sample with as many cases as there are *clusters*, rather than *elements*. Hence, a sample made up of 60 clusters might be equivalent to a simple random sample of 60 individuals. This is obviously an extreme that is never seen in practice. At the opposite extreme would be a series of clusters showing the same variation within each

cluster as simple random samples of the same size. In this case, each cluster would represent the entire population, another condition rarely met in practice. Most sampling situations fall between these extremes, tending toward one or the other according to the characteristic being studied. In general, experience has shown that well-designed cluster samples will produce standard errors that often are about one and one-half times as large as the standard errors from srs samples of the same size. The mathematical procedures used in calculating the standard errors of clustered samples are beyond the scope of this discussion. These procedures are well treated, however, in standard works on sampling, especially Kish (1965).

Finally, several practical considerations might be mentioned. Clustered samples may be designed to include all of the elements in a given cluster, or only part. The results are called *take-all* or *take-part* clusters, with the latter requiring an additional stage of sampling. In either case, the clusters of final elements (the individuals, households, etc. actually selected for interviews) should be kept small if they are likely to produce little variation on the main variables of the study. For example, numerous studies have shown that such characteristics as race, social class, and ownership of automobiles or durable consumer goods tend to be similar among neighbors in the United States. If these characteristics are critical to the analysis plans of the study, it would be advisable to use relatively small clusters of households in the sample. On the other hand, some variables, such as fertility, show considerable variation among neighbors, so that the effects of clustered household units may be slight. In general, where it is possible to choose the design of final element clusters, it is safest to have more rather than less heterogeneity within clusters. This suggestion is particularly germane when it is difficult to obtain advance information about the effects of clustering on the variability of key measures in the study. In this situation the final clusters of dwelling units should usually be around 4 to 5 units, and should rarely go above eight. If the use of large clusters cannot be avoided, a selection procedure should be devised to reduce their size, such as making them *take-part* clusters.

Systematic Selection

A third modification of simple random sampling is *systematic selection*. This is *a method of selecting units from a list through the application of a selection interval, I, so that every Ith unit on the list, following a random start, is included in the sample*. The interval, *I*, is readily determined by dividing the population size (*N*) by the desired sample size (*n*). The result is the inverse of the sampling fraction, *f*.

$$I = \frac{N}{n} = \frac{1}{f} \qquad (13)$$

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Suppose we wished to select a systematic sample of 270 students from the registration list of 5400 students in the earlier example. The first step would be to calculate the interval, $I = 5400/270 = 20$. Then we would choose a random start from the first segment of length I on the list, that is, 1-20. A random number within this interval could easily be obtained from a table of random numbers. If the number 16 was drawn, the 16th student on the registration list would be the first selection. The final step would involve adding the value of the interval (20) to the random start (16) and to the succeeding numbers obtained in this way. In our example, the sample of registration numbers would be:

16, 36, 56, 76, 96, 116, . . . , 5356, 5376, 5396

The students corresponding to the selected numbers would comprise the sample elements.

The lists to which systematic selection is applied may be either *written lists*, such as a registration list of students at a university or lists of dwellings, or *proxy lists*, such as rows of houses found side-by-side along a street or around a block, or individual case records in a file. The only requirement for such unwritten lists is that the principle of ordering, such as physical proximity in the cases of houses and files, be unambiguous. Much of the art and hard work of survey sampling lies precisely in discovering lists through which sampling may be carried out. Once the lists are ready, the selection process itself is often simple and swift.

The main advantage of systematic selection is simplicity and ease of administration. In the example cited, it is much more convenient to draw one random number and then proceed by intervals of 20 than to draw 270 random numbers. Another advantage arises when the lists from which the selections are made are implicitly stratified on a variable important to the study. An example would be a list of factory employees organized by the date of hiring. If length of service at the factory were a significant control variable in the study, the use of systematic selection from this list would have the side effect of stratifying along that variable. Sometimes an element list is intentionally ordered with this benefit in mind.

In contrast with simple random sampling, units are not selected independently in systematic selection. Depending on the selection interval and the order of the sampling units on the list, only certain combinations of units can be chosen. This condition does not prevent each sampling unit from having a known or even identical chance of selection, but it does violate one of the formal assumptions of sts sampling, which is independence in the selection of elements. Whether this departure brings advantages or disad- [illegible] sampling error depends on the specific circumstances

involved. In the case of the employee list ordered by length of service at the factory, the gains are likely to outweigh the drawbacks. In other cases, bias may be introduced.

The greatest danger of bias lies in a coincidence between the selection interval and a cyclical repetition of some characteristic along the list. An extreme example would be a population list made up of husbands and wives who appear alternately on successive lines. An even-numbered selection interval (e.g., 4) would yield a sample made up of either all men or all women, despite the fact that the list is evenly divided between the two. To protect against less obvious occurrences of this type, a long list can be broken up into several sections with separate selection procedures, including a different random start, applied to each. Another source of bias would arise in a list ordered in steadily increasing values of a variable to be measured. A survey of credit union borrowers, for example, might use a list organized by the size of loans received by each borrower. In this case, the point selected for the random start could influence the average loan size found in the sample. If the interval was fairly large and the random start was near the beginning, the average amounts would be lower than if the start was at the other end of the interval. The importance of this bias would depend on the range of differences across the interval. If the range is small relative to the mean and median, the resulting bias could probably be ignored.

Unequal Probabilities of Selection

In unequal probabilities of selection, sampling units are chosen by a procedure giving some elements a higher or lower chance of selection than others. As a result, the sample includes proportionally more of the oversampled cases. One reason for adopting unequal probabilities of selection (UPS) was mentioned in connection with stratification. A subgroup of the population, such as the wealthy or a minority group, may be extremely important in meeting analysis objectives and yet very small relative to the total population. A sampling fraction suitable for producing the desired overall sample size might yield too few cases to permit separate analysis of the subgroup in question. With very few sample cases, the standard error of an estimate based on data from the subgroup would be unacceptably high. Under these conditions, it may be advisable to form separate strata for the subgroups (e.g., the wealthy or the minority group) and then sample them separately at a higher rate. Through procedures to be discussed shortly, the same result may be achieved by using unequal probabilities of selection without explicitly forming separate strata.

Another situation in which the use of UPS is common involves sampling units of widely different size. In area sampling, for example, the first-

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stage or primary sampling units (PSUs) are often defined by natural or administrative units such as blocks, political subdivisions, or segments marked out on maps and sketches. Such units will usually show marked differences in the number of elements within their boundaries. Rather than forcing the formation of sampling units with approximately equal numbers of elements, the researcher can control for size differences by adjusting the selection probabilities to each unit's size. One method of doing so, known as *probabilities proportional to size* (PPS), will be explained later.

A third reason for using UPS is to reduce the costs of sampling and/or interviewing. In some surveys, particularly in the developing nations, the expenses involved in preparing a sample and collecting data will differ substantially between areas or population subgroups. Other "costs" might include danger to the lives or health of the sampling team or the interviewers, a legitimate concern in many countries. In such cases, it may be worthwhile to use lower sampling rates for the more expensive or difficult segments of the population.

A further consideration is the variance of important data across the several strata. Sample cases from population subgroups showing high variance on a given characteristic (e.g., income) will tend to reduce the overall sample [illegible] more than the same number of cases from low variance subgroups. In such circumstances there are advantages to oversampling the high variance subgroups. Further consideration of these and related factors are found in sampling textbooks under the heading of *optimization*.

Offsetting these benefits is one overriding drawback: the need to assign compensating weights to sample elements, and to apply them during analysis. Used alone, a sample drawn according to UPS procedures would give a distorted picture of the population. The oversampled strata or elements would carry more weight than they deserve, while the rest would be underrepresented. For example, if the wealthy were sampled at three times the rate used for the other strata, and if no adjustments were made during analysis, this subgroup would carry three times its proper weight in any tabulation based on total sample data. It is usually necessary, therefore, to assign weights which will either *decrease* the overall representation of oversampled elements, or *increase* the representation of those that were undersampled. Thus, if the wealthy were oversampled by a 3:1 ratio, then weights in analyses carried out on the total sample should be one-third that of elements sampled at the regular rate.

Other problems in using UPS procedures may arise from the researcher's inexperience in working with weighted data or the lack of appropriate data processing equipment. Any tabulation or calculation based on weighted data is more complicated than the same operation carried out with unweighted data. The more intricate the analysis, the greater the complexities. Sometimes the proper balance can easily be restored by duplicating the punch cards for those categories of sample cases that are underrepresented because of UPS. For example, if the stratum corresponding to the more wealthy respondents is sampled at twice the rate of the remainder of the population, the problems of weighting can be dealt with rather simply by duplicating the cards for all of the samples except those in the wealthy stratum, and then merging the two sets of cards for data processing. With more complex UPS samples, this procedure may be inadequate. While most of the mechanics of weighting can be handled semiautomatically by modern computers and available data processing "packages," the analyst must be well trained in the use of weighted data and constantly alert to their implications. If he has little experience with survey analysis, or if the data processing equipment has very limited capacity for handling weighted data, UPS would be inadvisable.

Beyond these drawbacks, there are other costs to be considered with UPS. Careful records must be maintained on the sampling fractions used with different strata or elements, the preparation of tabulation requests must give explicit attention to compensating weights, the description of the sampling procedure is lengthened, and the increased possibility of error requires extra attention to the details of data processing and analysis.

Procedures and Examples UPS can be built into a sample design in at least three ways: (1) by dividing the population into strata and then applying different sampling fractions to the strata; (2) by deliberately assigning higher (or lower) probabilities of selection to special types of elements on a list without forming separate strata; and (3) by assigning probabilities proportional to the size of sampling units, such as city blocks or clusters of dwellings. The first two can be illustrated in a hypothetical study of the financing of student expenses of higher education. To determine how students pay for their university training, a team of social scientists plans to conduct a survey of students from the same population. In anticipation of the survey, each student was asked at registration if he or she expected to work for pay during the school year. The analysis plan calls for comparisons between those who expected to work and those who did not. A total of 1800 students fell into the former category, 3600 into the latter. The task now is to draw a sample of 400 students divided equally between these groups, that is, with 200 from each.

The first possibility is to form distinct strata consisting of those who expect to work and those who do not, and then carry out separate selections in each to obtain 200 students. The sampling fractions required would be 1:9 for those who expect to work (1800) and 1:18 for those who do not (3600), as shown in Table 4.7.

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Table 4-7 Sampling Fractions to Obtain Equal Numbers of Sample Cases of Workers and Nonworkers from the Student Population

	Subgroup	
Item	Planning to work (workers)	Not planning to work (Nonworkers)
Desired n	200	200
N	1000	3600
$f = n/N$	1:9	1:18

The second option would produce the same result without explicit stratification. The procedure would be to assign two selection chances to each nonworker on the list compared to one chance for each worker. The chances would then be cumulated for workers and nonworkers in a column called *selection possibilities*, as in Table 4-8. Systematic selection would next be applied to the list of cumulated chances. The appropriate interval, I, would be calculated by dividing the total number of selection possibilities, 7200 (1800 students with two chances each, plus 3600 students with one chance each), by the desired sample size of 400. Thus $I = 7200/400 = 18$. This interval would be applied to the random start, 7, and successively to the numbers that follow (25, 43, 61, 79, etc.). The student corresponding to line number 4 (selection number 7) would be the first selected. By chance he is a person who is expected to work. The probability of selection for a worker in this method would be 2:18 = 1:9. The worker has two chances that the selection number chosen from every interval of 18 numbers will coincide with his own. The nonworker has only one chance in 18 of being selected, or half as much as for a worker. Though the selection procedures are somewhat

Table 4-8 Excerpt from List of Registered Students with Modifications Providing for Unequal Probabilities of Selection Based on Students' Plans to Work

Line number	Student identification	Classification	Selection weight	Selection possibilities
1	(Name, or other	worker	2	1,2
2	unambiguous identifi-	non-worker	1	3
3	cation)	worker	2	4,5
4		worker	2	6,7
5		non-worker	1	8
6		non-worker	1	9
etc.		etc	etc.	etc
5299		non-worker	1	7199
[illegible]		[illegible]	1	7200

different, the result produced by this method is almost identical with that obtained from the approach shown in Table 4-7.

Selection with *probabilities proportional to size* (PPS) is a special case of unequal probabilities of selection. Here the selection probability assigned to a unit, such as a city block or an apartment complex, is set proportional to a measure of its size. For example, when the primary sampling unit (PSU) for an area sample is the county, probabilities of selection could be based on the size of each county in the last census or on an updated estimate of this figure. Of course, the measure of size should be in units related to the population under study. In the case of counties it should be in units of population or dwelling units rather than land area. Because of wide variations in the densities of population by counties, a measure of land area might bear little relation to population size. The procedures for applying PPS will be shown in the example presented in Chapter 5.

Adjusting for Unequal Probabilities Two basic techniques are used to compensate for the overrepresentation of sample elements produced by UPS. The first is *weighting* of sample elements. This is a procedure for restoring to the sample the same proportion of elements of different types that are found in the population. Higher weights are assigned to individual sample cases of the type that are underrepresented, and lower weights to those that are overrepresented. In the illustration shown in Tables 4-7 and 4-8, a weight of two could be assigned to data obtained from nonworkers in the sample, and a weight of one to workers. The sample data are then tabulated using the respective weights of the sample cases. Usually the simplest method of assigning weights is to use the inverse of the sampling fractions by which elements were selected. As in the previous example, a sample element selected at 1:4 of the highest rate would have a weight four times as large as elements selected at the maximum rate. The calculation of most statistics from the sample, such as means, medians, and percentages, should be carried out from weighted tabulations. However, in calculating sampling errors, the actual sample size rather than the sum of the weights should be used. No increase in the effective sample size is brought about by adding weights.

The second technique for dealing with unequal selection probabilities is that of *compensating selection probabilities in sampling*. Equal overall probabilities may be restored by using a multistage design in which selection probabilities are unequal within each stage, but with a chain of selection ultimately producing the same selection probability for each selected case. For example, some dwellings might be within blocks selected at 1:5, with the dwellings subselected at 1:20. The overall sampling fraction is thus 1:100. Other sample dwellings may be in blocks selected at 1:25, with dwellings subselected at 1:4. The overall probability of selection would be the same as in the previous case, 1:100. Other combinations could be devised to yield the same [illegible]

Multistage Sampling

The final variation on simple random sampling is *multistage sampling*. This is *a process of selecting a sample in two or more successive, contingent stages*. The basic procedure will be outlined for two stages, although the logic can be extended to others. The first stage consists of two fundamental operations: dividing the target population into many large groups or clusters of elements (primary sampling units—PSUs), and then using chance procedures to select a large number of these to represent the entire set. The first stage is intentionally designed so that the selected PSUs, such as city blocks or counties, will contain more elements than are needed for the final sample. The second (or final) stage involves subsampling within the selected PSUs to draw the sample of elements, such as individuals or dwelling units.

Compared with simple random sampling, the major advantages of multistage sampling are convenience and economy. Costs of sample preparation are greatly reduced by the fact that the multistage approach does not require complete lists of individual elements in the population. Consider, for example, a two-stage sample of dwellings in a city in which the PSUs are blocks or other small geographic areas. In this case, it would be necessary to have lists of individual dwellings only for the *selected* PSUs rather than for the entire city. To carry out the first-stage selections, all that is needed is a list of the PSUs and a measure of size for each. Similarly, for a sample of school children, a list of schools and homerooms would suffice for the first-stage selections. Lists of the individual children would be needed only for the selected homerooms. Other advantages were discussed in the section on clustering where we pointed to possible economies in interviewing and field administration. Multistage sampling may also contribute to better quality in carrying out the final selections, especially by permitting greater flexibility and control in developing lists of population elements.

The major disadvantage of multistage sampling is the same as with cluster sampling: increased sampling error arising from the selection of sample cases in groups rather than independently. This drawback can usually be kept to tolerable proportions by selecting a relatively large number of PSUs in the first stage. In cases where the possible number of PSUs ranges from several hundred to a thousand or more, it is often advisable to select from 50 to 100 PSUs to keep sampling error within reasonable bounds. This is a very imprecise rule of thumb introduced to illustrate a point rather than to suggest a sample design. In any concrete case, the best policy is to consult an experienced sampling statistician.

Finally, several practical considerations should be taken into account in developing a multistage sample. First, the primary sampling units should cover all the elements in the population to be sampled. Every element must be identified with one or another PSU, but none should appear in more than

one. Observance of this rule ensures that every element will have a known chance of being selected into the sample at the first stage. A second and related point is that the definitions and boundaries of PSUs, as well as associated sampling instructions, should be unambiguous. If these first-stage units consist of geographic areas, it is not enough to list the name of a certain suburb or area of the city. The instructions must give exact delimitations of its boundaries, stating precisely what is and is not included in this area. In many cases, this will mean walking around the area or consulting an enlarged aerial photograph to determine the exact limits. In area sampling it is common practice to use clearly defined natural boundaries, such as rivers, or unambiguous manmade limits, such as roads, in an effort to provide sharply delineated PSUs.

Third, the success of a probability sample depends on the observance of predetermined rules for the last stage of sampling, the selection of respondents. Only rarely will sampling requirements be met by interviewing whomever happens to appear at the door. Usually the target population is defined as a specific set of individuals living within the dwelling units, such as heads of household, all women fifteen to forty-nine years of age, employed males, or female registered voters. The instructions to the interviewers should specify exactly who is to be interviewed and how they are to be chosen. A brief filter interview is often used to identify the habitual residents in the selected dwellings. This information can then be used to make the final stage of selection. It is worth emphasizing that all of the elaborate work of preparing a multistage sample can come to naught if proper procedures are not followed in selecting respondents. Interviewers should have extensive training and practice before being assigned to this task.

Fourth, with a relatively modest additional investment, a multistage sample may be converted into a *master frame* for subsequent samples. The administrative overhead and the field work required to develop a national sample, for instance, may provide handsome dividends for other studies requiring probability sampling. The key to this benefit is the fact that the selected PSUs usually contain many more elements than are needed for one sample. It is thus possible to draw new samples from the same population by repeating the final stage of the selection process with different random numbers. In most cases, the first-stage selections of PSUs and the listing of sample units, such as dwellings, within these PSUs are the only raw materials needed. Additional work may be needed, however, if there will be a time lag of more than a few months between the first and later samples. In this case, it is often necessary to review the listings to determine the extent of new construction, demolition of buildings, and similar changes affecting the sample. The costs involved in updating the master frame are usually small. A detailed illustration of a multistage probability sample follows in the next chapter.

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CONCLUSION

This chapter has dealt with the basic principles of sampling and estimation largely at the conceptual level. But there is much more to designing a good sample than having a grasp of concepts and principles. With area samples, there is considerable art to making the best use of available materials (maps, census data, etc.) and manpower. Training and careful supervision during sampling field work are usually as important for high quality as an adequate theoretical design. Unfortunately, slipshod work in the practical procedures of sampling often escapes notice when the data are reported. Statistical tables report findings for the various groups and subgroups under study, but they typically provide no means for evaluating the quality of the information. Here, as elsewhere in survey research, theory and practice are inseparable in producing reliable information. Study directors who feel that the basic task is done when calculations of standard error are completed could be sadly disappointed by a careful scrutiny of the field operations in sampling. Thus, we would strongly recommend that in any complex sample, including almost any large area sample, the study directors consult an experienced sampling statistician in the early stages of planning. The great advantage of such consultants is that they can effectively blend theory and practical considerations to recommend an optimum design for the purposes of the research.

While careful sampling is extremely important in survey research, it is but one part of an integral process. It should be remembered, in particular, that sampling is only one of several sources of error. The quality of the questionnaire, the overall response rate in interviewing, and the interviewing and reliability of the coding are other factors which influence the accuracy of the data. Thus, in planning the survey the study directors should aim for an adequate balance of precision and quality at all stages. There is little to be gained from a highly precise sample which is undercut by a low response rate, or from a top-flight interviewing staff which works with a third-rate sample. Each incomplete interview with a selected respondent is potentially damaging to the sample, as are substitutions of respondents or other failures to follow instructions. In short, while it is often tempting to see sampling as an end in itself, partly because the results are more easily measurable than in some other parts of survey research, the proper perspective is to set sampling in the total context of the research. In the end what counts is overall error rather than just sampling error.

FURTHER READINGS

Kish, L., *Survey Sampling* (New York: Wiley, 1965).

Stephan, F. F., and P. J. McCarthy, *Sampling Opinions: An Analysis of Survey Procedure* (New York: Wiley, 1963).

Chapter 5

Illustration: A Multistage Area Sample

The sampling concepts introduced in Chapter 4 can be illustrated with an example of multistage area sampling. The aim of the exercise is to develop a sample of heads of households for the national urban survey that serves as the principal example in this book. The guiding questions for the survey were outlined in Chapter 2, the questionnaire is presented at the end of Chapter 6, and a specimen code for the information is supplied in Chapter 9. In line with the objectives of this study, the sample design covers only the largest cities in the country of Pacifica. These are defined as cities whose population is 50,000 or over. Eight cities in Pacifica qualify, as is shown in Table 5-1. The immediate task is to design and select a probability sample which will yield about 2000 interviews with household heads from this urban population.

ESTABLISHING THE SAMPLING FRACTION

To obtain 2000 completed interviews, it will be necessary to select more than that number of dwelling units. Some dwellings in the population will be

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Chapter 7

The Survey Interview

The survey interview is a form of verbal interaction designed to obtain information satisfying the objectives of a particular study. While the purpose of the interview is seemingly one-sided—to collect data from the respondent—the interviewing process is decidedly interactive, involving constant communication between the interviewer and respondent, and sometimes other parties as well. As a form of social interaction, the interview must operate within certain broadly defined social and ethical boundaries. Discussions which intrude too far into the life of the respondent, or treat him or her in a depersonalized manner, not only raise serious ethical questions, but may activate defenses frustrating the primary goal of data gathering. It is important, therefore, to understand the social norms and personal sensitivities at work in any interviewing situation. The aim of this chapter is to present a conceptual framework for understanding the processes of communication in the survey interview, and to offer various practical suggestions for conducting the interview.

AN INTERACTIVE APPROACH TO THE INTERVIEW

The success of the survey interview depends on the quantity and quality of the information exchanged between the interviewer and the respondent. This flow of information depends on four interacting parties and conditions: the interviewer, the respondent, the topic, and the immediate interviewing situation. The interviewer must communicate the question, motivate the respondent to cooperate, probe for additional information when necessary, and record the information thus obtained. The communication process may become distorted or biased at any of these points. Similarly, the respondent contributes his part by accepting the role of information-provider and giving answers which are complete, precise, true, and relevant. He, too, may disrupt the flow of information by refusing to take the questioning process seriously, or by introducing specific distortions into his responses. The study topic may affect the communication process either by stimulating the interest of the respondent and interviewer, or by arousing anxiety, hostility, fear, or lesser negative reactions in the participants. The interviewing situation includes such conditions as the time and place of the conversation, the presence of "third parties," and the general climate of opinion toward the survey in the surrounding community. The influence of the situation on communication will depend in part on the topic and in part on the respective characteristics of the interviewer and the respondent. The inhibiting effects will normally be greatest when the interviewer and respondent come from different and contending racial or ethnic groups, when the study touches on the conflict itself, and when the interview takes place before other community members. The mutual influence of these conditions is outlined in Figure 7-1.

An interactive approach to the interview suggests the importance of an intimate and advance understanding of the specific field situations to be faced in a given survey, and counsels against any simple approach to interviewer selection and training. Just as there is no standard respondent and no uniform interview situation, so there is no ideal interviewer in the abstract. Professional research organizations employ individuals who have demonstrated their competence in a wide variety of field situations, but even their talents are not universally applicable.

Every interviewer, no matter what his range of experience, is more at ease with some types of respondents, topics, and field situations than others. The critical task in planning the interview, therefore, is to devise a strategy which will produce an optimal fit between the talents of the field staff and the exigencies of data collection. In practice, this means close attention to the background characteristics and expectations of the respondents, the physical situations where the interview will take place, the hackles likely to

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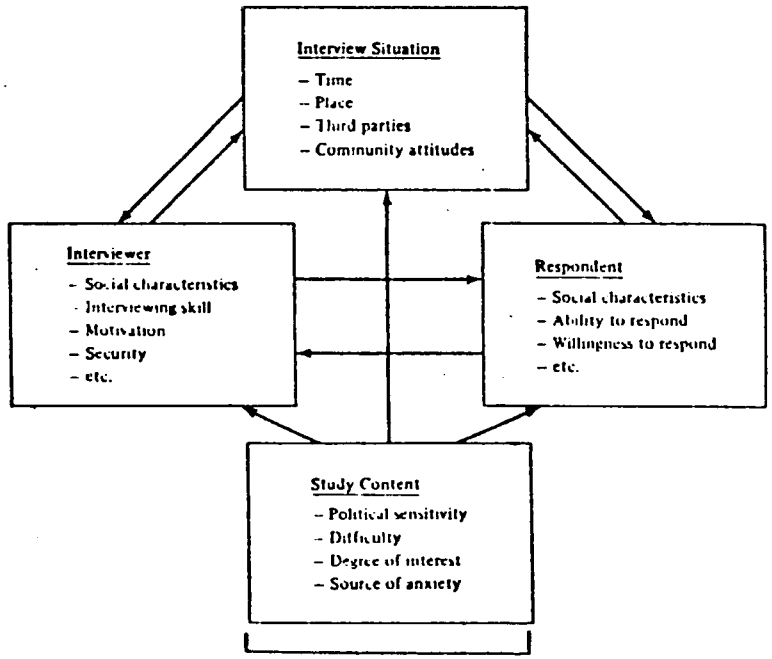

Figure 7-1 Factors influencing communication in the interview.

be raised by the survey questions, and the degree of competence that can realistically be expected from the interviewers. Energies spent in this direction are likely to be more productive than the vain search for the personality characteristics of the ideal interviewer.

The "systems approach" suggested here may show, for example, that the demands presented by a combination of sensitive questions and difficult interviewing conditions exceed the skills available among the interviewers. In this case, it may be better to shorten, simplify, and desensitize the questionnaire rather than run the risk of public animosity and questionable data. Similarly, if there are sharp racial or ethnic cleavages in the communities under study, it would be advisable to introduce racial and ethnic considerations in interview assignments. In short, there is no substitute for a detailed understanding of the actual conditions which will be faced in the field.

The Motivation to Participate

The goal of open, accurate, and relevant communication requires a motivational commitment to participation on the part of both the respondent and

the interviewer. For the respondent, this means not only an initial decision to take part in the study, but a sustained willingness to share available information throughout the interview. In the case of the interviewer, the initial decision to participate can often be taken for granted, though commitment may be greatly weakened if there is actual or perceived danger. In the United States such fears have become increasingly common as interviewing in central city areas has grown more precarious. Whatever the initial commitment, the interviewer's motivation to work at a high level cannot be taken for granted.

For both parties the net commitment to participation can be viewed as the resultant of positive and negative forces. For either one, the balance of forces may shift at any time during the interview. It will depend on such conditions as the sensitivity or difficulty of the question, environmental distractions, fatigue, fear, and the response of the other. The respondent's balance may be tipped only slightly in favor of the interview at the beginning, but increase as the topic becomes more familiar and the discussion itself produces certain satisfactions. Conversely, the interviewer's reactions may be very positive at the beginning, when the challenge of winning over the respondent is great, but decrease as the process moves into more routine territory. Careful planning for field work requires consideration of both the positive and negative forces likely to arise for respondents and interviewers. We will now examine the individual motives affecting participation, and then turn to the impact of the interactions between the respondent and the interviewer.

The Respondent

Positive Forces What are the various kinds of satisfaction which might be tapped to encourage a high level of participation by the respondent? The answer is, of course, culture-specific: the motives operative in the United States or Canada may be quite different from those in rural India. Nevertheless, we can suggest several broad categories which seem to be applicable to many cultures.

First, a strong motive for participation is the *desire for self-expression.* People often derive satisfaction from providing information or expressing their opinion on a subject which interests them. Such satisfaction may be enhanced by the belief that the information may have some effect on the policy of a nation, community, or employer. On rare occasions, a survey interviewer has been greeted by remarks such as: "I've been waiting for Gallup and you people to come around for twenty years—where have you been?"

A second positive force is the *desire for interpersonal response.* This is the satisfaction found in sharing information about important events in one's

life with a sympathetic listener. One study conducted by the Michigan Survey Research Center suggests that this may be one of the most critical factors in respondent participation. Mail questionnaires were sent to respondents in national surveys to assess their reactions to the interview experience. "A high proportion of the respondents reacted in terms of feelings about the interviewer and the process of the interview rather than to the survey as such. It appears . . . that what impressed itself on the respondents was not the subject of the interview or the questions that were asked, but the relationships they established with the interviewers" (Kahn and Cannell, 1957, p. 47). Lest the significance of the interviewer be overemphasized, however, it should be noted that a later study by the same organization failed to find a direct relationship between the respondent's global reactions to the interviewer and the accuracy of reports on health information (Cannell, Fowler, and Marquis, 1968). Also, while identification with the interviewer can be a positive force, it may be counterproductive if extended too far. The respondent who "tells too much" at the beginning of an interview may later regret the indiscretion and become more guarded.

A third positive motive is the sheer *intellectual challenge* of some interviews. Respondents will sometimes agree to participate in order to satisfy their curiosity about opinion polls and surveys. Others may welcome the contact as a means of reducing loneliness or boredom. Intellectual satisfactions may be particularly salient for certain kinds of respondents, such as professors, writers, or busy members of a political elite. Such individuals may reject a highly structured questionnaire, but rise to the challenge of a dialogue on topics of interest. Lerner (1956) reports that a critical factor in winning over French intellectuals was the interviewer's ability to engage in intelligent debate.

Fourth, the survey interview may lead the respondent to *insights* which are helpful and rewarding. There is some evidence, for example, that interviews following on personal or social disasters, such as suicides among family members or tornadoes, help the respondent to make sense of highly disorienting experiences and to develop a greater sense of meaning in life (Gorden, 1969, pp. 92-93).

Fifth, the interview may stir *feelings of altruism*. The respondent may be motivated by a desire to help the interviewer with his or her job, or to aid a graduate student with a dissertation. In many studies, where the content is at least neutral, this may be the most important motive to participate. In some cases, altruism may take the form of identification with the sponsoring institution or with the content of the research, as in studies of cancer or mental health. Kinsey and his associates (1948) drew heavily on appeals to altruism in conducting their research on human sexual behavior, citing its relevance to marriage, child training, and other social concerns.

Sixth, the interview may provide an opportunity for *emotional catharsis*. This positive force is related to the desire for interpersonal response and to insight, but involves primarily the release of tension through the expression of feelings.

A seventh and critical source of satisfaction, and one which springs directly from the interview itself, is *gratification from the successful performance of the respondent's role*. The talented interviewer will try to assist the respondent in accepting the role of information-provider, and provide him with the rewards of approval and esteem for a job well done. Much to the surprise of neophyte interviewers who see the respondent as a bundle of resistances, many individuals want to be good respondents and are pleased when they have reached a satisfactory level of performance. To be successful in this task of role-education, the interviewer must convince the respondent that *he* is vital to the study, that he has a unique contribution to make, and that what he has to say is interesting. Usually this process will be carried out more by the interviewer's own attitudes and behavior, including encouraging remarks, nods, and smiles, than by careful oral presentations. Needless to say, the message communicated must be sincere to be effective, and in principle there is no reason why it should not be, for all of the points suggested about the respondent's contribution are true. We shall see later, however, that the communication process can become badly distorted by feelings and perceptions arising in the interaction between the interviewer and respondent. Finally, in some cases, the respondent may be motivated by *extrinsic rewards*, such as payment for the interview or fulfillment of academic obligations. The use of such incentives presents special and complicated problems that go beyond the present discussion.

Negative Forces The optimism emerging from this review of positive forces must be balanced against the factors working against respondents' participation. Foremost among these is *fear*, whether of a potential assailant at the door, an ambiguous research process, or the uses of the data. In many cities at the present time, considerable resistance arises from the reluctance of the residents to open their doors to strangers. Interviewers in the less developed countries, moreover, often find that respondents have no category in their perceptual universe for "research" and "personal interviews." For this reason, there is often strong suspicion of any organized data-gathering activity, including the most thoroughly legitimated national census. The whole notion of engaging in a question and answer process with a stranger may be very foreign, producing uncertainty and confusion among the intended respondents. Even where survey techniques are more familiar, as in North America and Western Europe, respondents may still be wary of the interview process, or about the effects of revealing sensitive information. They may suspect the interviewer of being a tax collector, a disguised police

agent or representative of a credit bureau, or some other imposter. Those with a major stake in the social order may also worry that the disclosure of confidential information about themselves may bring a loss of esteem in the community, or harm to the larger group of which they are members, such as an ethnic minority. Even when the interviewer assures them of confidentiality, they may doubt his or her credibility.

Another force working against participation is a *perceived invasion of privacy*. For many citizens a crucial aspect of personal freedom lies in the right not to discuss or disclose certain beliefs, attitudes, or behavior. Often the desire for privacy is tied to one's freedom to maintain some degree of geographic seclusion. In the United States some critics have argued that the growing use (and misuse) of surveys and polls is a threat to such seclusion (cf. Miller, 1971; Warwick, 1973).

Third, the motivation to participate may be reduced by *hostility toward the interviewer*. Immediately sensed differences in personality or background may tip the balance of forces in a negative direction. The same effect may be produced by *hostility toward the sponsor*. For some individuals, the fact that a survey is sponsored by a university organization or a government agency brings forth feelings of loyalty, while in others it has a completely negative effect. For this reason it is always essential to know in advance how the sponsor is regarded in a given area.

A final negative force lies in *threatening subject matter*. This point refers less to the uses which will be made of sensitive information than to the intrinsic dissatisfactions associated with discussions of the question topics. Some topics, such as partisan politics in Latin America, may be intrinsically interesting to respondents, but off limits for the sample survey because of fears about the uses to be made of the data. Others, such as death or debts, may evoke few fears of misused data, but generate considerable anxiety because of their personal sensitivity. The conflict between the forces working for and against participation in the respondent is illustrated in Figure 7-2.

The Interviewer The interviewer is probably the major influence on the motivation of the respondent and on the quality of the responses received. Though research on this question is sparse, there is some evidence that the

The Respondent's Motivation to Participate in the Interview

Positive forces			Negative forces
Self-expression	→	←	Fear: survey, interviewer, uses of data
Interpersonal response	→	←	Hostility toward interviewer
Intellectual challenge, curiosity	→	←	Perceived invasion of privacy
Insight	→	←	Threatening subject matter
Altruism	→	←	Hostility toward sponsor
Performance of respondent role	→	←	Costs in time and energy
Ex[illegible] rewards	→		

face-to-face exchanges during the interview are more highly related to the accuracy of the information than any other conditions, including the demographic characteristics (age, sex, etc.) of the interviewer and respondent (Cannell, Fowler, and Marquis, 1968). If the interviewer is interested in the study, enthusiastic about his or her work, and likes the respondent, these feelings will usually be communicated to the respondent with positive effects on the latter's participation. On the other hand, if the interviewer is languid, lackadaisical, or bored, he or she may hurry the respondent to the detriment of completeness and accuracy, accept a response of "don't know" where a bit of probing would have produced a positive answer, or show carelessness in recording the answers given.

Positive Forces Many of the satisfactions provided by the survey interview are identical for the interviewer and the respondent. These include the desire for interpersonal response, intellectual curiosity, and identification with broad social concerns. Still, there are several differences in the incentives available to the two participants, stemming mainly from the fact that survey research is a profession (or at least a job) for the interviewer, and a temporary avocation for the respondent. This situation results in several sources of satisfaction that are specific to the role of interviewer.

Perhaps the most important is a sense of professional identification. The notion of a profession implies that an individual has acquired a specialized body of knowledge or skills, and has demonstrated his proficiency to some certifying group. Thus, one of the prime forces encouraging serious interviewers toward a high level of participation is a desire to demonstrate and improve their skills at interviewing. It is significant that problems of falsified or "curbstone" interviews are much less frequent when the staff consists of professional interviewers than when it is made up of temporary recruits. In the former case, identification with the organization as well as the profession serves to counteract the temptation toward faking. Closely related to professional identification is the intrinsic satisfaction accompanying the mastery of interviewing techniques, quite apart from the recognition accorded such mastery by others. Further, some interviewers may view their work not only as a skill and a professional activity, but as a means of career advancement. The career ladder may be confined to the interviewing profession itself, or extended to related fields, such as research administration. Also, in survey interviewing, as in most occupations, important satisfactions are derived from peer support or group morale. For some interviewers, one of the delights at the end of a long day is the opportunity to exchange stories and insights with others on the team. Back and Stycos, in their report on field work in the Jamaica Fertility Investigation, underscore the importance of peer relations in interviewing teams.

> We have noted that the field work was accomplished by interviewing teams—groups of four to five workers who would travel together to the area and com-

> plete the canvassing and interviewing in a week or so. Because of the remoteness of most rural areas, teams had to reside in the field during these periods. Since we felt that these primary group conditions could be both a source of friction and a source of strength the make up of the teams was determined at the conclusion of training largely by means of sociometric choice. Moreover, each team was in charge of a Group Captain also appointed largely on the basis of sociometric choice. Although friction did occasionally occur, we believe that the team organization was a decided asset if not an absolute necessity. It is hard to conceive of a solitary interviewer surviving under the field conditions in the rural areas without group support [1959, p. 23].

Interviewers working in large urban areas rarely develop the close-knit relations described here, but the general point raised about group support remains valid.

The interviewer's motivation to perform well in his work will also be higher if he understands and identifies with the purposes of the survey. It is, thus, important for the study directors to take time to explain why the research is being carried out, what they hope to learn from it, how the various sets of questions fit into these goals, and how the performance of the interviewers can affect the quality of the data. It is not advisable, however, to lay out the major theoretical hypotheses guiding the research. Studies of experimenter effects (Rosenthal, 1966) suggest that expectations by researchers of how the findings should appear may increase the likelihood that they do appear. Specifically, interviewers who know that Group A is hypothesized to be different from Group B in certain ways, may unwittingly influence the responses obtained in the direction of the hypothesis. Once the field work has begun, the study directors and supervisors can further contribute to the interviewers' motivation by providing feedback on how the study is progressing and, in other ways, treating them as "insiders."

Negative Forces Among the dissatisfactions leading to a reduction of the interviewer's motivation are those stemming from absence of the conditions just noted—professional identification, the mastery of basic interviewing techniques, opportunities for career advancement, and group support. Another negative force which assumes greater prominence as a survey progresses is boredom with the interview. At the beginning, the topic may be new and the respondents' observations intriguing. Later, the questionnaire may become routine and the interactions dull. The degree of boredom will vary with the topic of the study and the degree of flexibility enjoyed by the interviewer. Questionnaires consisting exclusively of closed-ended items will usually lead more rapidly to boredom than those which allow for free responses and require considerable probing.

Fatigue, fear, difficult travel conditions, inconvenient hours, and frustration in locating respondents are other common inhibitors of the interviewer's motivation. In the United States, interviewers may be thoroughly frightened by assignments in areas with high crime rates, even when accompanied by another staff member. Fear of robbery or assault will mount if the study requires extensive work at night in such areas. Similar problems are seen in other countries. In rural Peru, for example, some areas are so inaccessible that an interview may require several hours of precarious travel by horseback—something of a challenge to a citydweller. Trips in other areas might require a police escort because of the high concentration of contraband operations. For some individuals, interviews in dangerous areas can be thrilling, but for many they reduce motivation. Other negative forces include dissatisfaction with the field supervisor, pay, or related employment conditions (see Chapter 8).

The Interviewing Situation The balance between positive and negative motivation for both the respondent and the interviewer will further depend on the peculiar circumstances of the interviewing situation. Though we sometimes speak of human personality as if it were fixed and stable, individuals show quite different "personalities" according to the situation in which they find themselves. A white interviewer conducting a survey in Harlem may appear to be a rather different person than in a predominantly white section of New York. Thus if we wish to predict how an interviewer and a respondent will behave in a particular set of circumstances, we must try to understand the forces at work in that situation.

The situational forces bearing most strongly on the survey interview are the place and time at which it occurs, the presence of "third parties," the attitudes toward the study in the surrounding community, and the sequence of the interviews. The place at which the interview is carried out may be psychologically significant because of the associations or memories evoked in either party, especially the respondent. Employee surveys carried out in the factory manager's office may elicit different attitudes than comparable questions asked in a union hall. Another important consideration in choosing a location is freedom from noise, distractions and interruptions, all of which affect the motivation to participate. In some situations, however, complete privacy may violate cultural norms and cast suspicion on the entire process. This is especially true with male-female interactions.

The timing of the interview will also affect the willingness of both parties to participate, and sometimes the respondent's ability to provide the desired information. Visits to households immediately before dinner are likely to meet with little success, and will often be resented. Moreover, in studies focusing on a specific sequence of experiences or events, the timing of the interview may influence the validity of the data collected. Gorden writes: "The most significant effect of timing is upon the respondent's ability to remember, accurately and completely, avoiding chronological and inferen-

tial confusion. To avoid simple forgetting, the interview should take place as soon after the relevant events and experiences as possible. Much psychological research indicates the distorting effects of fading memories" (1969, p. 159).

The presence of "third parties" or sometimes entire groups of spectators poses special problems for the validity of survey data. This is a very common situation in the less developed countries—in some areas almost all interviews at least begin in the presence of others—and not uncommon in other countries (Mitchell, 1965, p. 679). The major problem with this practice is that the presence of outsiders places the respondent under pressure to distort his answers in the direction of community norms or what will make the observers think well of him. This situation can have major repercussions when the first interview is carried out with a community leader or headman whose opinion then becomes a semiofficial standard for subsequent interviews. The effects of outside observers need not always be negative, however. As Mitchell points out, "In studies seeking information rather than attitudes, third parties may help keep the respondent honest and also help him to remember the requested information. In other instances especially with women and younger people, respondents may refuse to be interviewed unless a third person is present" (1965, p. 679). Some practical techniques for dealing with this problem will be suggested later in the chapter.

Community attitudes toward the survey may also affect the motivation to participate, as well as other facets of the interview. When the research is carried out in hostile territory, both the interviewer and the respondent are likely to be more guarded in their communications than if conditions were more favorable. Similarly, when the community itself is highly polarized, for example, along ethnic lines, the interviewer will have to be doubly careful to avoid identification with one or the other of the contending parties, unless such identification is part of his research strategy. This point is closely related to decisions about the sequence in which interviews will be conducted. An obvious situational factor affecting the interviewer's work is the degree of legitimacy he or she has acquired from previous contacts. This consideration is especially important when the respondents selected are in close communication with each other, as in single organizations such as a factory, or in small communities. Here it is often advisable to begin with the highest-status individuals in the sample, and also with those known to be most willing to participate (Gorden, 1969). Early success, especially with opinion leaders in the area, helps to legitimize the study as well as the interviewer

Interviewer-Respondent Interaction

The survey interview is a short-term human relationship in which each participant will seek cues about the emotional reactions, attitudes, social status

and expectations of the other. As Cannell, Fowler, and Marquis observe, the household interview

> . . . may be so out of the ordinary stream of daily events that respondents really have no cognitive "set" which they bring to the situation. The situation is so new that it is difficult to generalize their associated feelings, attitudes, and expectations. Therefore . . . the respondent must look to the interviewer or some other source for cues as to her expected behavior [1968, p. 35]

The interviewer may have very similar reactions because of the wide differences among respondents. On the basis of an intensive study of the interviewing process, the above authors conclude: "It may be this cue-searching process which accounts for the very strong tendency of interviewer and respondent to behave at the same level of activity in the interview" [p. 35].

The specific cues will vary with the society and culture as well as with the immediate interviewing situation, and also with the stage in the interview itself. At the beginning, each will try in some fashion to locate the other in the social structure and his or her own perceptual framework. For reasons already indicated, many respondents will find themselves without an appropriate frame of reference, particularly if the culture contains no slot corresponding to the role of interviewer. The most common way of classifying the other at the beginning is to rely on such time-honored social characteristics as age, sex, and social class. The respondent will typically pay careful attention to such overt indicators of position as the interviewer's dress, manners, accent, skin color, bearing, age, and sex. Some, of course, may short-circuit this process and immediately classify the visitor as "professional interviewer" or "census taker." The interviewer may also unconsciously try to place the respondent, although he or she will have considerable advance information from the sample description, and the general character of the neighborhood. After the participants have tentatively completed this preliminary sorting, the search will normally shift from overt characteristics to more subtle qualities such as signs of approval, disapproval, pleasure, encouragement, and hostility. The research by Cannell, Fowler, and Marquis (1968) also suggests the importance of the activity level of the participants. If either the interviewer or the respondent is highly expressive, laughs, or jokes, the other may follow suit. Given the desire for interpersonal response, both will be on the watch for signs of how well they are meeting the overt and subtle expectations of the other (cf. Goffman, 1969).

First Impressions Psychologically, a great deal happens in the first part of the interview, even before the conversation begins. The tentative judgments made at this stage may be reversed later, but only if there is

contrary evidence. To understand both the operation and implications of this process of impression formation, we must examine the structure of the society and community in question, especially the major lines of cleavage. Such characteristics as age, sex, and social class have no automatic influence on the outcome of the interview. Their influence, as well as that of other social characteristics, depends entirely on the emotional connotations which they evoke, and on their relationship to the issues under investigation in the survey.

We would suggest three questions related to impression formation that might be raised in planning for field work. First, what are the most significant bases of stratification and the most prominent lines of cleavage in the area under study? In other words, what are the social-structural and cultural factors most likely to bear upon the process of interpersonal communication? Age and sex will figure prominently in almost every society, though their importance will also differ greatly from one setting to another. Standard demographic characteristics such as these offer a useful starting point, but they are insufficient for many situations. In some societies, such as, perhaps, the border regions between India and Pakistan, religious differences (for example, Hindu versus Moslem) may well be more important than class. Similarly, even within the same nation, regional origins, reflected especially in accents and manners, may be critical for some studies. Quite probably a local interviewer will have more success in rural South Carolina than one perceived as a Northerner, especially if the survey touches on regionally sensitive issues. The use of university students as interviewers may also create obstacles to communication among those who bear one type of resentment or another against this group as a whole. Furthermore, in cross-national research, the nationality of the interviewer will assume great importance, and not always in predictable directions. A study of political elites in Europe and the United States (Hunt, Crane, and Wahlke, 1964) revealed that American nationality was a definite asset in gaining access to legislators in Austria and France.

Second, what are the external indicators of these social-structural and cultural factors? Given the perceptual vacuum at the opening of the interview, both parties are likely to focus on such immediately observable characteristics as dress, accent, racial or ethnic traits, posture, and gestures, as well as the year and make of the other's automobile, the quality of housing and furniture, and the social status suggested by other possessions. These visible characteristics are significant in the interview only insofar as they evoke emotional and perceptual reactions. For this reason, each interview situation must be analyzed in detail to uncover the most salient points of divisiveness.

Third, what is the likely relationship between social cleavages, observable personal characteristics, and the subject matter of the study? In general,

the more closely the topics of the interview touch the tender nerves of the social system, the more important will be the social differences between the interviewer and the respondent. For example, the use of white interviewers in black neighborhoods in the United States will probably have a smaller impact on a study of consumer reactions to brand names than on one dealing explicitly with racial attitudes.

There is now a sizable body of evidence dealing with the impact of social characteristics on survey interviews in the United States. The studies concerned with race suggest that, in general, interviewers from the same racial backgrounds as the respondents will have greater success than others in collecting valid data on racially sensitive and, perhaps, even other topics. A carefully controlled investigation by Hyman and his associates (1954) showed that black interviewers were better able than whites to obtain information from black respondents on their resentment over discrimination. Other research (Athey, Coleman, Reitman and Tang, 1960) indicates that white interviewers working with white respondents obtained more expressions of hostility against nonwhites than did black or Oriental interviewers. Williams (1964), however, adds an important qualification to these conclusions. His results show that the interviewer's race is likely to produce bias only when there is a large status gap between him and the respondent, and when the questions are threatening. Other research by the same author (Williams, 1968) suggests that the effects of race will further depend on the objectivity of the interviewer's attitudes and the degree of "rapport" during the interview. This finding is in general agreement with the approach taken in this chapter, which argues that first impressions based on race and similar characteristics are important, but that subsequent interactions will also affect the quality of the information collected.

Age, sex, and class differences may also affect communication during the interview itself. The studies by Hyman et al. (1954) suggest that the communication of sensitive, personal, and especially sex-related information is easier when both parties are of the same sex. Thus female interviewers might be more successful than males in discussing contraception and abortion with female respondents, while males might hold the edge in a study of working conditions in a steel plant. The interviewer's age may also create barriers between him and the respondent, though again much will depend on the specific topics and the situation. Interviewers of high school age will probably have little success in gathering information from a cross section of a large city, but they may do better than their elders in a study of teenage drug use carried out at high schools.

The effects of social class are very similar to those of race. Katz (1942) discovered that working-class interviewers elicited more radical opinions on issues such as labor unions than did their middle-class counterparts. Lenski

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and Leggett (1960) also found that middle-class interviewers may create pressures toward deference or acquiescence among working-class respondents. Cannell et al. (1968), on the other hand, found no relationship between the social characteristics of interviewers and respondents and the accuracy of reporting health information. One reason might be that the content of the questions—illnesses, impairments, accidents, injuries, use of medical and dental facilities, and so forth—is less susceptible to distortion from social influences than questions on politics, sexual behavior, or drug use.[1] By contrast, the effects of status, race, ethnicity, or class may be greater in some of the less developed countries than in the United States. The main reason is that in these countries many respondents have no conception of the role of "survey interviewer," and thus turn to traditional social characteristics in defining the interview situation (cf. Mitchell, 1965; Berreman, 1973).

The previous discussion should not be taken as a firm recommendation that interviewers and respondents regularly be matched on social characteristics. Rather, the available evidence suggests that in selecting interviewers and making assignments, it would be very wise to consider the probable effects of social characteristics, interacting with the subject matter of the study, on the validity of the data. In some cases, matching may well be in order, while in others it would be totally unjustified.

Interpersonal Exchanges Fortunately, first impressions are not necessarily irrevocable. What happens during the interaction itself will further affect the quality of the information and may completely override the initial attitudes formed on both sides. The critical task facing the interviewer, at this stage, is to train or "socialize" the respondent into the role of information provider, while simultaneously maintaining an attitude of objectivity and a high level of motivation in his own work. More is involved in this process than just establishing warm relations or "rapport," though this is crucial. The interviewer must also communicate to the respondent that the quality and accuracy of his responses are highly important. An emphasis on rapport alone may lead to a situation in which all are at ease and in good spirits and both parties report enjoying the interview, but the data collected are shallow and incomplete. The respondent should not be misled into thinking that the visit is a social occasion in which information gathering is secondary. It is both more ethical and more effective to make it clear from the beginning that *what* is said is essential to the task at hand. Thus the interviewer is forced to walk a tightrope between critical objectivity toward what is being said and an attitude of warmth and acceptance toward the person who says it. There is no necessary incompatibility between these tasks, and no need for insincerity. Many forms of social interaction involve similar tensions. What, then, are some of the forces which work for and against the joint goals of objectivity and rapport during the actual interactions?

[1] For an overview of the literature on response invalidity and bias see Phillips (1971, pp. 12-49). The author also offers a number of useful suggestions for increasing our understanding of the sources of bias, including greater attention to the processes of data collection and increased reliance on direct observation. He does not appear to recognize, however, that the correctives he proposes are also open to bias. In social research there is no easy or direct route to objectivity, whether through introspection, observation, or interviewing.

Positive Forces The interviewer commands a number of interpersonal rewards which can be used to stimulate a high level of participation and a proper role definition on the part of the respondent. Basically, these involve communicating positive feelings toward the study, the interview, the respondent as a person, and the contribution that he can make. Much of this communication occurs at the nonverbal level through facial expressions, tone of voice, mannerisms, and the like. Among the most critical attitudes to be communicated is a sense of self-assurance and ease about the task of interviewing. The respondent will be more likely to accept his own role, and also more flattered, if the interviewer makes it clear that he knows what *he* is doing. If he is apologetic about the study, fumbles with the questionnaire, overexplains the purpose of the questions, and generally seems frightened by the whole experience, the respondent will understandably be confused about what is expected of him and reluctant to proceed. Building upon a solid foundation of self-confidence, the interviewer may draw upon other rewards to encourage the respondent to accept the proper role. Such encouragement may take the form of sounds and phrases showing that the interviewer is paying close attention to what is being said and finds it interesting. Vocalizations such as "uh-huh," "I see," "I understand," as well as nods of the head or other motions communicating the same message, tell the person that he is moving in the expected direction. When used with skill, short periods of silence may have the same effect, especially when the interviewer's posture and expression indicate approval of the preceding remarks and an expectation of more like them. One must be cautious of overusing these signs of encouragement, however, especially the stronger varieties such as "that's right," "good," and "I agree." With these the interviewer runs the risk of biasing the responses in the direction rewarded (cf. Hildum and Brown, 1956). And, as noted earlier, research on "experimenter effects" in social research (Rosenthal, 1966) suggests that the interviewer may unconsciously use such rewards to elicit responses which fit *his* expectations. A study of the 1948 presidential election (Wyatt and Campbell, 1950) showed, for example, that interviewers who expected respondents to have discussed the campaign with others obtained answers in line with this expectation. These findings argue for the use of more neutral encouragements, such as "uh-huh," rather than "good."

In any survey interview there is always the danger that rapport-building efforts may be *too* successful. This happens when the respondent becomes overly dependent on the rewards provided by the interaction situation, and biases his responses in a direction which will produce more of the same. If the respondent comes to have a strong attraction to the interviewer, either for personal reasons or because of what the interviewer represents (the middle class, education, the government), he may be tempted to slant his responses toward what he thinks the interviewer wishes to hear.

Negative Forces Counteracting these several rewards are various interpersonal inhibitors of rapport and accurate communication. Here we shall consider only those under the control of the interviewer, but it is important to recognize that the respondent is also the source of parallel negative forces. One of the most common deterrents to the respondent's participation is a feeling of uncertainty about what is expected of him in the interview situation. This may stem from a lack of self-assurance or an overly apologetic attitude on the part of the interviewer, or from broader cultural factors such as sheer unfamiliarity with any type of social research, including surveys. Respondents will also be resentful if they feel that they are being "used" as a pipeline for information with no respect or consideration for themselves as persons. This feeling is most likely to arise when the interviewer emphasizes objectivity to the detriment of rapport. The interviewer may further inhibit communication by forgetting important pieces of information mentioned earlier in the conversation, such as whether or not a couple has children; by failing to express interest or failing to probe for further details on points which the respondent considers crucial to the study; by constantly interrupting the individual as he tries to speak; by communicating boredom with the questioning process; and by immersing himself so completely in note-taking that he rarely looks up from the questionnaire. Respondents are normally quite astute in assessing the interviewer's true feelings toward the interaction, basing their judgment both on what he says and does.

At this point, we should introduce a note of caution about the cross-cultural applicability of the previous remarks. The bias of our suggestions, and of those in most works on interviewing, is toward an egalitarian style in the interview. We feel that the bulk of the evidence gathered in the United States supports our assumptions in this regard. We would also have to admit, however, that these assumptions may not hold up for interviewing in other cultures. Some researchers have suggested, in fact, that the egalitarian approach may well have to be modified in situations where the interviewer and respondent come from different social classes, and there are distinctive patterns of interaction between these classes. Mitchell writes:

> Research agencies in many countries recruit their interviewers from among [illegible] that they come from middle- and upper-class

> backgrounds, and are themselves educated people. This type of interviewer creates a communication problem, since there are certain traditional ways in which members of different classes interact. For example, custom demands that lower-class persons use polite forms of address, and not express themselves freely to members of the upper classes [1965, p. 683].

Similarly, Back and Stycos (1959) report that interviewers in their study of fertility in Jamaica occasionally made use of quite authoritarian high-pressure tactics, seemingly with success. The use of these tactics may have been dictated in part by the reception sometimes given the interviewing teams.

> Respondents or others in the community would put on a show to test the extent to which an interviewer could "take it." In some instances they would seem to engage in leg-pulling for sheer sport. Perhaps it was gratifying to frighten, humiliate, or anger someone of higher status. But perhaps they were unwilling to carry it through when confronted by someone of still higher status, or someone willing to call the bluff or even "pull rank" [p. 10].

The authors conclude:

> Whether such techniques are more harmful or valuable is difficult to judge. It can only be said that they were cited almost invariably as instances of *successful* techniques by interviewers who had had the dangers of biasing respondents drummed into them during training. Conceivably, they are effective among types of respondents found particularly in the lower class where an authoritarian approach from a person of higher status is expected. One must at least consider the possibility that such an approach seems more sincere than an equalitarian one which might give the impression of condescension or even of fawning as a means to an end.

The fact of the matter is that, aside from this report and two or three others, we know very little about the dynamics of interviewing in other cultures. Given this state of the art, we can only encourage survey researchers in any culture to pay careful attention to the issues raised by status discrepancies, and to carry out some informal experimentation during the pretests.

Interaction and Bias

Thus far we have considered the impact of the initial predispositions, background characteristics, behavior, and attitudes of the interviewer and respondent, as well as the interview situation itself, on each other's motivation to participate. We turn now to the specific kinds of distortion and bias introduced by poor participation and faulty communication. These errors may arise from the behavior of either or both parties.

Bias from the Interviewer The interviewer may adopt a variety of attitudes toward the respondent. He can see him as a person who will be inter-

esting to interview, one whom he would like to impress with his education or professional skill, a rather "low-class" individual who will probably not understand what the interview is about, or a disagreeable character who will make the whole experience unpleasant. These attitudes in themselves are of little consequence if they do not reduce the quality of the data, but research as well as experience suggest that they often will. The following are among the sources of bias resulting from improper attitudes and motivation on the part of the interviewer.[2]

1 *Errors in asking the questions.* On the basis of his early interactions, the interviewer will often arrive at tentative conclusions about the respondent's ability to answer the questions and about the type of answers which "fit" his situation. Acting on these assumptions, the interviewer may introduce bias by shortening the question or simplifying the language, by using a higher level of vocabulary to impress high-status respondents, or by suggesting answers, either through changes in the wording of the question or through indirect means such as vocal inflection. For example, in interviewing a person with little formal education, he may shift from a question worded "Have any of your children attended college?" to "I don't imagine any of your children have gone to college, have they?" He may further bias the responses by assuming that one of five opinion statements included in a certain item is inappropriate to the respondent's situation, and thus read only four. There are, of course, times when the interviewer must improvise in the field, but here we refer to those situations in which improvisation is not called for by the objective circumstances.

2 *Errors in probing.* Among the interviewer's most critical responsibilities during the questioning process is that of probing to obtain complete, accurate, and relevant answers to all items. Here, too, the expectations and stereotypes built up during the course of the interaction, as well as his feelings toward the respondent as a person, may lead to biased data. The most common error is insufficent probing. This often results from the interviewer's belief that the person has little to say about a given subject because of limited education, intelligence, or his position in society. Then, too, if the interviewer has strong expectations about what the respondent *should* say, or strong feelings about what he would like him to say, he may cease probing when the "right" answer has been mentioned. Even more serious errors may be introduced when probing is used positively to lead the respondent in the direction of a certain answer. When one feels he has come to know the respondent quite well, there is often a very real temptation to begin questions with phrases such as: "I suppose you would agree that . . ." The proper uses of probing will be discussed later in the chapter.

3 *Errors in recording answers.* Attitudes and expectations may also affect the accuracy with which the respondent's answers are recorded in the

[2] This discussion of interviewer errors draws on Kahn and Cannell (1957, pp. 189-193)

questionnaire. The interviewer may be tempted to improve the grammar or level of language used, omitting profanities or grammatical errors. Or he may simply not "hear" certain statements which are inconsistent with his own attitudes and expectations, or with what the respondent has said earlier in the interview. The respondent, however, is not the only source of pressures to modify the material recorded. The interviewer may feel that what the respondent has said is so incoherent that he will be criticized by his supervisor or the coding staff if it is presented in its original form. To avoid this situation, he may edit out some of the inconsistencies, make the sentences more complete than they actually were, and otherwise improve on the final product.

4 *Errors in motivating the respondent.* The success of the survey interview rests heavily on the ability of the interviewer to maintain a high level of relevant motivation in the respondent. At times, the interviewer may fail to carry out this responsibility, perhaps because he dislikes the respondent or finds him dull or threatening, or because he would like to terminate the interview as soon as possible. This failure may take at least three forms. The first consists of *undermotivating* the respondent, for example, by failing to arouse interest in the study or by ignoring his needs for encouragement and information during the interview. Under these conditions, the respondent may continue with the interview, perhaps out of politeness, but provide a level of information which is quite shallow. A second error is that of *inappropriate motivation.* This would be seen when the interviewer encourages the respondent to become too dependent on his approval, or, at the other extreme, when he tries to induce participation by appealing to his official status in the government or university. A third error may result from the interviewer's *insensitivity to the situation of the respondent.* Kahn and Cannell write: "Basically, the interviewer must sense the respondent's needs, and adapt his efforts to motivate accordingly. He must 'pick up the respondent where he is.' Respondents will differ in resistance, in their interest in explanations and purposes, and in their need for encouragement and support" (1957, p. 192). Insensitivity is seen when the interviewer fails to relate what he does to the psychological situation of the respondent at that moment.

Bias from the Respondent The respondent's attitudes, expectations, and feelings can also be a major source of bias in the survey interview. There are numerous reasons why he may be unwilling to "open up" with complete and accurate answers, including uncertainty about the purposes of the study, fear of the reactions of others in the community or organization, the feeling that the interviewer is so different in background that he will not understand his point of view, and fear that the interviewer may disapprove of responses indicating violations of some social norm. Bias and error will be reflected in responses which are incomplete, imprecise, inaccurate, false, or irrelevant. The following are several of the more common forms of respondent bias.

21.NHP -- 80

1 *"Courtesy bias."* This form of distortion was first suggested in an article on survey research in Southeast Asia (Jones, 1963). According to the author, courtesy is a pervasive value in this region, and one with important implications for social research. Its central elements include maintaining a pleasant and agreeable atmosphere, avoiding open disagreement with a person of higher status, saying what is pleasing and avoiding discussions which would affront or cause hurt to others, or which the other would not like to hear. While this source of bias seems especially applicable to Southeast Asia, it is found in other regions as well, including the United States. In a general sense, courtesy bias can be viewed as the tendency to limit one's answers to topics which are pleasant and cause little discomfort or embarrassment to the interviewer. At times it may be reflected in answers which move a painful interview to a speedy conclusion.

2 *Ingratiation bias.* This is similar to the courtesy bias, but more complex in its dynamics. It occurs when the respondent distorts his answers in directions intended to win the approval, attention, or favor of the interviewer (cf. Back and Gergen, 1963). To do so the respondent must develop hypotheses about what the interviewer wants to hear, and then aim his answers at fulfilling these expectations. This type of bias is most likely to arise when the interviewer becomes too friendly with the respondent and places excessive emphasis on the rewards available in the immediate interviewing situation. It may affect not only the direction a given response takes, but also its length. This point becomes important when the length or "number of reasons" is taken as an indication of interest in a topic, as sometimes happens with open-ended questions. The ingratiation bias has sometimes been caricatured in stories about native respondents providing interviewers with lurid but inaccurate details of village life because "that's what they wanted to hear."

3 *"Sucker bias."* This arises when respondents make a deliberate effort to mislead or deceive the interviewer, not so much to hide the truth as to trick, outwit, embarrass, or play a hoax on an "outsider." This situation is described in the Keesings' (1956) study of elite leadership in Samoa, but is not unknown in other populations, including university students.

4 *Social desirability bias.* This occurs when respondents distort their answers to conform to the prevailing norms and values in their own community or the larger society. It differs from both courtesy bias and ingratiation bias in that the main point of reference is the norms of the society rather than the expectations or feelings of the interviewer, although the two are intertwined. As a result of social desirability, the respondent may be reluctant to mention behaviors considered immoral, such as violations of sexual codes, or the use of alcoholic beverages. This list might be extended to include other biases, such as the apparent tendency of Japanese respondents to underevaluate their rank and accomplishments (the "humility bias"), or of many respondents to restrict the direct expression of emotions during the survey interview (affectivity bias).

PRACTICAL GUIDELINES FOR INTERVIEWING

Because no two surveys are alike, it is impossible to set down ironclad rules for conducting the survey interview. A study which makes use of highly experienced and carefully trained interviewers will allow for greater flexibility in procedures than another with a totally inexperienced field staff. Also, much depends on the aims of the study and the character of the questionnaire. A survey whose goal is mainly to explore issues and isolate problems for future study will require less attention to the specific manner of asking questions than another seeking precise quantitative information. In every case, it is essential to relate procedures followed in the field to the goals of the study, the capacities of the interviewing staff, the attitudes of the respondents, and other factors considered earlier in this chapter.

With this caveat in mind, we will now offer various practical suggestions for carrying out the survey interview. These should not be regarded as rules to be followed in every situation, but rather as guidelines applicable to many household surveys, especially in North America. To lend a note of concreteness to the discussion, we will introduce relevant materials from the *Interviewer's Manual* used by the Michigan Survey Research Center.

Preliminary Preparations

Preparing the Community It is usually helpful to make a few advance contacts in the community or organization before the interviews. Particularly important in the United States are "legitimizing" contacts with the local Chief of Police, Better Business Bureau, and Chamber of Commerce. The field staff should not attempt to obtain their approval for the study, but rather make clear that theirs is a legitimate research organization. This step has become increasingly important as growing numbers of cities have passed ordinances exercising control over house-to-house solicitation, including survey research. One report (Arnold, 1964) indicates that at least 250 communities in 34 states in the United States have provisions for some type of control of surveys, ranging from registration with law-enforcement officials to complete prohibition.

In some cases, especially in cities with numerous interviews scheduled, it is worthwhile to submit a story about the survey to a local newspaper and then have the interviewers carry a clipping in a plastic cover. If respondents see that the study has received coverage from a respected newspaper, they will be less likely to reject the interview as a form of sales solicitation or political canvassing. Interviewers from the Survey Research Center have also found it helpful to carry reproductions of articles about the Center from *Time*, *Newsweek*, or other magazines.

Field work carried out in rural areas of the less developed countries may demand much more elaborate preparations. In certain cases, it may even be necessary for the interviewers to spend a month or more as residents before attempting any interviews at all. Wilson (1959) suggests that it may be prudent to carry out token interviews with a few leaders who do not fall into the sample, both out of deference to their position and as an example to others in the community. This procedure would be unethical, however, if the individuals were led to believe that their responses counted in the survey results when, in fact, they were to be discarded. It might be more sound to select a special sample of community leaders and to use their responses, perhaps treating them as a separate unit of analysis. Short of living in the village or interviewing community leaders, it is important at least to contact the key individuals, explain the survey to them, and secure their support.

Advance preparations can, however, be carried too far. Large-scale publicity campaigns will often arouse both interest and opposition. The dangers from overexposure are particularly great in potentially controversial studies, or in areas where the survey is relatively unknown. Often it is best to keep publicity to a minimum and to rely mainly on personal contacts.

Preparing the Respondent The essential point here is the same as in the case of the community: some advance preparation may be helpful, while too much is often counterproductive. Some research organizations, including the Survey Research Center, find it useful to send a letter to the respondent mentioning that an interviewer will be calling at his home within a day or so. Experience suggests that these letters are most effective when they are brief and general, and when the gap between the arrival of the letter and the arrival of the interviewer is very short. There are at least three problems with long introductory letters. First, in many cases they will simply not be read. Second, it is difficult to choose a level of language appropriate to all respondents. If the level is too high, the less educated group may be offended, while if it is too low, it will be considered insulting by the better educated respondents. Third, if the respondent receives too much information about the study, he may either decide that he does not like it or lose the sense of curiosity which serves as one of the strongest sources of motivation to participate. The typical letter used by the Survey Research Center now says little more than "You have been selected and our interviewer will be calling you," with a few general comments about the study and an assurance of confidentiality. Given the ambiguous results produced by letters of introduction, we would suggest that study directors carry out informal experiments testing their effects.

Introducing the Study

The Interviewer's Appearance We have already noted that from a psychological standpoint a great deal happens during the first thirty seconds after the interviewer and respondent see each other. The most immediate and obvious clue to the interviewer's background is his general appearance, especially his dress. It is important for the interviewer to ask himself each day how his appearance will be interpreted in the particular areas in which he will be working. Usually he should dress in a simple, neat, and inconspicuous manner. While on the job, he should also avoid wearing pins, lapel buttons, rings, or other forms of identification which associate him with a particular social group or cause, such as a fraternal order, political party, or antiwar movement. These signs may call attention to themselves and thereby either distract the respondent's attention from the study or lead him to slant his comments in a direction related to the perceived identification, or both. In planning for the study, policies should also be set regarding other aspects of personal appearance which may evoke strong reactions in respondents, such as hair styles, bare feet, and hemlines. Though these are difficult questions to raise with interviewers, especially those with no prior experience, it is much better to do so at the beginning than to attempt to sort out the effects of appearance after the data are collected.

Timing As part of planning the day's work, the interviewer should make a specific assessment of the time of day which will be most convenient for the respondents in that area. Male heads of households, for example, will rarely be at home during the day, while they may be much more accessible in the early evening and on weekends. Housewives may be at home in the morning, but resent interruptions of their work schedule during those hours. In such cases, the interviewer may meet with greater success in the early afternoon before the children return from school. Similarly, when the community contains a high proportion of night and shift workers, it is best to schedule interviews at a time which will not interfere with their sleep schedule, such as immediately after lunch. Other considerations which might enter into planning for the initial contact include the timing of popular television programs, preparation for church services, holidays, and fears of burglary or other crimes.

Opening remarks

Gaining entry The interviewer should appear relaxed and confident as he approaches the respondent's doorstep; he should be neither impatient nor overly casual. He should be serious, but not grim. Also, to avoid being mistaken for a salesman or a tax assessor, he should carry his interviewing

materials in a folder rather than a briefcase. The larger survey research centers in the United States and Canada typically provide each interviewer with a plastic folder bearing the official seal of the organization. When he arrives at the sample household, he should knock or ring briefly, and allow ample time for the occupants to answer. The main challenge when someone appears is to present enough information to obtain an invitation into the house, where the study can be explained more conveniently. The SRC *Interviewer's Manual* offers several suggestions on this point.

> *Doorstep introductions should be brief.* . . . The doorstep is not a very convenient place to carry on a conversation and to establish a friendly relationship. For this reason, the doorstep introduction usually should be brief, just sufficient to get you inside the house. Once inside, you are in a better position to convince the person of the value of his cooperation. It is easier for the respondent to say "no, thank you" on the doorstep than it is in his living room.
>
> At the doorstep the interviewer should not ask questions to gain permission for the interview but should suggest the course of action which she desires. For instance, instead of asking, "May I come in?"—to which a respondent could easily say "No"—say, "I would like to come in and talk with you about this." Other examples of questions to avoid are, "Are you busy now?" ("Yes, I am.") and "Could I take this interview now?" ("No, not now.") and "Should I come back?" ("Yes, come back later.") Questions which permit negative responses can lead the respondent into refusing to be interviewed.
>
> The interviewer should assume the respondent is *not* too busy, and should approach her meeting with the respondent as though the interview were going to take place right then, at the time of contact. By all means, make arrangements to return at a more convenient time *if the respondent suggests this*, but accept this situation at the respondent's instigation. Suggest it yourself *only* as a last resort: when you want to leave the door open for another try at a time when the respondent might be more willing to be interviewed.
>
> The first few contacts with a respondent should be made by a personal visit, and not by telephone. This is simply because it is so much easier for a respondent to say "no" and hang up the phone than to say "no" when you are standing in front of him. The exceptions to this are telephone surveys and addresses where numerous attempts to reach a respondent have been unsuccessful.

As soon as possible after meeting the respondent, the interviewer should introduce himself by name, say where he is from, and identify his research organization. It is helpful to support these statements by showing an official identification card. By mentioning his name and showing his credentials, the interviewer helps to reduce suspicions about the study.

Explaining the Study By this time the respondent will be curious about the purpose of the research and about why he was chosen. The interviewer should now provide a brief and clear explanation which would handle these questions honestly, but without raising new objections to participation. The statement on the purposes of the study should be fairly general, including enough information to stimulate interest and legitimate further questioning, but not so much as to overwhelm the respondent. New interviewers sometimes feel obligated to answer every possible objection to participation, and in the process raise more difficulties than they solve. It is usually most effective to begin the questioning process very soon after arriving, and to handle questions and objections only as they are raised by the respondent. It is also vital, however, to make the opening statement sufficiently broad to cover the specific areas of questions to be covered later. The respondent may rightly become suspicious if he is told, "This is a study of people's attitudes," and then is asked, without further explanation, to provide detailed information on income and birth control practices.

Many respondents will wish to know why they were included in the study and what will be done with the information gathered. The *Interviewer's Manual* suggests this approach to the first question:

> It is important that the respondent understand that he is part of a "cross section" survey, and that he was chosen quite impersonally only because he happens to be a particular person at a particular address. You may say something like this: "You see, in trying to find out what people in the country think, we don't talk with everyone, but we try to talk to men and women of different ages in all walks of life. We start by selecting certain counties or cities from all over the country. (Interviewer can show map from back of thank you card.) In each of these areas the Center selects smaller areas, such as blocks, and finally a selection of specific addresses is made. Then when the interviews from all these addresses are combined, we have a cross section of the people."

The interviewer should emphasize that the person's answers are confidential; neither he nor his address will be identified when the results are published. In most surveys, it is inaccurate to say that the answers are anonymous, since the household is identified by a specific address. Moreover, when the study is carried out in a single organization or community, the respondent may ask, and has a right to be told, if the results will be presented in such a way that he can be indirectly identified as a member of a group, such as a work group in a factory.

Very often it will help in explaining the study to show a newspaper clipping about this particular survey or previous studies carried out by the

research organization. Similarly, the interviewer may wish to carry a few copies of published reports of other studies to answer questions raised by more sophisticated respondents.

Handling Field Problems Each interviewer should be prepared to deal with several difficulties commonly arising in the first stages of the interview. These include:

1 *"I'm too busy."* In this case, the interviewer must first decide if the respondent is really too busy, or if his comment reflects suspicion or a lack of interest in the study. If circumstances (guests, housecleaning, children) suggest that the interview should be postponed, the interviewer should try to set a definite time when he will return, preferably within the following twenty-four hours.

2 *Respondent is away.* If the person selected is absent but other family members or roommates are at home, the interviewer should give a brief explanation of the study to one individual and try to determine when the respondent will return. It may also be necessary to explain why one of the other residents cannot be interviewed in his place. To avoid confusion and maintain comparability, the study directors should set a definite policy on the maximum number of call-backs allowed.

3 *"I'm not interested."* When comments of this sort are made, the interviewer should maintain his composure and try to determine the specific objection to the survey. If the person has no specific objections, it may be possible to win his cooperation by asking the first question. Usually it is advisable to avoid protracted debate about the study unless the individual presses a particular point. If he is concerned about the uses of the findings, for example, the interviewer should deal directly with his questions, emphasizing the confidentiality of the results, and perhaps showing him a specimen report illustrating the statistical nature of the analysis.

4 *"Who's behind this?"* Generally it is best to say that the study is sponsored by the research organization, such as the Survey Research Center, rather than to mention the specific details of funding. Statements such as, "This study is being carried out by the Survey Research Center with funds from the federal government" may lead to extended debate about the government, the advisability of spending money on this project, etc. If, of course, the respondent knows something about how survey research is funded and asks a specific question about sponsorship, he should be given an honest answer. But here, as elsewhere, there is no point in raising unnecessary objections.

5 *"Do I have to do this?"* Some respondents may confuse a survey with the national census, which is legally obligatory. This question can be answered by comments such as "There is no legal obligation for you to take part in this survey, but we do need information from persons like you if our results are to give an accurate picture of conditions in the whole country."

6 *"What good is this?"* Interviewers should think about this question well in advance of the first contact. It is both unethical and practically inadvisable to suggest that the survey will lead to specific benefits, such as better jobs, more parks, or less crime in the neighborhood. The most accurate answers are those indicating the general usefulness of surveys in uncovering the major problems facing people in the area, planning for the future, or measuring public opinion on important issues.

7 *Refusals.* In almost every survey, some respondents will say that they do not wish to be interviewed. The interviewer must exercise considerable judgment in these situations, for the same words may conceal rather different feelings toward the study. For some the refusal is really a veiled request for additional reassurance about the legitimacy of the study or the sincerity of the interviewer. In survey research as in romance, a "no" should not always be accepted at face value. But there will also be others who are adamant in their refusals, and whose wishes should be respected. Under these circumstances, the interviewer should leave politely, with no extended debate or "parting shots." A graceful exit may facilitate a second visit by another staff member. Sometimes, even with a firm refusal, it is possible to lay down the questionnaire and say: "All right, I won't try to interview you, but could you tell me just two things for the record." Two questions carefully chosen in advance may be very helpful in assessing the degree of bias in the results by comparing respondents with refusals. Also, the apparent reasons for the refusal should be noted as soon as possible in the space provided on the questionnaire.

Dealing with "Third Parties" We have already suggested that the presence of outsiders may lead to bias or distortion. This problem is especially serious when the study includes questions related to controversial community norms or sensitive aspects of personal behavior. Several avenues are open to the interviewer for dealing with "third parties."

1 The simplest and most effective approach is often to explain to the outsiders that their presence may bias the results. The interviewer can point out that people often do not express their real feelings when others are listening. Back and Stycos (1959) report that this technique of "role-educating" the outsider was used with considerable success in their study of fertility in Jamaica. Some interviewers in this study used a doctor-patient analogy, others flattered the outsiders by emphasizing their power or influence over the respondent, while one underscored the tendency of others present to answer questions themselves rather than leaving them for the respondent.

2 After arousing the respondent's interest in the study, the interviewer can encourage him to find a place where they can talk alone. This can either mean finding another location for the interview, such as a nearby room, a porch, or the backyard, or having the respondent ask the outsiders to leave.

This approach will be most effective with children and others lower in status than the respondent, but it may succeed with other adults as well. In making such requests, however, one must be sensitive to cultural norms regarding "excessive" privacy, especially in male-female contacts. In rural areas of Asia, Africa, and Latin America the purposes of the study will often best be served by moving to an area which affords some privacy, but which is still somewhat visible.

3 The interviewer can point out that it may save time to conduct the interview in private. If the respondent objects that he will probably need help in answering some of the questions, the interviewer can agree to call the others when necessary. Once the interview begins, the perceived need for help may quickly disappear.

4 When the questionnaire begins with fairly broad items which are not likely to be sensitive to the influence of outsiders, the interviewer might allow these individuals to remain for a few minutes to satisfy their curiosity, and then ask them to leave. This approach may backfire, however, if the outsiders become so interested in the previews that they wish to remain for the full feature. Back and Stycos (1959) suggest several other methods for gaining privacy, such as having the interviewer "freeze out" the outsider through pregnant silence and pointed glances, offering a modest bribe to children, and arranging to have family members go off on errands for the duration of the interview.

Any attempt to deal with the problem of "third parties" will be greatly aided by advance knowledge of the cultural norms and practices found in the interviewing sites. With such knowledge the entire issue can be discussed intelligently during the training sessions, and policies can be set on the techniques judged appropriate for the study at hand. While considerable discretion must always be left to the interviewer, it is important to define the range of acceptable techniques in order to assure comparability from one setting to the next. We would argue, for example, that the use of payments to "third parties" is a particularly dubious policy, especially if there is any possibility that later surveys will be carried out in that area. Payments of any sort usually have the effect of setting a precedent which creates serious problems in future interviews.

Asking the Questions

The interviewer has two major responsibilities in asking questions: developing and maintaining "rapport" with the respondent, and following standard procedures in using the research instrument. Since both are essential, one should not be emphasized to the exclusion of the other. The purposes of the study will not be served if the interviewer changes or omits questions in an effort to improve his relationships with the respondent. By the same token

little is gained if the questions are asked in such a rigid and mechanical fashion that the respondent becomes emotionally detached from the interview. We would offer the following as general guidelines for achieving both rapport and standardization.

1 *Use the questionnaire carefully, but informally.* The interviewer should treat the questionnaire as a tool for data collection, rather than a master controlling all his actions in the interview. In order to achieve this level of informality, he must be thoroughly familiar with the purposes of the study and especially the wording and order of the items. Informality and a relaxed attitude toward the questionnaire and the questioning process need not imply carelessness or arbitrariness in asking the questions.

2 *Know the specific purpose of each question.* Both to satisfy the purposes of the research and to increase his own ease in using the questionnaire, the interviewer should be clear about what is considered an *adequate* response for each item. In questions about occupations, for example, it is important to know in advance how the information will be coded. For certain purposes an answer of "factory worker" may be sufficient, while for others it may be important to know if a man is a machine operator or a janitor in the factory. Instructions about the purposes of the questions and the level of information required are usually considered in the training sessions, but they should be carefully reviewed before the field work begins.

3 *Ask the questions exactly as they are written.* Experiments on question-wording (see Chapter 6) indicate that even minor changes in wording can alter the meaning of a question, thus reducing its comparability from one person to another. The success of the survey depends in large measure on standardized conditions in the interview, especially in the way that questions are asked. For this reason the interviewer should avoid omissions, improvisations, explanations, or abbreviations of the items. Ad hoc interpretations of "what they're looking for" are especially precarious, for they may easily have the effect of suggesting an answer to the respondent. If the person does not understand the question the first time, the interviewer should repeat it just as it is written. Sometimes silence may mean doubt or confusion rather than a misinterpretation of the item. In this case, the interviewer might make a neutral comment, such as: "We're just interested in what people think about this—there are no right or wrong answers." If all else fails it may be necessary to restate the question with slight changes, but this should happen very rarely, and the exact changes should be written in the questionnaire. Sometimes interviewers feel that they must have the freedom to modify the questions in order to appear natural and comfortable during the discussion. We would argue that the same effect can be produced, with fewer risks, by intimate acquaintance with the questionnaire and the occasional use of neutral phrases or comments.

4 *Follow the order indicated in the questionnaire.* In the well-designed survey questionnaire, the order of the questions receives careful attention,

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and is chosen for specific reasons. These reasons may include stimulating the respondent's interest in the study, facilitating transitions from one topic to the next, aiding the respondent's memory of past events, standardizing the conditions for asking opinion questions, experimenting with the impact of varying question placement, and maintaining rapport as the interview moves on. Arbitrary changes in the order of asking the questions may not only reduce the comparability of the interviews, but also introduce serious bias into questions sensitive to sequence. Also, if the interviewer skips around the questionnaire, he may omit important questions or find, to his embarrassment, that he is lost.

5 *Ask every question.* Sometimes, in answering one question, the respondent will make comments which seem to answer a later question as well. Similarly, especially in the case of opinion questions covering more or less the same topic, he may say, "Put me down as 'yes' (or 'no') for all of them." The best policy to follow under these circumstances, even when it seems clear that the respondent has answered the later questions, is to repeat the question. It may help, however, to say: "You may have answered this question earlier, but I want to be sure to put down your own answer. So, to refresh my memory . . ." The reason for this policy is that prior responses often prove to be inaccurate when the later question is asked directly. The SRC manual offers sound counsel on this point:

> Write down the initial answer under the question when it occurs. Then ask the partially answered question when you get to it, but preface it with some remark which will show the respondent that you haven't forgotten what he said earlier and haven't rejected his earlier answer. Such a remark might be: "We're asking people on this survey about each one of these, and I'd just like to make sure how you feel about each one separately . . ." In those few cases where the question has been clearly answered, the interviewer might say, "You've told me something about this, but the next question asks . . . ?"

6 *Do not suggest answers.* It is often tempting to suggest a response which seems to fit the respondent, especially after he greets a lucid restatement of the question with a blank stare. The danger in suggesting answers is that the respondent will accept them, perhaps feeling that the interviewer's answer must be the right one, or that this is the fastest way of ending the interview.

7 *Provide transitions when needed.* A major challenge for the interviewer is to ensure that the questioning process flows smoothly from one item and one section of the questionnaire to the next. In some cases, the questionnaire itself will aid him in this task by providing standard transitional phrases. At other points he should feel free to improvise with neutral comments showing how one section connects with the next, or simply that the interview is shifting to a new topic. He should not, however, attempt to summarize groups of questions when his summary might create a "set" or

affect the respondent's attitudes in other ways. In most cases it is sufficient to say, in effect, "We're through with questions on that topic. Let's move on to the next."

8 *Do not leave any question blank.* Even when every effort has been made to anticipate the situations which will make a question inapplicable or inappropriate, an item may not be relevant for certain respondents. In this case it is best to cross it out and add a note about why it is inappropriate. When items are left blank it is difficult for the coders and study directors to determine if they were omitted by over sight or were judged to be inapplicable. Aside from questions covered by "skips," every item should have either an answer or an explanation of why it does not.

Obtaining an Adequate Response

Often during the course of the interview, the respondent will give answers which are incomplete, unclear, irrelevant, or otherwise inadequate to the purposes of the study. These situations provide the interviewer with one of the most critical tests of his skills—the ability to probe for answers. The term *probing* refers to a variety of techniques used to stimulate discussion and focus the flow of information without suggesting answers. The specific aim of the probe is to obtain information which satisfies the purposes of the question. To carry out this task successfully, the interviewer must be thoroughly familiar with the objectives of each question. Without such knowledge, he will have no yardstick for gauging the adequacy of the responses. Several kinds of neutral probes may be used in the survey interview.

1 *The silent probe.* A well-timed pause is perhaps the simplest and most neutral way of stimulating further discussion by the respondent. Inexperienced interviewers often feel uncomfortable with this technique, fearing that silence will be interpreted as incompetence or that it will embarrass the respondent. The difference between the "pregnant pause" and the "embarrassed silence" usually lies in the attitudes and behavior of the interviewer. The pause is likely to be most helpful when the interviewer waits confidently and expectantly for more information, perhaps encouraging the respondent with a nod of the head or his facial expression.

2 *Overt encouragement.* This form of probing draws on brief assertions of understanding and interest indicating that the interviewer accepts what has been said up to that point and would like to hear more. These include remarks such as "uh huh," "I see," "yes," "hmmm," or "that's interesting," as well as nonverbal expressions such as a nod of the head. As suggested earlier, overt encouragement is often combined effectively with the silent probe.

3 *Elaboration.* This consists of neutral questions or comments used to obtain more complete or accurate responses. When elaboration probes are used they should always be recorded in the interview schedule, preferably in

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abbreviated form. The *Interviewer's Manual* suggests the following helpful phrases, together with "key word" abbreviations.

"How do you mean?" (How mean)
"Could you tell me more about your thinking on that?" (Tell more)
"Will you tell me what you have in mind?" (What in mind)
"I'm not sure I understand what you have in mind." (What in mind)
"Why do you think that is so?" (Why)
"Could you tell me why you feel that way?" (Why)
"Which figure do you think comes closest?" (Which)
"What do you think causes that?" (What causes)
"Do you have any other reasons for feeling the way you do?" (Other)
"Anything else?" (AE or else)
"Repeat question." (RQ)

These examples make it clear that the probe chosen must be adapted to the specific form of inadequacy seen in the answer. The ability to match the probe to the problem increases with experience in interviewing and with knowledge of the specific objectives of each question.

4 *Clarification* Here the interviewer not only asks for more information, but specifies the kind needed. Clarification probes are in order when the responses given appear inconsistent, contradictory, or ambiguous. In these cases, the interviewer might introduce questions such as the following:

"I'm sorry, but I'm not clear about what you meant by that—could you tell me a little more?"
"I'm not sure I understand. Did you say a few minutes ago that (repeat earlier and seemingly inconsistent response)?"
"Could you tell me why you felt that way?"
"About when did that happen?"

Great skill is required of the interviewer in probing to resolve inconsistencies, contradictions, or obviously inaccurate statements. The challenge is to elicit correct information without appearing to be carrying on a cross-examination. The challenge will be particularly great when, as sometimes happens, a respondent will cling tenaciously to seemingly inconsistent statements. In certain cases, especially when rapport will be seriously damaged for other questions, it may be necessary to forgo probing completely, or to return to the inconsistencies at the end of the interview.

5 *Repetition* Sometimes the interviewer can probe by repeating what the respondent has just said as he records this information in the questionnaire. Respondents will often treat such "echo probes" as a request for additional information, and will respond accordingly. This approach can sometimes go awry, however, when the phrase repeated is relatively insignificant, or when a sophisticated respondent sees through the technique. It is

very embarrassing for the interviewer to be greeted with the comment, "Yes, that's what I just said."

Probing is helpful only when it is *neutral*. By their very nature, interview probes are difficult to control and can easily lead to bias or distortion in the information obtained. The greatest danger of all lies in questions which implicitly suggest an answer or direct the respondent's attention to one alternative rather than others. For example:

Q. Are there any magazines that you read regularly?
A. Yes, a few.
Q. What are the names of these magazines?
A. I don't remember exactly right now. Let me think a minute.
Probe: Well, how about *Time* and *Newsweek*. Do you read either of these?

This is an illustration of a leading or directive probe which introduces basic changes in the content of the original question. In the example above, the most appropriate probe might well have been a few moments of silence, followed by a neutral question such as "Can you think of any at all?" The risk of leading probes can often be reduced by requiring the interviewers to record all of their remarks in the questionnaire.

Another aid to the accuracy of survey information, particularly when the study deals with objective questions such as income or fertility, is to encourage the respondent to check relevant and available records. One danger in this procedure, of course, is that the search for records may take so much time or become such a distraction that the interview itself is placed in jeopardy. Nevertheless, as noted in Chapter 6, it is sometimes helpful to ask the respondent to check financial records, birth certificates, receipts, or other records. However, the interviewer should not ask to see these records. With objective questions, other members of the family might also be asked to supply information, particularly when they are better informed on the topic than the respondent. But the hazard arising from outside consultation is that the experts consulted may then be reluctant to depart from the scene. One way to deal with this problem is to structure the questionnaire so that the items likely to require information from others come near the end, and follow those known to be more sensitive to group influences.

Recording the Responses

The success of the open-end interview question depends on a complete and accurate record of what the respondent said and how he said it. It is not enough for the interviewer simply to include enough information to satisfy the coding categories used in the study. He must also try to convey, through

the respondent's own words, a full and nuanced picture of his knowledge, attitudes, feelings, and other personality characteristics. Also, it is usually impossible to know in advance what answers satisfy the minimal requirements of coding. Often, during the coding or later, a researcher will return to the verbatim accounts and attempt to measure other, more subtle qualities, such as the person's verbal fluency, his attitudes toward the survey and the interviewer, or his covert feelings toward the government. In general, the simplest rule for open questions is to *provide a verbatim record of all material relevant to the purposes of the study.* Occasionally the respondent will digress to discuss sports, the weather, or other topics which clearly fall outside the scope of the research. In these cases, it is not necessary to provide a verbatim record, though the interviewer should note that the digression has taken place.

While the goal of providing a complete verbatim record might seem straightforward enough, the task of transcribing responses is complicated by other demands made on the interviewer's attention, such as asking questions, probing, listening, and looking at the respondent. To facilitate the recording process, it is usually advisable to observe three rules.

1 *Record the responses immediately.* The best time to transcribe the respondent's exact words is during the interview itself. As time passes, the interviewer's memory will fade so that he may easily distort what the respondent has said or miss many of his characteristic expressions. The problem, of course, is that it is difficult to take exact notes while simultaneously trying to hold the respondent's attention. Some have attempted to solve this problem by using a tape recorder, but this practice poses special problems which we shall consider shortly. Usually the most practical course is to jot down key words and phrases as the respondent is talking, and then reconstruct the full conversation immediately after the interview. It is also important to begin writing as soon as the respondent begins to talk. In general, one interview should be completed before another is begun.

2 *Abbreviate words and sentences.* The following abbreviations, for example, are commonly used by interviewers at the Survey Research Center

R	Respondent
I'er	Interviewer
I'w	Interviewing
DK	Don't Know
RQ	Repeated Question
Q're	Questionnaire

Sentences can also be abbreviated by omitting articles and prepositions, and by giving priority to key words.

3 *Include all probes.* To have a complete record of the interview, it is important to know not only what the respondent said, but how the interviewer's comments affected the flow of information. The interview, as noted earlier, is an interaction between two or more parties, and this fact should be reflected in the final record. Thus, comments or interruptions made by outsiders should be noted as well. To allow for proper identification and coding of the recorded material, the interviewer's probes, remarks, summaries, and instructions should always be placed in parentheses.

Two additional procedures will often facilitate the mechanics of recording. First, both for purposes of clarity and to permit easy erasures later, the interviewer should record the answers with a black lead pencil rather than a pen. This suggestion is especially important if the interviewer uses shorthand or relies on key words to reconstitute the full response. Answers recorded in ink are difficult to change and also may become illegible if the questionnaire is exposed to moisture. Second, it is always advisable to carry a portable writing surface in the event that a table is not available. The folders issued to interviewers by large survey organizations are designed with this specification in mind.

Using a Tape Recorder On the surface, one simple solution to many of the problems of recording would be to have all interviewers use portable tape recorders. This technique would clearly have the advantage of leaving the interviewer free to concentrate on the questioning process, and would virtually eliminate the problem of selective recall and distortion in recording. Frequently, however, respondents answer differently when they know they are being taped, while secret taping is highly unethical.

The tape recorder is invaluable for certain types and phases of interviewing, but it remains impractical for the typical household survey. It seems most appropriate when the purpose of the study is to explore complex issues in considerable depth with a limited number of respondents. This situation might well arise in the initial stages of a large survey. Here the emphasis is on refining the problem and isolating the precise dimensions for further study. Tape recorded interviews with a few dozen respondents may serve this purpose admirably well.

When the survey involves relatively brief interviews with a large number of respondents, on the other hand, there are several disadvantages to tape recording the responses. First, this procedure requires that much more time—perhaps double or triple that seen in the usual interview—be devoted to transcribing the responses. When the tape recorder is not used, the interviewer can write while he is talking with the respondent, and then spend a brief amount of time later in editing this material. If the interview is re-

corded, he must replay the entire tape after he leaves and transcribe the material onto the questionnaire. Second, respondents may feel uncomfortable when they know that the conversation is being recorded. The empirical evidence regarding the effects of tape recording on the accuracy of survey data is unfortunately very limited. Most of the existing research (Bucher, Fritz, and Quarantelli, 1956; Belson, 1967) has turned up no measurable differences in the quality of information obtained in recorded and nonrecorded interviews, but these studies have been neither comprehensive nor tightly controlled. However, Belson speculates, on the basis of his research, that

> using the tape recorder in the interview introduces a degree of formality or officialness such that the less-educated respondents are bluffed into making a greater effort to get their statements right, whereas members of the middle and upper social sectors become characteristically more wary about what they go on record as saying [1967, p. 257].

If the tape recorder is used, the interviewer should be thoroughly familiar with its operation, and should keep it as inconspicuous as possible during the conversation. Respondents are easily distracted by microphones and revolving spools.

Concluding the Interview

Before leaving the household, the interviewer should thank the respondent and any others present for their time and cooperation. His departure should never be hasty or brusque, but neither should he prolong the conversation unnecessarily. In most cases, the best approach is to ask the respondent if he has any questions about the study, and if so, answer them. Also, several large research centers find it helpful when concluding the interview to hand the respondent a "thank you" card signed by the interviewer. A typical card might read:

Name of Center

We wish to thank you for your cooperation and your contribution to the success of the _____ study.
Your interviewer was: _____ (signed)
If you have any further questions or would like additional information we will be happy to answer your inquiries.
Requests should be addressed to:

Name and address of center
Telephone number

Immediately after leaving, the interviewer should take a few minutes to complete a "thumbnail sketch" of the respondent and the interviewing situation. This might include information about the respondent's attitudes toward the interviewer and the study, unusual aspects of the interview, such as "third parties," apparent inconsistencies, interruptions, tense situations, or language problems, the interviewer's reactions to the respondent, and any other information which would be useful in coding the data or interpreting the individual's responses. While these descriptions are usually not coded explicitly, they are almost always read by the coders and often by the study directors as a means of understanding and evaluating the interview.

In sum, the survey interview must be set in the context of the entire study, including the subject matter under investigation, the social structure and culture of the society, the immediate interviewing situation, the demands posed by the questions, and the ultimate requirements for data. While both social-psychological theory and cumulative experience with survey research suggest a number of general guidelines for interviewing, these can never be applied in a mechanical fashion. Proper planning for interviewing requires both a clear sense of study objectives and an almost clinical understanding of the conditions under which the data will be gathered. If this understanding is limited at the beginning, it would be well worth the investment to conduct pretests aimed as much at evaluating the conditions of field work as the questionnaire. Finally, we must admit that, while there has been a great deal of useful experience with survey interviews, to date there has been relatively little controlled observation of the interview process. Other studies such as that conducted by Cannell et al. (1968) are badly needed, and would provide a more sound basis for practical advice about interviewing.

FURTHER READINGS

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materials in a folder rather than a briefcase. The larger survey research centers in the United States and Canada typically provide each interviewer with a plastic folder bearing the official seal of the organization. When he arrives at the sample household, he should knock or ring briefly, and allow ample time for the occupants to answer. The main challenge whenever one appears is to present enough information to obtain an invitation into the house, where the study can be explained more conveniently. The SRC *Interviewer's Manual* offers several suggestions on this point.

> *Doorstep introductions should be brief.* . . . The doorstep is not a very convenient place to carry on a conversation and to establish a friendly relationship. For this reason, the doorstep introduction usually should be brief, just so latent to get you inside the house. Once inside, you are in a better position to convince the person of the value of his cooperation. It is easier for the respondent to say "no, thank you" on the doorstep than it is in his living room.
>
> At the doorstep the interviewer should not ask questions to gain permission for the interview but should suggest the course of action which she desires. For instance, instead of asking, "May I come in?"—to which a respondent could easily say "No"—say, "I would like to come in and talk with you about this." Other examples of questions to avoid are, "Are you busy now?" ("Yes, I am.") and "Could I take this interview now?" ("No, not now.") and "Should I come back?" ("Yes, come back later.") Questions which permit negative responses can lead the respondent into refusing to be interviewed.
>
> The interviewer should assume the respondent is *not* too busy, and should approach his meeting with the respondent as though the interview were going to take place right then, at the time of contact. By all means, make arrangements to return at a more convenient time *if the respondent wants this*, but accept this situation at the respondent's instigation. Suggest it yourself *only* as a last resort when you want to leave the door open for another try at a time when the respondent might be more willing to be interviewed.
>
> The first few contacts with a respondent should be made by a personal visit, and not by telephone. This is simply because it is so much easier for a respondent to say "no" and hang up the phone than to say "no" when you are standing in front of him. The exceptions to this are telephone surveys and addresses where numerous attempts to reach a respondent have been unsuccessful.

As soon as possible after meeting the respondent, the interviewer should introduce himself by name, say where he is from, and identify his research organization. It is helpful to support these statements by showing an official identification card. By mentioning his name and showing his credentials, the interviewer helps to reduce suspicions about the study.

Explaining the Study By this time the respondent will be curious about the purpose of the research and about why he was chosen. The interviewer should now provide a brief and clear explanation which would handle these questions honestly, but without raising new objections to participation. The statement on the purposes of the study should be fairly general, including enough information to stimulate interest and legitimate further questioning, but not so much as to overwhelm the respondent. New interviewers sometimes feel obligated to answer every possible objection to participation, and in the process raise more difficulties than they solve. It is usually most effective to begin the questioning process very soon after arriving, and to handle questions and objections only as they are raised by the respondent. It is also vital, however, to make the opening statement sufficiently broad to cover the specific areas of questions to be covered later. The respondent may rightly become suspicious if he is told, "This is a study of people's attitudes," and then is asked, without further explanation, to provide detailed information on income and birth control practices.

Many respondents will wish to know why they were included in the study and what will be done with the information gathered. The *Interviewer's Manual* suggests this approach to the first question:

> It is important that the respondent understand that he is part of a "cross section" survey, and that he was chosen quite impersonally only because he happens to be a particular person at a particular address. You may say something like this: "You see, in trying to find out what people in the country think, we don't talk with everyone, but we try to talk to men and women of different ages in all walks of life. We start by selecting certain counties or cities from all over the country. (Interviewer can show map from back of thank you card.) In each of these areas the Center selects smaller areas, such as blocks, and finally a selection of specific addresses is made. Then when the interviews from all these addresses are combined, we have a cross section of the people."

The interviewer should emphasize that the person's answers are confidential; neither he nor his address will be identified when the results are published. In most surveys, it is inaccurate to say that the answers are anonymous, since the household is identified by a specific address. Moreover, when the study is carried out in a single organization or community, the respondent may ask, and has a right to be told, if the results will be presented in such a way that he can be indirectly identified as a member of a group, such as a work group in a factory.

Very often it will help in explaining the study to show a newspaper clipping about this particular survey or previous studies carried out by the

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

DEVELOPING COUNTRY PERSPECTIVE

DINNER ADDRESS BY K.C. SIVARAMAKRISHNAN

Tuesday, November 13, 1979

6:30-9:00 p.m. Code 22.S

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ENVIRONMENTAL IMPACT

ECOLOGICAL STUDIES AND IMPACT ASSESSMENT: TOOLS FOR SETTLEMENT PLANNING AND PROJECT DESIGN

Wednesday, November 14, 1979

9:00-11:00 a.m. Code 23.NHP

Presented by:

Jeffory G. Boyer

SHELTER TRAINING WORKSHOP

November 5-30, 1979

INTRODUCTION: THE ENVIRONMENTAL CRISIS. . . . 23.NHP -- 1

I. THE CASE FOR ENVIRONMENTAL CONSIDERATIONS IN DEVELOPMENT PROGRAMS. . . . . 23.NHP -- 2

II. INTEGRATION OF ECOLOGICAL CONSIDERATIONS INTO THE PLANNING AND DESIGN OF HUMAN SETTLEMENTS AND SHELTER PROGRAMS . . . . . 23.NHP -- 5

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ECOLOGICAL STUDIES AND IMPACT ASSESSMENT: TOOLS FOR SETTLEMENT PLANNING AND PROJECT DESIGN

23.NHP

INTRODUCTION: THE ENVIRONMENTAL CRISIS

The concepts of sustained economic growth and rising expectations in terms of improved human living standards have gained global acceptance. In an effort to satisfy the world's accelerated population demands, we are being forced to intervene more and more into the natural ecological systems of our physical environment and to alter them to better meet our basic needs and cultural lifestyles.

In the course of this evolutionary process of human and material advancement, man's interventions within existing natural ecosystems have brought about varying degrees of modifications. However, the ecological limitations of these natural systems have not always been taken into account in the planning and implementation of many economic development projects. The consequences of our environmental abuses have resulted in: (1) depletion of natural resources essential for food production, power generation, water supply and foreign exchange; (2) pollution of critical life support elements mainly air and water; and (3) deterioration in the overall quality of human life, especially in urban areas of high population concentration.

Until recently, the issue of environmental quality and the use of the world's natural resources has been the principal concern of a relatively small number of people inside and outside the scientific community. Governments of both developed and developing countries have been busy concentrating their energies and resources on resolving their most immediate political, social and economical problems. In response to the practical necessities of opting to focus mainly on the short-run situation at the expense of the long-term implications of our development policies and actions, many countries have implicitly or explicitly responded to the economic development and environment issue on the basis of the following presumptions:

- Biological resources are renewable and reduction in their quantities is of no immediate concern;
- Assimilative capacities of ecological systems are almost limitless and permanent impairment of their productive capacities has not been attained by current pollution loadings; and
- If environmental deterioration becomes a serious issue, the use of applied science and technology will ameliorate any potential significant environmental problems.

Today, as we approach the decade of the 1980s, declining quality of human life has emerged as a public issue of significant worldwide concern.

Two historic developments are converging to create an unprecedented crisis in human settlements: (1) accelerated population growth; and (2) massive population migration from rural to urban areas. Despite the hopes of the 1970s to alleviate and even eliminate human want through the advances of modern science and technology, the majority of the world's inhabitants are no better off than before. In absolute numbers, there are more people ill-housed, malnourished and illiterate today than in the past decade. While these problems are not exclusively confined to any one particular geographic region of the world, the plight of deprived peoples is dramatically increasing in the world's major urban centers. Economic stagnation in part attributed to the accelerated depletion and/or deterioration of the world's natural resources base is causing massive rural-to-urban migrations. The existence of life itself for these peoples threatened as they struggle to survive in wretchedly overcrowded and polluted environs of our cities. The morbidity and mortality statistics of these human settlements vividly attest that the environmental crisis is real and urgently requires attention.

I. THE CASE FOR ENVIRONMENTAL CONSIDERATIONS IN DEVELOPMENT PROGRAMS.

A. Dual Dimension of the Environmental Problem.

The environmental problems of both developed and developing countries can be grouped into two broad categories: (1) problems of human poverty due to physical deterioration of the natural environment; and (2) problems of adverse spin-off effects from the economic development process designed to solve the problems of human poverty.

1. Problems of Human Poverty

International development assistance programs have always been keenly aware and committed to address a variety of major human environment problems - the principal emphasis being given to poverty, disease, malnutrition and illiteracy. Efforts to raise the standard of living of the world's poor have been predicated on the realization that improvement of basic living and working

conditions is intimately tied to the physical state of the natural environment. The state of human impoverishment itself is often a prime causal factor of the deterioration of the natural environment. For example, lower income groups are frequently exposed to more debilitating diseases and shorter life expectancies due to their geographic proximity, if not direct physical exposure with raw sewage, discarded solid waste, contaminated drinking water, and spoiled or improperly prepared foods. Their prolonged exposure to these disease reservoirs and associated disease vectors pose significant hazards to their health and general well-being.

To achieve positive results in correcting this type of environmental problem requires remedial measures to restore the life-supporting capabilities that have suffered deterioration over long periods of time. Depending on the severity of the ecological degradation, renewal of the productive functions of deteriorated water, land and air resources can often be difficult and sometimes impossible to correct if the environmental damage is irreversible.

2. Problems of Economic Development Processes

The second major category of environmental problems involves the adverse effects of man-induced changes to natural and human environments. Only recently have the problems of environmental impacts resulting from the spin-off effects of economic development processes themselves gained global attention. In attempting to improve the standard of living of the world's poor, developing countries with assistance from international funding agencies have intensified their development activities to meet expanding population needs.

Construction of large scale human settlements, roads, dams, water supply and sewerage systems, etc. have been financed with the objective of increasing benefits to different user groups. However, numerous case examples can be readily cited in which unanticipated significant adverse impairments of both natural and human ecological systems have occured because environmental issues have been neglected or given only marginal attention in project analysis.

The omission of the environmental dimension in the evaluation of development projects raises a spectrum of fundamental questions regarding the validity of analyses dealing with technical soundness, comparative costs and benefits and trade-off relationships.

More importantly, the lack of environmental sensitivity and awareness of critical ecological concerns in advance of project implementation deprives decision-makers of the knowledge of what biological processes and natural resources may be disrupted or what cultural values sacrificed in conjuntion with a particular set of proposed development actions. In reaching decisions, it should be recognized that economic development does result in changes of short-term and long-term duration to both natural and human ecological systems. Therefore, care needs to be exercised to ensure that the effects of development do not lead to the irreversible deterioration of the resources that present and future generations are dependent upon as well as a reasonable quality of life to which they are entitled.

This paper is primarily concerned with how potentially significant environmental problems can be avoided or minimized in advance of their occurrence as well as enhancing the benefits of economic development. In order to anticipate these adverse spin-off impacts of development projects and to make the hard choices that must be weighed in the full knowledge of their implications, requires that our present environmental concern be translated into concrete action at the project planning and design stages.

B.

The challenge to both developed and developing nations in their mutual concern of raising the standard of living for mankind is to begin to place consideration of environmental quality on an equal footing, with the commitment to exploit and utilize the world's natural resources. Clearly, the interrelationship between development and environmental quality does not involve a question of choice between economic growth or environmental quality. Upon reflection, these two considerations are inter-dependent and not mutually exclusive. To put the environment/development issue in proper perspective does not involve a question of whether to have one and not the other, but how do we attain both. The problem is not how to choose between environmental protection and achievement of development goals, but how to direct development so as to ensure maximum human benefits from the environment for both present and future generations.

In retrospect, the developing countries would be well advised to learn from both the mistakes and successes which the United States and other nations have made in the course of their economic development. It is

hoped that in the pursuit of your national development goals, you will profit from the experiences of others and avoid repeating the same mistakes. It is clearly evident now, that the United States had failed to recognize early on the importance of protecting and preserving the environment.

In applying hindsight about developmental experiences in the United States, it is evident that prevention of environmental deterioration is infinetely preferable to remedial or curative measures. Not only is it more effective, but also less expensive. We have learned from our painful experiences of the past that a small investment in environmental protection in the conceptual planning and design stages of program/project development can be worth many times what would later have to be spent in repairing the damage from neglected critical environmental considerations.

II. INTEGRATION OF ECOLOGICAL CONSIDERATIONS INTO THE PLANNING AND DESIGN OF HUMAN SETTLEMENTS AND SHELTER PROGRAMS.

A. Ecological Principles of Development

Recognizing that rapid economic growth and increased exploitation of natural resources are beginning to show signs of causing ecological stress on our natural life support systems, it is imperative that sound environmental management principles and practices be adopted and judiciously applied in project design and implementation. The adoption of a new ethic of ecological stewardships will pay dividends in terms of development projects of lasting quality, measurable improvements in human well-being and reversal of current trends of deteriorating natural biological life support systems.

One of the first prerequisites to ensure that a particular type of economic development program is planned and carries out in an environmentally sound manner is to evaluate its compatibility with several basic and widely accepted ecological principles. The principles listed below can be helpful in exploring development alternatives and in reaching reasonable compromises whenever political, social, economic and environmental interests are in conflict:

- Present utilization of natural resources should endeavor to maintain a range of resource use options available to future generations. Continued maintenance of a diversity

of resource opportunities is critical to long-term economic productivity and stability. Development of resource should be planned for maximum sustainable use and conservation of renewable natural resources;

- Natural and human ecological systems are dynamic in character and consist of intricate linkages to one another so that developmental modifications to any particular subsystem component may set in motion disturbances elsewhere in either or both natural and human ecological systems. The spatial extent of these impacts may be far removed from the point of initial disturbance, and

- Natural biological systems have upper limits of resiliency and if these thresholds are exceeded beyond a "point of no return", the damage may be irreversible in terms of a meaningful human time-scale.

B. Integrated Ecological Studies in Support of Human Settlements and Shelter Programs.

Human settlements, rarely, if ever function as independent units but are influenced by, and affect, a wide geographic area larger than their particular physical boundaries. While it is important to formulate and evaluate feasibility of individual shelter projects on the basis of pertainent site-specific conditions, it is equally critical to assess the significance of a host of macro-scale biological and non-biological variables which affect human settlement patterns, development processes, shelter forms and characteristics, and overall quality of human life.

An ecological approach in human settlement planning suggests a multi-disciplinary effort in carrying out a series of integrated studies which consist of two closely related but distinct dimension (MAB, June 1975):

- The study of systems of settlements or particular settlements and their components as ecological systems with particular attention to input-output studies or budgets of material and energy flow combined with the analysis of interrelationships between these processes of the settlement system and human well-being; and

- The study of the interaction between the human settlement or settlement pattern, and the natural ecosystem of which it is a part, with particular attention to the short and long term effects of each on the other, the capacity of the natural system to support human activity and the need to plan for maximum sustainable use and conservation of renewable natural resources.

Throughout the 1970s much attention has been focused on studying examples of housing successes and failures, the use of appropriate building materials and technologies, delivery systems and institutional structures, etc. Much has been learned from the expenditure of time and resources in these endeavors, however, I believe it is now imperative that we step back from our "brush fires" and ask ourselves some basic questions: (1) what is it that you are attempting to accomplish? (2) What direction are you heading? and (3) what extent does the approach and specific programs relate to overall national economic development policies and implementation strategies? In the coming 1980s a decade of scarcity, high inflation, high unemployment and possible social and political instability two central issues emerge:

i. The need for national human settlements planning and its integration into national and regional economic development strategies; and

ii. Our planning forthe establishment of new or improved human settlements must be comprehensive in its scope and its approach must be humanistic and not emphasize simply a "brick and mortar" mentality.

Shelter projects should be judged as "good" only to the extent they demonstrate a design for living in recognition of the unique lifestyles of selected groups to be benefited. In order to achieve congruence between the built environments of sites and service upgrading and new housing construction type programs requires increased attention to the specialized needs of the individual/family unit and their connections to the neighborhood and community, in terms of work, home and leisure activities as well as associated cultural values and traditions.

C. Scoping and Recommended Contents of Ecological Studies

1. The Concept of Scoping

So as not to lose sight of the principle purpose of supportive ecological investigations in the planning, design and implementation of shelter programs, it is important that these efforts begin at the earliest possible stage of the programming cycle and focus on the identification of development constraints and opportunities, significant issues of environmental concern, and probable impacts (negative and positive) of proposed programmatic and/or project-specific shelter activities. Consideration of these types of practical operational needs will better insure the integration of ecological studies into decision-making processes as well as to serve as an effective management tool to minimize costly mistakes and environmental risks. In carrying out ecological investigations, the concept of scoping is recommended to be implemented. This approach involves a process of narrowing the scope of inquiry and subsequent detailed analyses to the significant environmental issues relating to the proposed action. The scoping process serves to "fast-track" the identification of critical environmental issues, short-or long-term implications of these issues on human settlement-environmental support system relationships, and the means by which these potential problem areas may be effectively handled both in a programmatic and project-specific context. To accomplish these objectives two basic levels of ecological analyses are suggested macro-scale (regional ecosystem analysis) and micro-scale (site-specific project impact analysis).

2. Broad Regional Ecological Analyses

The first level of analysis deals with the dynamic interrelationship of settlements to their environmental support systems. This type of study involves the identification and assessment of macro-scale regional linkages of the natural environmental setting and the form and functions of existing human settlements. The primary objectives of this broad regional-based analysis are: (1) to determine the quality and quantity of critically needed natural resources which represent the life support systems of human settlements, i.e., water, air, food, fuel, raw materials, etc.; (2) to assess the capacity of local receptor environments to store or recycle the waste loadings of present and future projected levels

of population gowth without jeopardizing continued productivity and stability of these natural ecosystems; and (3) to evaluate the natural response of individual human settlements and their particular shelter structures to the dominant physical characteristics of the ecosystem in which it is located.

The conceptual framework of a comprehensive system of regional modeling to assess the performance between human and physical environmental systems is reflected in Figure 1. Figure 2 illustrates the major steps of the methodology to carry out this type of ecological analysis. Several practical points should be remembered in applying the model to a particular situation. First, the appropriate geographic boundaries of each natural life support component must be delineated. Critical components to consider include water, air, food, energy sources and raw materials for production. It is important to remember that the delineation of the physical boundaries for each major life support component will vary widely and may be altered over time due to changes in lifestyles, technology and the availability of supply systems. (Environmental Comment, 1977). Having completed the physical mapping exercise task, the data inventory can be initiated. Suggested components of the environment that should be considered in establishing the environmental quality profiles are listed in Figure 3.

Second, an analysis of these environmental quality indicators can provide not only, an integrated assessment of existing conditions, but also, trends in regional environmental quality. Values may be assigned to these indicators to provide a relative quantitative measure of environmental quality. Such an exercise may aid in establishing a prioritization of the problems and where both remedial and preventative actions should be first assigned.

Subsequent steps 3 through 7 are designed to implement an ecologically based planning process involving the reevaluation and/or setting of development goals, objectives, alternative strategies, impact assessment and future growth decisions. In the implementation of these steps it is important to remember that the carrying capacity of critical life support systems are not fixed but subject to changes in lifestyles, technological advances in pollution controls, and the public's willingness to pay for environmental protection programs. Therefore, this type of ecological analysis should be used as a flexible tool or yardstick for planners to assess what resources are likely to be in short supply to meet existing and projected growth and development demands.

3. Programmatic and Project-Specific Impact Analyses

Following completion of the regional ecological analysis in which a macro-scale picture emerges of the relative resiliency and upper limits of the carrying capacity of essential natural life support systems to sustain both existing and future population demands, a second level of environmental analysis should be undertaken. This type of study is designed to accomplish two objectives:(1) to measure the regional ecosystem's ability to tolerate the incremental pollutional effects of new growth and development resulting from project-specific actions at a particular location; and (2) the degree of compatibility between the proposed built environment of the shelter project and the natural constraints of the site and the socio-economic and cultural variables of the beneficiary group(s). The integration of these environmental concerns within comprehensive development impact model is shown in Figure 4.

To facilitate use of this impact assessment model, it is recommended that a systematic identification procedure or matrix be used in correlating specific environment concerns with the separate components of the proposed shelter project (See Table 1). Utilization of this impact assessment technique focuses on soliciting answers to five (5) basic questions in the following sequential order:

a. What critical environmental concerns are most likely to be impacted or changed given the nature of the proposed components of the HG program/project and its geographic location?

b. How will each of the proposed components of the program/project potentially affect existing natural and built environmental conditions?

c. By whom are the anticipated environmental effects likely to be felt?

d. When and how much of an environmental change is anticipated?

e. To what extent are any identified significant adverse impacts likely to be eliminated or reduced in terms of their severity, given the host country's level of environmental awareness, priorities and technical capabilities?

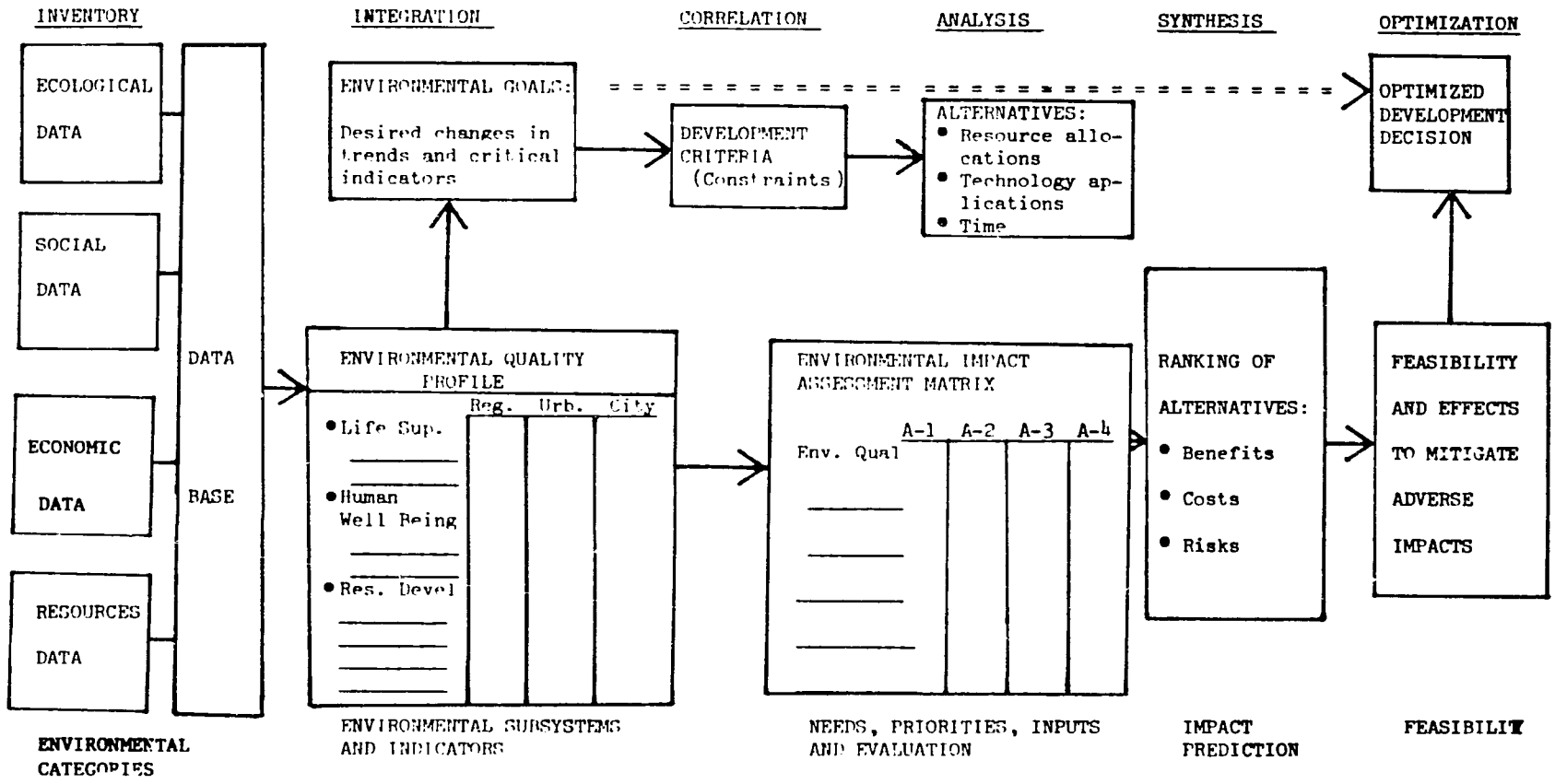

Figure 1: CONCEPTUAL MODEL FOR REGIONAL ECOLOGICAL ANALYSIS

Source: Stover, 1976

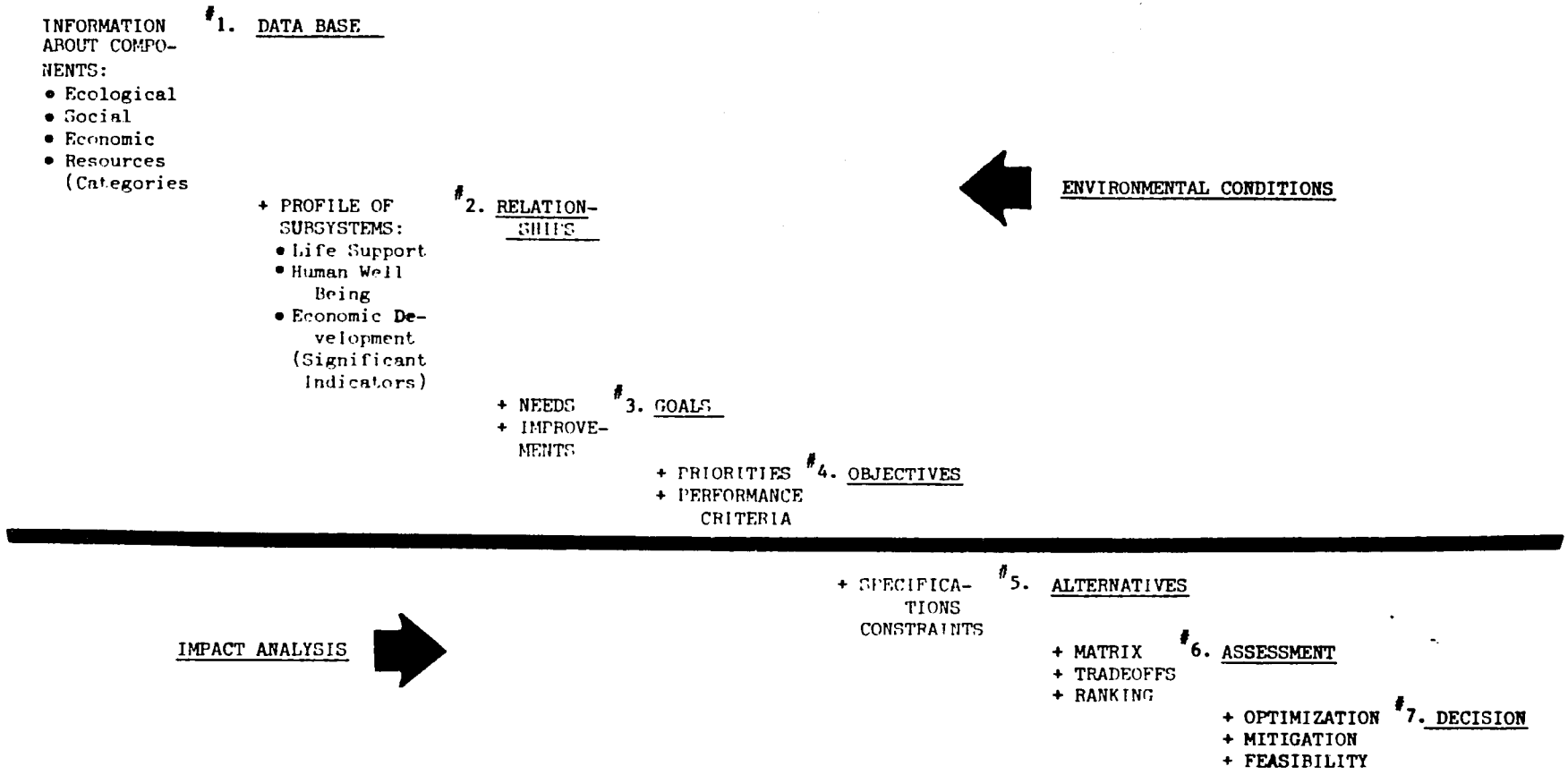

Figure 2: ENVIRONMENTAL DECISION PROCESS

Source: Stover, 1976

PHYSICAL

- **Geology**
  - Unique Features
  - Resource Value
  - Slope Stability/Rockfall
  - Foundation Stability
  - Depth to Impermeable Layers
  - Subsidence
  - Weathering/Chemical Release
  - Tectonic Activity/Vulcanism
- **Climate and Air**
  - Macro-climate Hazards
  - Forest and Range Fires
  - Heat Balance
  - Wind Alteration
  - Humidity and Precipitation
  - Generation and Suspension of Contaminants
  - Shadow Effects
- **Soils**
  - Slope Stability
  - Foundation Support
  - Shrink-Swell
  - Frost Susceptibility
  - Liquefaction
  - Erodibility
  - Permeability
- **Biota**
  - Plant and Animal Species List
  - Vegetative Community Types
  - Diversity
  - Productivity
  - Nutrient Cycling
- **Energy**
  - Energy Requirements
  - Conservation Measures
  - Environmental Significance
- **Special Features**
  - Sanitary Landfills
  - Wetlands
  - Coastal Zones/Shorelines
- **Water**
  - Hydrologic Balance
  - Aquifer Yield
  - Groundwater Recharge
  - Groundwater Flow Direction
  - Depth to Water Table
  - Drainage/Channel Form
  - Sedimentation
  - Impoundment Leakage and Slope Failure
  - Flooding
  - Water Quality

SOCIAL

- **Services**
  - Educational Facilities
  - Employment
  - Commercial Facilities
  - Health Care/Social Services
  - Liquid Waste Disposal
  - Solid Waste Disposal
  - Water Supply
  - Stormwater Drainage
  - Police
  - Fire
  - Recreation
  - Transportation
  - Cultural Facilities
- **Psychological Well-Being**
  - Physical Threat
  - Crowding
  - Nuisance
- **Imageability**
  - Visual Comfort
  - Formal Coherence
  - Apparent Access
- **Safety**
  - Structures
  - Materials
  - Site Hazards
  - Circulation Conflicts
  - Road Safety and Design
- **Physiological Well-Being**
  - Noise
  - Vibration
  - Odor
  - Light
  - Temperature
  - Disease
- **Sense of Community**
  - Structural Organization
  - Homogeneity and Diversity
  - Physical Stock and Facilities
- **Historic Value**
  - Historic Structures
  - Historic Sites and Districts

Figure 3: PRINCIPAL COMPONENTS OF THE ENVIRONMENT

Source: Lemer, 1974

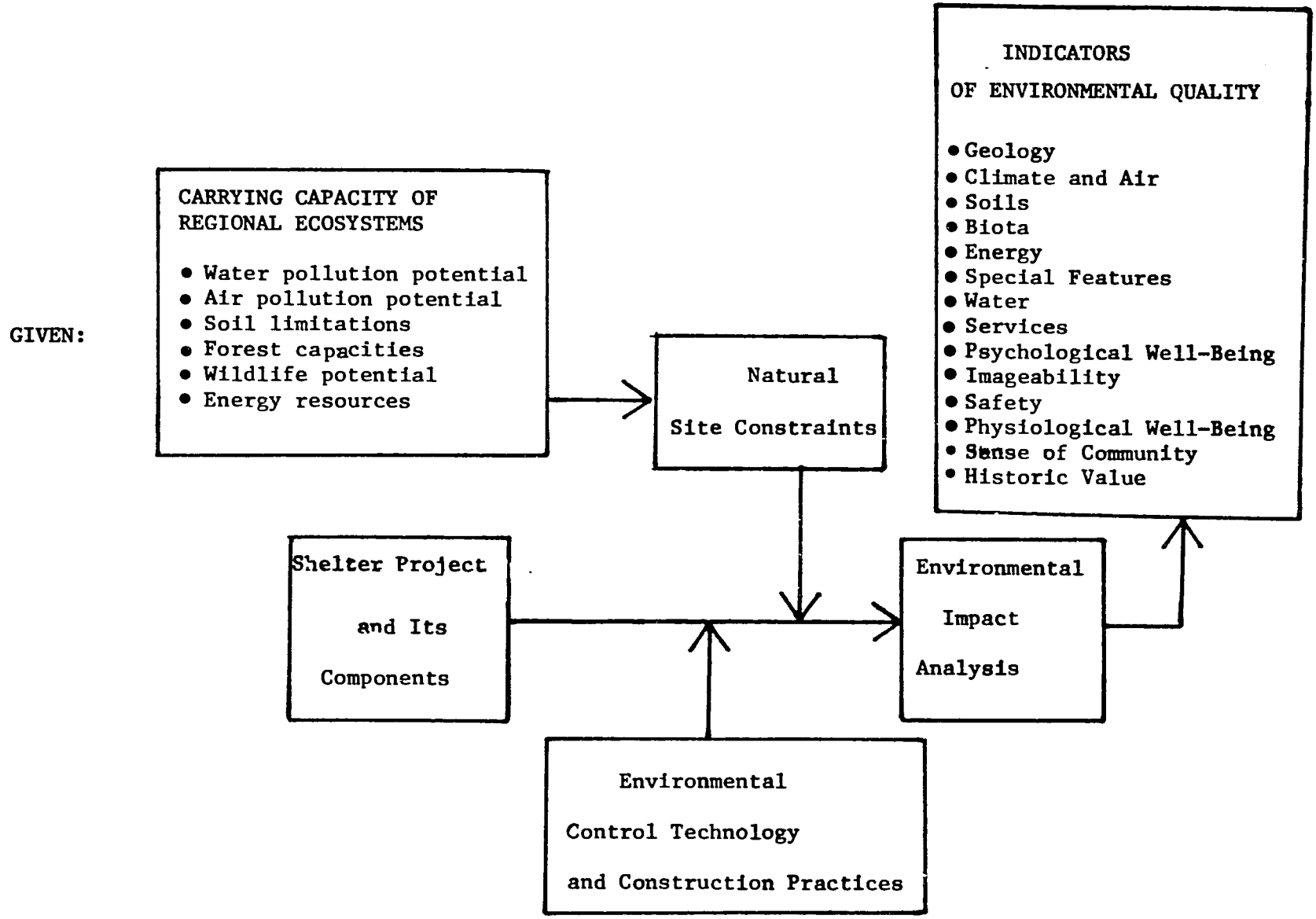

Figure 4: COMPREHENSIVE DEVELOPMENT IMPACT MODEL

TABLE I

CHECKLIST FOR

ENVIRONMENTAL IMPACT IDENTIFICATION AND EVALUATION

COLUMN 1 LIST OF SELECTED CRITICAL ENVIRONMENTAL CONCERNS	COLUMN 2 LEVEL OF PROJECT CONCERN*	COLUMN 3 PROGRAM/PROJECT COMPONENTS LIKELY TO CAUSE CHANGES	COLUMN 4 ENVIRONMENTAL NATURE OF PROBABLE IMPACTS--NEGATIVE (-) POSITIVE (+)
PROGRAM/PROJECT IMPACTS ON THE ENVIRONMENT NATURAL ENVIRONMENT 1. EXISTING WATER RESOURCES: A) SURFACE (RIVERS, LAKES, RESERVOIRS)			
B) UNDERGROUND (AQUIFERS)			
C) ESTUARY			
D) OCEAN			
2. ENVIRONMENTALLY SENSITIVE AREAS: A) UNIQUE OR UNSTABLE GEOLOGIC FORMATIONS			
B) WETLANDS, MARSHES, FLOODPLAIN, AND ESTUARIES			

*COLUMN 2 SYMBOLS: NA -- THIS AREA OF CONCERN IS NOT APPLICABLE TO THE COUNTRY, REGION OR THE PROPOSED PROJECT
U -- THIS AREA OF CONCERN IS UNLIKELY TO BE OF IMPORTANCE
P -- THIS AREA OF CONCERN IS POTENTIALLY OF IMPORTANCE
C -- THIS AREA OF CONCERN IS CONSIDERED CRITICAL

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TABLE 1

CHECKLIST FOR
ENVIRONMENTAL IMPACT IDENTIFICATION AND EVALUATION

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4
LIST OF SELECTED CRITICAL ENVIRONMENTAL CONCERNS	LEVEL OF PROJECT CONCERN*	PROGRAM/PROJECT COMPONENTS LIKELY TO CAUSE CHANGES	ENVIRONMENTAL NATURE OF PROBABLE IMPACTS--NEGATIVE (-) POSITIVE (+)
PROGRAM/PROJECT IMPACTS ON THE ENVIRONMENT NATURAL ENVIRONMENT 1. EXISTING WATER RESOURCES: A) SURFACE (RIVERS, LAKES, RESERVOIRS)			
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C) ESTUARY			
D) OCEAN			
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c) Aquifer Recharge Areas			
d) Rare or Endangered Plant and Animal Species and Their Habitats			
e) Historical, Archaeological, and Cultural Resources			
3. Influence on Existing And/or Future Land Use Activities and Development Patterns Which May Affect:			
a) Wildlife Refuges			
b) Prime Agricultural Lands			

*Column 2 Symbols: NA -- This area of concern is not applicable to the country, region or the proposed project
U -- This area of concern is unlikely to be of importance
P -- This area of concern is potentially of importance
C -- This area of concern is considered critical

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c) VALUABLE NATURAL RESOURCES--FORESTS, WETLANDS, MINERALS, ETC.			
D) OPEN SPACE/RECREATION LANDS			
E) ECOLOGICAL BALANCE OF THE AREA/REGION			
F) STABILITY AND PRESERVATION OF HUMAN SETTLEMENT AREAS			

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4. ECOLOGICAL CONSEQUENCE FROM INTRODUCING NEW OR DIFFERENT TECHNOLOGICAL SYSTEMS ASSOCIATED WITH COMMUNITY INFRASTRUCTURE & SERVICES:			
A) WATER CONSUMPTION VERSUS SUPPLY LIMITATIONS			
B) ENERGY REQUIREMENTS			
C) AMBIENT AIR QUALITY			
D) WATER QUALITY			
E) CHANGE IN AGRICULTURAL PRACTICES AND USE OF HUMAN WASTE FOR FERTILIZER			

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HUMAN ENVIRONMENT			
1. TRADITIONAL CUSTOMS & SOCIO-CULTURAL CONDITIONS:			
A) COMMUNITY CHARACTER & COHESION			
B) SOCIAL ORGANIZATION			
C) INSTITUTIONAL STRUCTURES			
D) LIFE STYLES & CULTURAL TRADITIONS			
E) FAMILY PATTERNS & VALUES			
F) DEMOGRAPHIC OR SOCIAL PROFILE			

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G) LEVEL OF PERSONAL SAFETY & CONVENIENCE			
2. ESTABLISHED HOUSING CONCEPTS AND PRACTICES:			
A) BUILDING MATERIALS			
B) CONSTRUCTION TECHNIQUES			
C) HOUSING FORM AND STYLES			
D) INTERIOR DESIGN OR STRUCTURE			
E) SPATIAL RELATIONSHIPS OF STRUCTURE TO OTHER SHELTER COMPONENTS (COURTYARDS, COOKING AREA, BATH, ETC.)			

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F) POPULATION DENSITY			
G) HOUSING LOCATION			
3. EFFECT ON PUBLIC HEALTH AND GENERAL WELL-BEING:			
A) COMMUNICABLE DISEASE CONTROL AND ENVIRONMENTAL HEALTH CONDITIONS			
B) DISPLACEMENT AND RELOCATION OF POPULATION			

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c) EMPLOYMENT/INCOME GENERATION			
D) LAND TENURE AND/OR STABILITY OF HUMAN SETTLEMENT AREAS			
E) INCOME EXPENDITURE PATTERN			

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LOCATIONAL FACTORS POTENTIALLY IMPACTING PROGRAM/PROJECT			
1. NATURAL HAZARDS: A) SEISMIC DISTURBANCES			
B) FLOODING			
C) DROUGHTS			
D) TORNADOES, HURRICANES, OR SIRROCCOS			
E) LANDSLIDES, ROCK SLIDES, OR UNSTABLE SLOPE CONDITIONS			
F) FIRES			
G) SOIL STABILITY--SHIFTING SANDS, EXPANDING CLAY, EROSION, ETC.			

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2. ENVIRONMENTAL HEALTH PROBLEMS: A) WATER QUALITY			
B) CLIMATE AND AMBIENT AIR QUALITY			
C) EXPOSURE TO COMMUNICABLE DISEASES			
D) MAN-MADE NUISANCE--NOISE, ODORS, TOXIC MATERIALS, ETC.			
3. AVAILABILITY AND CAPACITY OF BASIC COMMUNITY INFRASTRUCTURE AND SERVICES: A) TRANSPORTATION--ACCESSIBILITY TO JOBS, SERVICES, ETC.			
B) WATER SUPPLY AND DISTRIBUTION			
C) SEWAGE COLLECTION, TREATMENT AND DISPOSAL			
D) HEALTH CARE			

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E) SOLID WASTE COLLECTION AND DISPOSAL			
4. URBAN/REGIONAL GROWTH AND LAND USE CONSIDERATIONS: A) STRAINS ON THE CAPACITY OF EXISTING NATURAL SYSTEMS (FOOD PRODUCTION, WATER SUPPLY, ETC.) OR MAN-MADE SYSTEMS (PUBLIC TRANSPORT, ELECTRICAL SUPPLY, SCHOOLS (ETC.) DUE TO PREVAILING PHYSICAL GROWTH PATTERN OF URBAN CENTER(S) ANTICIPATED TO BE POSSIBLE HG SITES			
B) IDENTIFIABLE IMPORTANT ENVIRONMENTAL RESOURCES THREATENED BY THE PROCESS OF URBANIZATION • RARE OR ENDANGERED PLANT AND WILDLIFE HABITATS			

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• WETLANDS			
• AGRICULTURAL LANDS			
• FLOOD PLAINS			
• FOREST			
• HISTORIC, ARCHEAELOGIC AND CULTURALLY SIGNIFICANT SITES			

*COLUMN 2 CODE: NA - THIS AREA OF CONCERN IS NOT APPLICABLE TO THE COUNTRY, REGION OR THE PROPOSED PROJECT
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• UNIQUE NATURAL AREAS			
• SCARCE OR CRITICAL RAW MATERIAL			

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In answering these questions, the analyst should approach the problem of identifying and analyzing potential impacts from dual perspectives. The basis of: (1) how the proposed actions will affect both natural ecological and human concerns; and (2) how the particular environmental conditions of the project's location are likely to impact the proposed project and its inhabitants. The identification of casual relationships (cause and effects) from these perspectives is of critical importance. The first three questions establish the basis for an impact assessment by identifying potential casual relationships, while the last question seeks to measure or quantify anticipated effects.

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Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

AERIAL PHOTOGRAPHY INTERPRETATION

Wednesday, November 14, 1979

11:00-5:00 p.m. Code 24.NHP

Presented by:

Douglas S. Way

SHELTER TRAINING WORKSHOP

November 5-30, 1979

OUTLINE OF PRESENTATION. . . . . 24.NHP -- 1

READINGS . . . . . 24.NHP -- 4

Aerial Photography: A Diversified Tool . . 24.NHP -- 7

Mathare Valley, A Case Study of Uncontrolled Settlement in Nairobi . . . . 24.NHP -- 19

Aerial Photography for Residential Subdivision Site Selection . . . . . 24.NHP -- 28

Outline of Presentation

AID Session
November 14, 1979
Washington, D.C.

General Intent: Two sessions will address techniques and application of aerial photography to residential and urban development in developing countries. The first session, 11 AM till noon, will have a more general orientation of aerial photography costs and benefits-capabilities relevant to developing countries. The second session after lunch will focus more upon ranges of applications and site analysis procedures directed toward urban and rural housing. A more specific outline follows.

Session One: Aerial Photography in Developing Countries--Important Fundamental Issues

11:00-12:00

I. The approach to a problem (analysis-synthesis) vs. data issues.

   A. Nature of data needs in developing countries: ranges of issues requiring data potentially suppliable from photographic interpretation.

      1. Typical state of existing data.

      2. How to generate and establish missing data (photo interpretation application).

II. Process of aerial photographic interpretation.

   A. Pattern recognition-correlation.

   B. Skills and training.

   C. General effectiveness of technique.

   D. General limitations of technique.

III. All photographs are not equally useful--issues of image quality applied to interpretation.

   A. Resolution and other factors.

   B. Seasonality.

   C. Scale.

   D. Sun angle.

IV. Costs and benefits of different aerial products.

   A. Film types: general characteristics and applications.

      1. Black and white

2. Black and white infrared.

3. Color.

4. Color infrared.

This presentation will be illustrated with actual photographic examples.

LUNCH Break.

<u>Session Two</u>: Applications of Aerial Photography to Developing Countries Including Site Evaluation for Residential Use.

2:00-5:00

I. General applications for critical data (evaluation of applicable film types, scale, interpretive procedure).
2:00 - 3:00

A. Growth and change--a monitoring function of land use patterns.

1. Ranges of techniques and images required.

2. Most suitable procedures and images.

3. Potential of computer assistance.

B. Demographic data (census by aerial photography).

1. Density analysis and population estimates.

2. Income computation

3. Land value.

C. Infrastructure analysis.

1. Utilities.

2. Transport

3. Services.

D. Land use/cover interpretation.

1. Classification - interpretation.

E. Natural Features.

1. Land resource surveys.

F. Map Compilation.

1. Photogrammetric products.

G. Evaluation of land for potential development.

3:00-4:00 II. Site evaluation for residential development: the role of the photographic interpretation.

A. Issues of site development

1. Data needs.

B. Techniques of terrain analysis.

1. A systems approach (landform evolution).

a. Climate, weathering, soils.

b. Rock materials.

c. Erosional process.

2. Examples of terrain analysis.

a. Site 1 (a humid zone)

Geology, soils, hydrology, housing applications.

b. Site 2 (an arid zone)

Geology, soils, hydrology, housing applications.

c. Site 3 (a tropical zone)

Geology, soils, hydrology, housing applications.

4:00-4:45 III. Comparative site evolution of prototype sites (workshop).

4:45-5:00 Final Discussion.

Readings for Session on Aerial Photography

November 14, 1979

Aerial photography is a powerful tool for developing data and for planning shelter programs. It is especially important in situations where trained personnel to perform field surveys are not available, and where rapid checks of field conditions are desirable.

Attached are four sets of materials which provide background on the use of aerial photography.

1. "Aerial Photography: A Diversified Tool", Geoforum, 2/1970.
This article summarizes the range of applications for aerial photography and is relevant to both developed and developing country settings. It also gives a list of references.

2. Etherton, Davis: Selections from Mathare Valley, A Case Study of Uncontrolled Settlement in Nairobi, Housing Research and Development Unit, University of Nairobi, 1972.

These excerpts show how aerial photography helped identify the characteristics of a low income settlement which would have been extremely difficult to determine through a strict field survey.

3. Bertaud, Alain: "Methodology for Aerial Photo Interpretation and the Identification and Design of Housing Projects for the Urban Poor of Developing Countries", prepared by CITRUD for the World Bank, 1978.
NOT ATTACHED IN NOTEBOOK -- GET FROM WORKSHOP OFFICE

This document explores in detail a specific application of aerial photography in formulating policy towards low income shelter programs for developing countries.

4. Way, Douglas: "Aerial Photography for Residential Subdivision Site Selection", American Society of Photogrammetry, 1978.

Although it does not deal with a developing country situation, this document illustrates how photographic techniques can be applied to solve site selection problems. The kind of information is applicable to a wide range of development situations. The document also describes applications of the relatively new technique of computer mapping.

SUPPLEMENTATL READING ON AERIAL PHOTO INTERPRETATION

Aerial Photography: A Diversified Tool

Die Luftphotographie: ein vielfältiges Hilfsmittel

La photographie aérienne: un outil conventionnel

L. W. BOWDEN and W. G. BROONER, Riverside, Calif.*

Abstract: An aerial photograph is a vital and useful tool and may contain more than 8×10^9 bits of information. In the past 100 years aerial photography has advanced to a highly sophisticated state. Although regarded as the most conventional and standard of the remote sensors, optimum use and application of aerial photography has yet to be fully reached. The deductive process of photo-interpretation is a multidisciplinary "tool science" that demands the viewer look at all aspects of the terrain and extract data for his particular needs and applications. An aerial photograph's overall view provides the interpreter with a perception of space and areal comparisons rarely available by other means. With continuing research and application of photographic and interpretation techniques, use of aerial photography in the visible and near visible ranges (approximately 350 to 1200 millimicrons) is bound to increase as more individuals realize the benefits. The only limitation is man's imagination and his ability to obtain and exploit imagery.

Zusammenfassung: Ein Luftbild kann mehr als 8×10^9 einzelne wichtige Informationen enthalten. Im Lauf der letzten 100 Jahre hat sich die Aerophotographie zu einer außerordentlichen Höhe entwickelt. Obwohl sie als herkommlichste aller Methoden der Fernerkundung angesehen wird, ist ihre optimale Anwendung noch lange nicht erreicht. Den deduktiven Weg der Bildinterpretation beschreiten heute viele Wissenschaftszweige, die für ihre spezifischen Bedürfnisse Informationen aus dem Photo sammeln. Auf Anhieb gibt ein Luftbild dem Beschauer eine räumliche Vergleichsmöglichkeit, die höchst selten auf anderem Weg erreicht wird. Je mehr sich die Photographie und die Techniken der Bildinterpretation entwickeln, wird der Gebrauch von Luftbildern im Bereich des Sichtbaren und im nahen IR und UV (etwa 350 bis 1200 mμ) zunehmen. Nur des Menschen Einbildungskraft und seine Fähigkeit, Bildinhalte auszuschöpfen, können hier Grenzen setzen.

Resume: Une photographie aérienne est un outil essentiel et utile, et peut contenir plus de $8 \cdot 10^9$ informations. Durant les 100 dernières années, la photographie aérienne a progressé jusqu'à un stade très sophistiqué. Bien qu'elle soit considérée comme le capteur à distance le plus conventionnel et le plus classique, on doit encore atteindre une utilisation et une application optimales de la photographie aérienne. Le processus déductif de la photo-interprétation est une «science-outil» pluri-disciplinaire, qui exige de l'utilisateur de considérer tous les aspects du terrain et d'en retirer des informations pour ses besoins et ses applications particuliers. La couverture globale d'une photographie aérienne fournit à l'utilisateur une perception de l'espace et des comparaisons aériennes rarement procurées par d'autres moyens. Avec la poursuite des recherches et de l'application des techniques de photographie et d'interprétation, l'utilisation de la photographie aérienne dans les plages visibles et presque visibles (environ 350 à 1200 millimicrons) est vouée à se développer au fur et à mesure que des utilisateurs particuliers se rendront compte de ses avantages. La seule limite réside dans l'imagination de l'homme et dans son aptitude à obtenir et à exploiter les images.

Introduction

Recent computations performed at the Livermore Laboratory, University of California, USA, estimate nearly 10^{16} bits of information on a single aerial photograph. The diversity and uniqueness of aerial photography as a remote data gatherer has yet to be equalled in any other sensor or any other part of the electromagnetic spectrum for providing information to earth scientists of many disciplines. The objects and conditions that are recorded with aerial films and cameras in both the visible and near visible photographic ranges provide – once the interpreter is indoctrinated to the aerial prospective – a most amazing and useful tool. In the hands of specialists and laymen alike, an aerial photograph is a time saving information giver and a utilitarian perception enhancer.

The mating of camera, film, and an airborne platform is not new. In both Europe and the United States, experiments were conducted in the mid-nineteenth century.

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During the United States' Civil War, for example, balloons were used as camera platforms to record the scene below and around and to provide strategic military reconnaissance. One suspects that as soon as man devised a means to become airborne he desired ways to record and capture the overall view below[1]). Advances in cameras and platforms, film, and filters, and interpretation systems and techniques have followed the pace of technological progress. Dramatic examples are the color and color infrared photographs returned from space in the past decade and a half.

"Photointerpretation is a *tool science*"[2]). Interpretation of aerial photographs can be used to obtain information in many physical, earth, social and engineering sciences. The application of aerial reconnaissance is limited only by man's imagination and his ability to obtain photography and to exploit it for the wealth of information which it records. Over the past several years, new research and testing emphasis has been directed toward color, infrared, and multiband photography (i. e., the use of filters to record reflected light in only narrow portions of the photographic region) as additional tools to the panchromatic image. The result has been continuing diversification of application when interpreting the conventional combinations of aerial cameras and films.

Why Aerial Photography?

Carl STRANDBERG (1967a) summarizes five reasons why aerial photographs, when properly interpreted, provide an effective way of discovering many obscured or hidden facts about the world around us. 1) They offer a vantage point of improved observation unobtainable by the ground based observer. From the air the observer's field of view is increased many fold. And the higher he (or the sensor) rises, the more landscape is observable and integrated into a single scene. Although there are restrictions due to atmospheric clarity, film resolution and lighting conditions, the observer may be able to detect and interpret objects many kilometers away (when all conditions are proper). 2) Modern sensors offer better resolution than the unaided human eye (which can resolve about 4.5 lines per millimeter at a contrast ratio of 2:1 while modern photographic systems can resolve several hundred lines per millimeter at a 2:1 contrast ratio). Objects invisible to a human may still be recorded photographically. 3) Human vision is spectrally limited and extends from about 400 to 700 millimicrons while the photographic spectrum is from somewhere around 320 to 1200 millimicrons, or almost twice as broad. 4) When the camera shutter is tripped, recorded objects are immobilized and they may then be studied at leisure. (The great advantage of aerial photography as an historical document cannot be overemphasized; however, on-time continuous recording systems in the same spectral range, i.e., TV scan, can be very useful in monitoring or analyzing such phenomena as traffic or weather conditions.) 5) The geometric fidelity of the components of images makes possible the determination of distances, vectors, and areas with a higher degree of accuracy than is usually possible by ground observations[1]). State of the art photographic systems have greater resolution capabilities than optical-mechanical scanners or television systems. Geometrical distortions are minimal and excellent spatial orientation can be achieved with precision aerial cameras. Additional advantages of aerial photography, when compared to other remote sensing systems, include, 1) greater ease of perception by human interpreters, 2) relatively more simple means of operation and processing (i.e., little or no circuitry or pretest equipment), 3) more compactness and less weight, and 4) lower cost and interpretation requirements.

One must always be aware, however, of limitations in obtaining and using aerial photographs. Some of the critically limiting factors are: 1) requirement for clear weather and adequate sunlight, 2) delay time between exposure and processing – photography is not a real time system as is television, 3) the mass of data stored on the image requiries many man-hours to extrapolate, because automatic scanning, storing and computing are not yet fully developed, and 4) photographic sensors are limited to only the visible and near-visible portions of the electromagnetic spectrum and do not provide broad spectral data. Any photograph, regardless of origin or type of image displayed, is nothing more nor less than a historic document and graphic record of visible or near-visible conditions at one point in time. Of course, therein lies some of the great advantages to aerial photography for conventional use in our dynamic world.

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[1]) DAGUERRE – the father of photography – succeeded in making positive prints by using silver compounds in the early 19th century. NADAR, a French balloonist, is believed to be the first aerial photographer when he ascended with a camera in 1857 or 1858. In 1860, J. W. BLACK, took a balloon aerial photograph of Boston and Union General G. B. McCLELLAN used balloon photography for aerial reconnaissance near Fredericksburg during the American Civil War.

[2]) For more detailed information see STRANDBERG, Carl H., *Aerial Discovery Manual*, John Wiley and Sons, Inc., New York, London & Sydney, 1967 or AVERY, T. Eugene, *Interpretation of Aerial Photographs*, 2nd Edition, Burgess Publishing Company, Minneapolis, 1968.

[1]) The *Manual of Photographic Interpretation* published in 1960 by the American Society of Photogrammetry is recommended as a detailed and comprehensive coverage of the many uses to which aerial photographs can be applied. The *Manual of Color Aerial Photography*, published by the same society in 1968, deals with color inputs primarily during the 1960's. At present (1970) the Society is preparing a two volume work titled *Manual of Remote Sensing* to be published in 1972.

Elements of Photo-interpretation

Photographic interpretation is a deductive process. Most interpretation manuals stress image or target identification and go into detail on how size, shape, shadow, tone, pattern and texture are critical elements of extractable information. As the interpreter progresses site, situation, and environmental relationships become an integral part of the interpretation process.

Before the elements of photo-interpretation are further discussed, it is useful to consider the photo-interpreter himself. Although many volumes have been written on both military and civil use of aerial photography, each interpreter employs aerial photography for his own specific application. Among the millions of people who have at one time or another looked at aerial or space photographs, there are four general categories of interpreters. The first is the layman who is a "gee-whiz" user. The "gee-whiz" user looks at a photograph and says "I can see my house, my farm or *all* the cars in Manhattan" (depending on the photo). That is as far as it goes. The second user is the target examiner, military or civilian, and he looks for a tree type, a rocket installation, a fault line or a traffic intersection and then does detailed analysis of the identified target. The third user is the discipline or subject interpreter, e.g., the soil scientist who examines the total photograph for a specific soils class, the hydrologist examining drainage patterns, or the photogrammetrist drawing topographic contours. A fourth type is the overviewer, who examines spatial relationships and patterns, e.g., the industrialist seeking a site location for a new plant, the forester classifying timber stands, or the geographer examining the integrated patterns on the photographic landscape. Naturally many of the above categories overlap but in general they are identifiable users. Many disciplines have developed their own highly specialized interpretation techniques, equipment, and applications for utilizing aerial photography.

Regardless of interpreter or diversified applications, the basic elements affecting photo-interpretation are linear features and geometric shape, size, tone, and texture. (Plate 1a). Symmetrical, straight or perpendicular features are rare in nature. With few exceptions, linear features indicate man's influence on the face of the earth. Occassionally a fault scarp, flood or [illegible] damage, or animal trails will be linear, but usually [illegible] presence of linear shapes indicates cultural activity [illegible] Furthermore, linear features are most obvious phen[illegible] in aerial photographs, including highways and streets, railroads, trails, canals, power lines, pipe lines, fence and field boundaries, and walls. Naturally, the ease of interpreting linear features provides a clue or surrogate to other extractable data.

Geometric shape ranks second to linear features as an element of aerial interpretation. Depending on photographic scale (i. e., map scale) the detectable shape may range from an individual tree to a total city or geologic feature. The Richat structure in Mauritania was more accurately interpreted when space photography indicated its previously unmapped shape. The shape of tree crowns in combination with the profile of shadows is often a clue to tree species on low altitude photography. In urban analysis, shape is an indicator of residential class, industrial or commercial activity, transportation facilities, a key to zoning laws and land use regulation, to name but a few.

Closely related to geometric shape is the element of size. Size may be determined relative to surrounding or known phenomena or photogrammetrically by measurement when photographic scale or ground data are known. It almost goes without saying that distance and height can be measured – easily when vertical stereoscopic photography is used, with difficulty when oblique or non stereo is used. Most air photo manuals describe the photogrammetric techniques to be employed.

Tone conveys more information to the alert interpreter than any other single element of a photograph. Tonal contrasts reveal complex patterns and their spatial relationships on the landscape. In recent years with the trend toward using positive transparencies with back lighting, the combination of hue, chroma and saturation in a color or false color (as in color infrared) photograph creates a great aid to photo analysis. In black and white photography the tone is a shade of gray. Relative tone can be quantified by microdensitometric measurements of the amount of light passing through a transparency. The analysis of such tone or color measurements may allow future interpretation of various terrain objects or conditions with a high degree of automation.

In addition to tone or color, similar objects, areas, or terrain conditions exhibit similar texture characteristics. A dense forest stand, for example, may have a unique textural pattern on an aerial photograph due to the arrangement of tones and shadows. Photographic texture is often expressed as "fine, medium, coarse", etc., and is somewhat analogous to cloth or fabric textures.

Having briefly reviewed the basic elements of aerial photo-interpretation, it is necessary to add a note about the quality of photographs used for interpretation. Photographic quality is largely dependent on a particular interpreter's needs or application. The primary characteristics governing quality, however, are the same. These, according to COLWELL (ASP, 1960), are tone contrast (the difference in brightness between image and background), image sharpness (the abruptness with which tone or color contrasts change), and stereoscopic parallax (the displacement of apparent position of terrain objects with respect to a terrain reference point due to a shift in camera position).

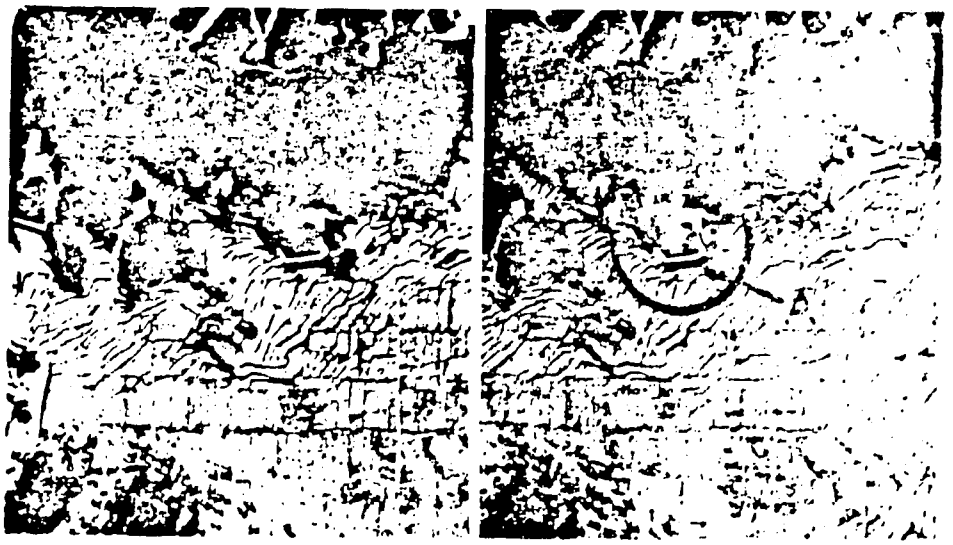

Fig. 1a

- A stereoscopic pair of aerial photographs taken from high altitude and illustrating the importance of tone, contrast, sharpness, and stero parallax for photo-interpretation. In the circled portion (A), tone contrast is noted by the difference in brightness between the water and earthen dam. In color, the contrasts would be due to differences in hue, value, and chroma characteristics of the photographs. Sharpness is indicated by the distance on the photograph where change from water tone to earthen dam tone takes place. Stereo parallax allows the height of the dam above water level to be interpreted and measured when viewed in stereo. (Courtesy of R. N. COLWELL)

Zwei stereoskopische Luftaufnahmen aus großer Höhe; sie zeigen, wie wichtig Farbtonung, Kontrast, Schärfe und Stereoparallaxe für die Bildinterpretation sind. Innerhalb des Kreises (A) beruht der Tönungskontrast auf der unterschiedlichen Helligkeit von Wasseroberfläche und Erdwall. In Farbe wären diese Kontraste bedingt durch Unterschiede in Lichtwert und Farbeigenschaft der Photographie. Die Tiefenschärfe des Bildes wird deutlich durch den Wechsel der Tönung des Wassers bis hin zum Erdwall. Die Parallaxe erlaubt bei stereoskopischer Betrachtung die Errechnung der Ausmaße des Dammes und seiner Höhe über dem Wasserspiegel. (Mit freundlicher Genehmigung von R. N. COLWELL)

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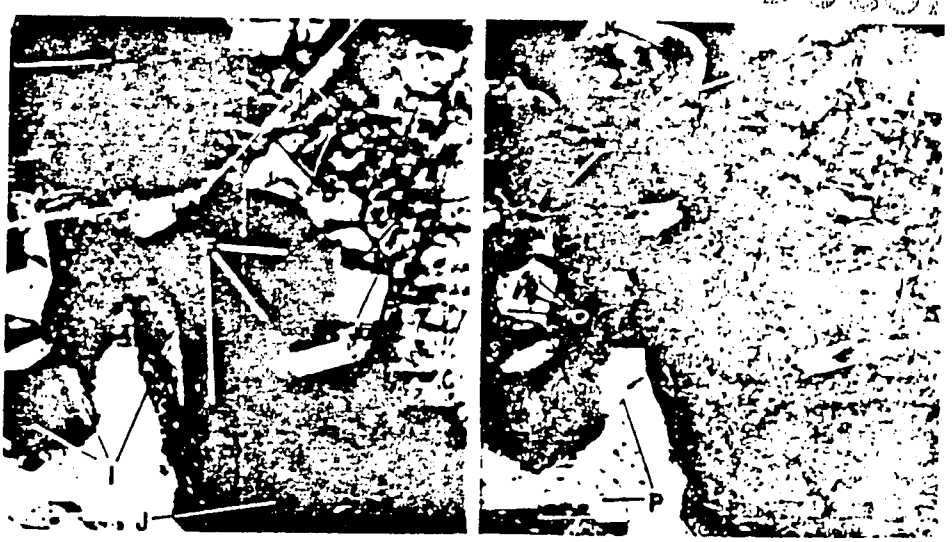


Fig. 1b

- Two high altitude aerial photographs taken simultaneously with panchromatic (left) and black and white infrared aerial films in an area of North Carolina containing both wildlands and croplands. These photos illustrate the value of multi-band photography. The panchromatic photo is superior for showing shallow water detail at (A), individual trees at (B), moist depressions at (C), cultivation marks at (D), the boundary between marsh grass and upland grass at (E), the route traversed by a forest road at (F), differences in crop maturity at (G), bare ground surrounded by forest trees at (H), ripple marks from a river glinting in the sunlight at (I), and an island of conifers and hardwoods surrounded by an old stream meander scar at (J). On the other hand, the infrared photo is superior for showing the boundary between two marsh grass species at (K), bodies of fresh water at (L), individual orchard tress at (M), and a mixture of dark-toned hardwoods at (N), differences between standing grain and stubble at (O), drainage swales and fallow ground at (P), and the limits of a pure stand of dark-toned conifers at (Q). (Courtesy of R. N. COLWELL)

Zwei Luftaufnahmen aus großer Höhe, gleichzeitig aufgenommen mit panchromatischem (links) und schwarzweißem Infrarotfilm in einem Gebiet von North Carolina, das sowohl Ödland als auch Ackerland umfaßt. Die Photos zeigen deutlich den Wert der Mehrbandphotographie. Das panchromatische Bild gibt Details im seichten Wasser (A), einzelne Bäume (B), feuchte Mulden (C), Anbauspuren (D), die Grenze zwischen Marschgras und Altlandgras (E), eine Straße durch den Wald (F), unterschiedliche Reife von Getreide (G), eine Lichtung (H), gekräuselte Wasseroberfläche des Flusses im Sonnenschein (I), einen Fleck von Mischwald, umgeben von einem fossilen Maanderbogen (J). Demgegenüber unterscheidet das Infrarotbild zwei Arten von Marschgras (K) und zeigt offene Wasserflächen (L), einzelne Obstbäume (M), einen gemischten Bestand von Laubbäumen (N), Unterschiede zwischen noch stehendem Getreide und Stoppelfeldern (O), Bewässerungsrinnen und Brachland (P) und einen reinen Koniferenbestand (Q). (Mit freundlicher Genehmigung von R. N. COLWELL)

Using Aerial Photographs to Best Advantage

Probably no other document better records man's action on the face of the earth than an aerial photograph. The most distinctive pattern is that of land use. The form and morphology of urban places, the practice and farming techniques of agriculture, the areas of timber regrowth, mining dumps, burn scars, transportation and many other land use features are present. The list of identifiable activities is as long and as diversified as the interpreter's imagination and energy.

The following discussion deals with only a small segment of aerial photograph applications and concentrates on those physical and cultural factors that are relevant to geography and other earth sciences. With the development of stable aircraft and spacecraft platforms, the improvements in earth photography are continually advancing and obtaining much greater application. The addition of color, color infrared, and multiband photography to the panchromatic images has added new categories and classes to the photo-interpreter's ability (Fig. 1b).

Agriculture and Forestry:

In agriculture, farming practices and patterns can be analyzed in detail. There are row patterns, slash and burn scars, irrigation systems, livestock counts, soil surveys and farm to market facilities identifiable. With new color infrared films, and certain multi-band systems, crop types have specific signatures which often enable identification. Even when the crop type cannot be immediately identified, clues from land use patterns, field size, crop cover, machinery trails, row width, time and season and many other indicators are used. Tree crops are identifiable as are cereal grains, pastures, and truck crops. Other elements are important as well. Improper irrigation, poorly distributed fertilizer, soil erosion or gulleying, excessive salinity, poor farming practices (i.e., lack of contour plowing or excessive weeds) are identifiable. In the future, with more complex film systems, yield potential, crop production and earlier detection of crop disease and insect infestation are a few of the anticipated results. Experiments are well under way in these applications (Fig. 2c and 2d).

Forestry is also a traditional user of aerial photography. Systems of timber inventory and evaluation are used in many areas. Accessibility, fire damage, insect and disease infestation, regrowth, vegetation mapping, and conservation are all helped by the availability of aerial photographic interpretation. Closely associated is water-shed management, recreation and wilderness area evaluation (Fig. 2b).

Landforms and Physiographic Features:

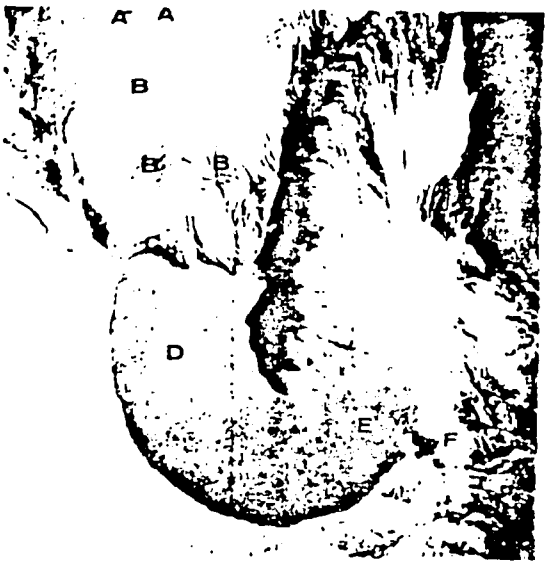
Aerial photography is a valuable and commonly used tool for geologic, geomorphic, and vegetation studies. Employing basic elements of photo-interpretation, skilled interpreters can recognize broad lithologic units and identify distinctive landforms or surface features. High quality photographs enable extraction of quantitative as well as qualitative geologic and physiographic information. Vegetation canopies often exhibit unique tonal and textural qualities to allow geologic interpretation. Although a continuous vegetation canopy masks the terrain surface, edaphic factors are often directly attributable to parent material. As a result, the floristic composition enables inferences to be made as to rock types, surface conditions, and geomorphic processes (Fig. 2e and 2f, 4a and 4e).

Urbanization:

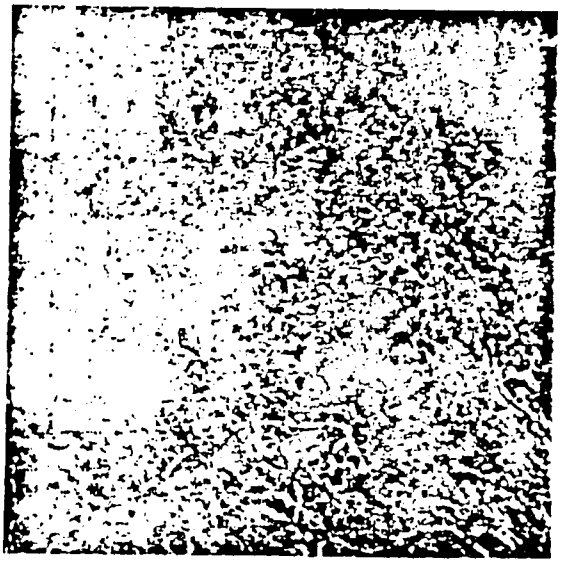
Urbanization offers a host of problems to be studied via aerial photography. One is surprised how little use is made by urban planners and administrators of a very useful data gathering device. Most agriculturalists, foresters, hydrologists and geologists are aware of the application of aerial photography to their disciplines even though they may not personally need or use photos. However, sciences and professions involved in urban area studies are often – though not always – unfamiliar or uninformed about aerial photographic applications in urban environments. Parcel and lot data from aerial photographs are sometimes used by real estate investors, tax assessors or public health units, but the practice is not widespread. Military, civil defense, and disaster prediction units do on occassion maintain transportation network surveillance, fire and flood hazard sensing, and terminal or industrial observation. But the use is spotty and not universal.

Four major areas using aerial photographs have received the most attention in urban studies: dwelling unit counts, housing quality, urban land use and the limits of urbanism.

Dwelling unit counts are a self-evident application although difficulty is encountered with multi-family or multi-story dwellings. Housing quality is a more specialized use of aerial photography and depends heavily on surrogates or indicators in the surrounding landscape. WELLAR (1967), in looking for indicators and correlations of poor housing quality in Chicago, used data obtained from multiband aerial photographs. The most consistent indicators of low quality housing are the presence of litter, garbage, derelict cars, piles of lumber and rubbish on occupied as well as vacant lots, the number of vacant lots, the presence of non-residential hazards and nuisances including industrial plants and warehouses, and the degree of lot crowding. MULLENS (1969), working in Los Angeles with color infrared photography, classified nine sets of surrogates of housing quality to apply to middle to low-middle income housing groups. However, the best three were simply a combination of vegetation luxuriants or lack of it, the presence or absence of litter, and amount of vacant land. MULLENS correlated the three (vegetation and litter and vacant land) with socio-economic data based on occupation, income, educational



a)



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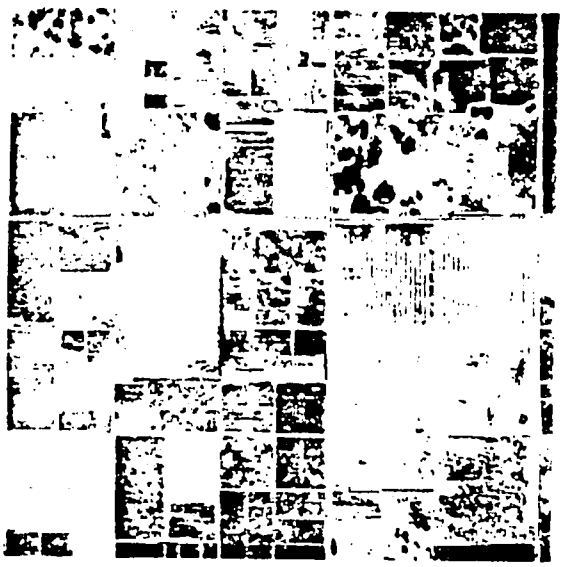

d)

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e)

f)

Fig. 2

- On a late summer color infrared photograph of Cascade Glacier, Washington (a) there is evidence of meltwater rivulets (A), crevasses and fractures (B), and near vertical terminus cliffs (C) on the ice surface, meltwater lake (D) with displaced iceberg (E), and vegetation (G) indicating past positions of glacier terminus. Color infrared photographs of forested areas (b), San Bernardino Mountains, California, provide studies including tree counts, species identification, and crown densities. Agricultural land use studies include crop identification as on (c) in Douglas County, Kansas, field sizes and patterns, and farming practices. Irrigated fields in the Coachella Valley, California (d) include vineyard, orchard, and field crops. Photos (e) and (f) are obliques recently obtained along the coastline of Baja California. Preliminary interpretation reveals a wealth of data yet to be analyzed. Photo (e), located on the west coast south of Ensenada, exhibits striking contrasts between non-vegetated plunging cliffs on the left side of the bay and vegetated cliffs and terraces on the right side, deeply dissected valleys with pronounced riverine vegetation, and sedimentation patterns in the water are indicated by differences in hue. Photo (f), located on the east coast and south of Punta San Fermin, exhibits a highly dissected basalt plateau in the background and volcanic shield cone in the foreground, saline deposition to the left and within the cone, as well as several prominent fault scarps.

Fig. 2

- Eine spatsommerliche Infrarot-Aufnahme vom Cascade Gletscher, Washington, (a) zeigt deutlich Schmelzwasserrinnen (A), Spalten und Bruche (B) und einen fast senkrechten Abbruch an der Gletschestirn (C), ferner einen Schmelzwassersee (D) mit einem Eisberg (E), Vegetation (G), die die frühere Ausdehnung des Gletschers anzeigt. Die Infrarot-Farbaufnahme einer bewaldeten Gegend (b), San Bernardino Mountains, California, erlaubt Untersuchungen bis hin zum Zählen der Bäume, zur Speziesbestimmung und zur Ermittlung der Baumkronendichte. Studien zur Landnutzung umfassen die Bestimmung der Anbaufruchte wie auf (c) in Douglas County, Kansas, ferner Feldgrösse, Flurformen und Anbaumethoden. Auf Bewässerungsfeldern im Coachella Valley, California (d), stehen Weinstocke, Obstbäume und Feldfruchte. Photos (e) und (f) sind jüngste Schrägaufnahmen von der Küste Niederkaliforniens. Eine vorläufige Auswertung läßt erkennen, welche Fülle von Daten noch der endgültiger Analyse harren. Bild (e) von der Westküste südlich Ensenada zeigt deutlich den scharfen Gegensatz von vegetationsfreier Steilküste auf der linken Seite der Bucht zu den bewachsenen Kliffs und Terrassen auf der rechten; tief eingeschnittene Täler mit ausgeprägter Talvegetation sowie Sedimentablagerungen vor der Küste sind durch unterschiedliche Farbtönung klar ersichtlich. Bild (f) von der Ostküste südlich Punta San Fermin zeigt ein stark zerkluftetes Basaltplateau im Hintergrund und den Kegel eines Vulkans im Vordergrund Salzablagerungen links davon und im Krater selbst, und einige Steilabbruche von Verwerfungen.

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level, mental health, death rates and arrests. Vegetation has proved to be the most indicative clue to urban conditions and at present color infrared photography is the superior urban area sensor. (Fig. 3c and 3d).

Urban land use and the extent of urbanism are traditional uses of conventional black and white low altitude photography. Recently, however, color, color infrared, and some multiband photography have been successfully used. High altitude panoramic and mapping photographs in color infrared has allowed land use mapping and rural-urban fringe detection at greater degrees of accuracy than was previously believed. In fact, Apollo 6 and 9 space photographs of Phoenix and Dallas-Fort Worth (where the total urban complex appears on a single frame) are very useful in studying changes at the city's edge. Remote sensing from space presents a very applicable tool in the above respect.

Transportation Studies:

Updating or identifying transportation routes and networks in both well developed regions and remote areas is a constant need that photography can help fulfill. Present methods rely on costly field studies and only random air photo coverage. SIMONETT (1969) states, "It has been widely suggested that high altitude (aerial) photography and space photography may be used for updating maps of transportation networks." In preliminary studies in the Dallas-Fort Worth, Texas, area, for example, SIMONETT has suggested that roads 30 to 90 meters wide can be consistently detected on space photography. The problems presented and resolution required are under study, but as stated earlier, linear features are some of the most easily identifiable. One must, however, be able to differentiate among pipelines, auto roads, railroads, power transmission routes, canals, etc. A single persistent problem is that of recording or analyzing dynamic events such as inter-city and intracity "rush hour" traffic in order to effectively contribute to better means of urban transportation.

Information Systems

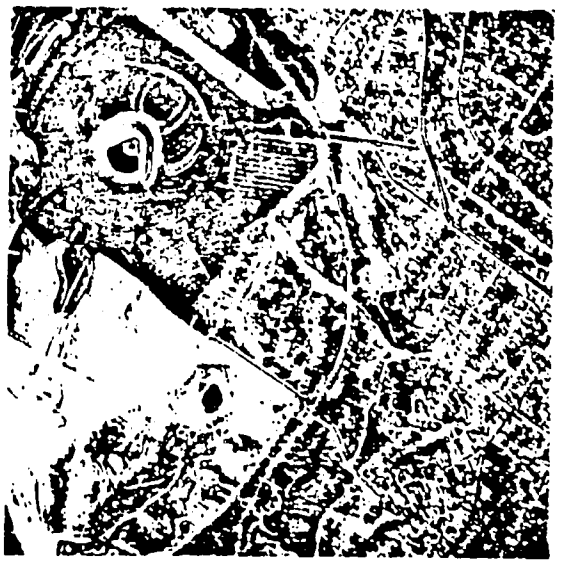
Evelyn PRUITT (1970) uses photointerpretation as an example of the potential input to an automated information system. PRUITT states, "The human interpreter of photography . . . . . finds clues in the recorded sizes, shapes, tones, textures, positions and associations. If these properties can be properly dissected, a machine may also use them to arrive at an interpretation that can be stored in an information system." Size and shape are relatively easy to store in an information system providing they have uniform internal properties with sharp boundaries and distinctly different backgrounds. Unfortunately such properties are rare.

a)

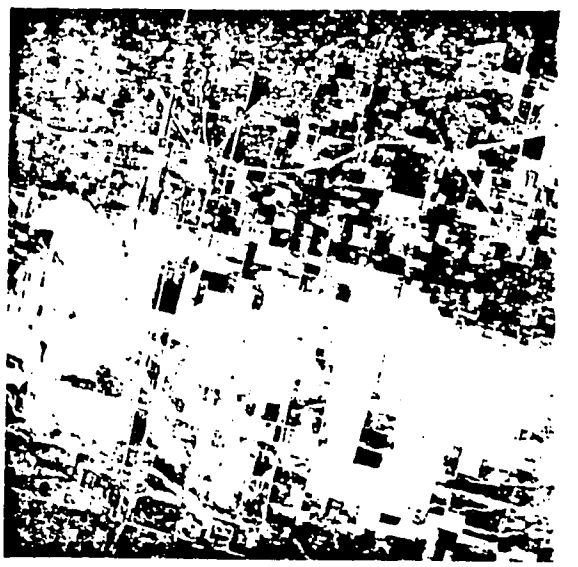
b)

c)

d)



e)



f)

Fig. 3

High altitude color infrared photograph of West Los Angeles, California, (a) showing residential areas of several communities, including Hollywood and Beverly Hills along the Hollywood Hills. Near the foot of the hills and adjacent to the San Diego Freeway is the University of California, Los Angeles. From such photography it is possible to rapidly and accurately construct land use maps such as the one shown (b). Additive filters often enhance color infrared film for more optimum interpretation of medium and high altitude photographs but are not necessary at low altitudes. Two examples taken from approximately 1000 meters for urban studies in East Los Angeles, California, are (c) 15 plus 80B filters and (d) a 15 filter only. (e) The Los Angeles Dodger baseball stadium is a striking feature on the landscape surrounded by complex transportation arteries, residential and commercial land uses, and open spaces. The encroachment of urban sprawl on rural fringe areas is illustrated on high altitude photography near Ontario, California (f) where urban land uses are replacing vineyards.

Fig. 3

Infrarot-Farbphoto aus großer Höhe von West-Los Angeles, California (a) mit Wohngebieten mehrerer Gemeinden wie Hollywood und Beverly Hills entlang den Hollywood-Höhen. Am Fuß der Hohen in der Nähe des San Diego Freeways liegt die Universitat von Kalifornien, Los Angeles. Eine solche Aufnahme erlaubt eine schnelle und zuverlassige Flichennutzungskartierung wie (b). Zusatzliche Filter erhohen bei Infrarot-Farbfilmen oft die Aussagekraft der Bilder aus mittleren und großen Höhen, aber sie sind nicht notwendig bei niederen Höhen. Zwei Beispiele aus etwa 1000 m Hohe im Zusammenhang mit stadtgeographischen Untersuchungen im Osten von Los Angeles, California: Bild (c) mit 15- und 80B-Filtern, und (d) mit nur einem 15-Filter. Das Los Angeles Dodger Baseball Stadion (e) umgeben von einem dichten Schnellstraßennetz, von Wohn- und Geschaftsvierteln und offenen Flachen. Das Übergreifen von stadtischer Siedlung auf landwirtschaftliche Randzonen wird illustriert durch die Aufnahme aus großer Hohe bei Ontario, California (f), wo stadtische Bebauung die Weinbaugebiete verdrangt.

PRUITT further states that spectral signatures offer possibilities of inputs to automated systems but not without difficulty. Each individual feature has its own characteristic spectral curve. This is, however, essentially a laboratory condition. Furthermore, while each feature in the environment has its own spectral characteristics, these characteristics are not necessarily unique at all times or all locations. Current research includes identifying the temporal and spatial parameters affecting spectral reflections recorded on photographs. Over the landscape, the camera records everything it sees and results in a "hodge-podge" of spectral curves. Grayscale, density measurements and traces, and wave form analysis can be quantified but as yet a practical method to digitize, manipulate or extract relatively useful data is not universally applicable.

Do It Yourself Photography

PEASE (1968) described the use of hand-held photography using color infrared film in a paper entitled *Color Infrared, A Boon to Geographers Who Fly.* The dedicated scientist or interested layman can achieve, at modest expense, very successful and highly usable photography from commercial airlines or private planes. The reader should understand that most manuals and instructions deal with the complexities of aerial photogrammetry or detailed military reconnaissance and often provide more data than can be used. Planimetric stereoscopic pairs taken from instrument laden planes are very useful to the cartographer while often unnecessary and expensive to the other possible users unless obtained in mass quantities from some government organization.

A case in point is the following: In the spring of 1970, one of the authors, accompanied by other scientists from the University of California, leased a small aircraft (highwing) to use in photographing the coast of Baja California. Fifteen years earlier, 9" stereo panchromatic photography had been flown and planimetrically mosaiced. Because planimetric mapping data was available on the earlier photography, our interest was to update studies of coastal settlement, changes in coastal morphology and structure, and examine vegetation patterns.

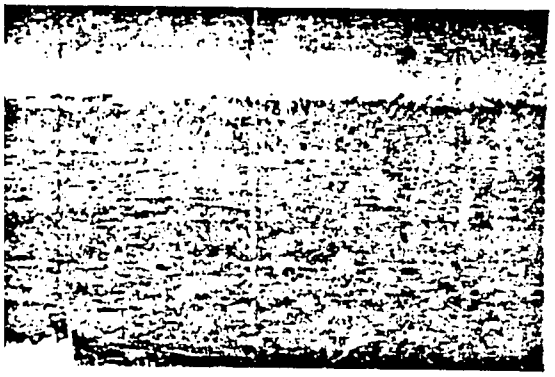
The success and simple execution of the above mission are detailed to illustrate the utility of hand-held photography for many geoscience applications. A highwing Cessna 206, chosen because wheel struts and wings did not hinder window photography, flew 4 to 5 kilometers off the coast at approximately 3,300 meters altitude. The crew and their responsibilities included (1) a pilot, (2) a navigator to monitor distances and log time, location, and film roll number, (3) a photographer to photograph continuous sequences of the coastline, and (4) an assistant to load and unload film, store and log. These duties were fulfilled by 3 professors (one was the pilot) and one graduate student.

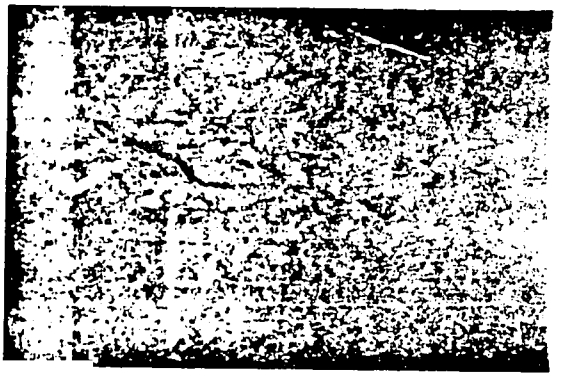
Using hand-held 35mm cameras, the resulting scale of approximately 1:30,000 at sea edge permitted only a few hundred frames to cover several hundred kilometers of coast line. Kodak Aero Ektachrome Infrared film (type 8443, Process E-3) was chosen for the continuous frame photography[1]). The total cost of plane, living expenses, film and processing, etc. was about $600 for phtotographing approximately 1300 kilometers of flightline along the

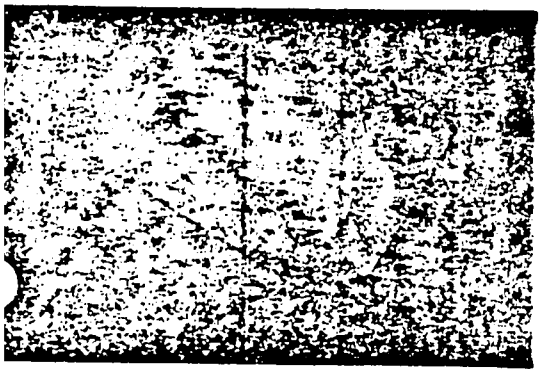
[1]) 8443 was chosen because of its superior haze penetration, vegetation and landscape recording, and spectral characteristics. A Wratten 15 + 80C filter was used, because ± 3000 meters altitude requires additive filters to bring out detail in this film. An ASA of 160 was used. For details on color IR photography at altitudes of 10,000 feet or more, see PEASE & BOWDEN (1969).

a)

b)







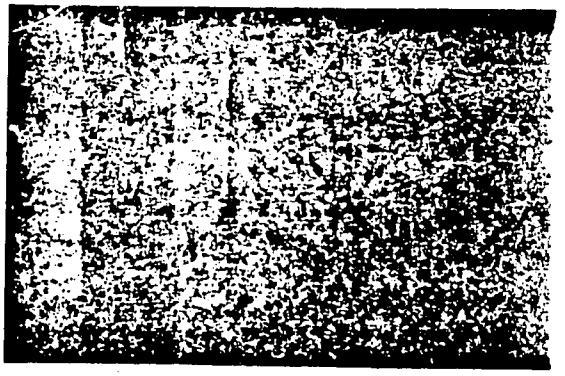


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Fig. 4

- The examples are hand-held 35 mm oblique color infrared aerial photographs. (a) San Juan River, Utah-Colorado; a number of geomorphic features and processes, including the entrenched meander and abandoned ox-bow, backcutting, uplift, and erosional patterns are evident. (b) All-American Canal, California, infrared reflectance from riverine vegetation outlines water seepage patterns from an unlined section of the canal along the edge of the Salton Trough. (c) Boulder, Colorado, along the Front Range of the Rocky Mountains; this photograph shows late winter atmospheric penetration potential of color infrared photography–Laramie, Wyoming, in the upper left corner, is a distance of almost 320 km. (d) San Gabriel Valley, California; single family residential patterns can be distinguished, as well as commercial centers, vacant land, orange groves, vineyards, and grazing land. Geologic features of the Grand Canyon, Arizona (e) are particularly pronounced as well as differences in reflectance of coniferous forests on the North rim (top) and pinyon juniper conifer on the south rim. Temporal differences in infrared reflectance can be seen on two photographs of Alamosa, Colorado, taken in December (f) with a snow cover and in July (g) where unimproved, cultivated, and flood-plain vegetation areas are well defined.

Fig. 4

- Alle Beispiele sind von Hand aufgenommene 35 mm Schrägbilder auf Infrarot-Farbfilm. (a) San Juan River, Utah/Colorado; zahlreiche geomorphologische Erscheinungen wie eingeschnittener Flußlauf, und abgeschnittener Mäander, rückschreitende Erosion sowie andere Abtragungsformen und Hebung des Gebietes sind erkennbar. (b) All-American Canal, California; das Infrarot der Vegetation in Kanalnähe zeigt deutlich eine Wasserversickerung an, die am Rand der Salton Rinne stattfindet. (c) Boulder, Colorado, mit Blick nach Norden entlang den Rocky Mountains; die spätwinterliche Aufnahme demonstriert die mögliche Fernerkundung mit Infrarot-Farbfilmen: Laramie, Wyoming, in der linken oberen Bildecke liegt 320 km entfernt. (d) San Gabriel Valley, California. Siedlungsbereiche mit Einfamilienhäusern können ebenso ausgemacht werden wie Einkaufszentren, freies Land, Orangenhaine, Weinanbauflächen und Weideland. Geologische Erscheinungen im Grand Canyon, Arizona, (e) treten ebenso hervor wie die unterschiedliche Reflexion der Nadelwälder auf dem Nordrand (oben) und der Wacholdervegetation auf dem Südrand. Saisonal unterschiedliche Infrarot-Reflexion ist ersichtlich aus zwei Photos von Alamosa, Colorade, vom Dezember (f) mit Schneedecke und Juli (g), auf dem Kulturland und Schwemmlandvegetation deutlich unterschieden sind.

Baja California coastline. Although the resultant photography was not high resolution, planimetrically perfect, nor of continuous stereo coverage (whose use can often be justified only by the photogrammetrist or cartographer), the modest cost of up-to-date aerial photography (in an unaccessible area as Baja) is invaluable. Commercial mapping quality photography of the same area would have cost approximately $15,000 for black-and-white and almost $20,000 for color infrared.

By choosing the proper film and filter combinations, useful piuctres can be acquired from commercial airliners flying as high as 56,000 kilometers. Kodak's Aero Ektachrome Infrared has been used successfully and one suspects the Soviet manufactured S-2 infrared would provide similar results. Haze, air pollution, and high altitude have discouraged both scientists and tourists from photographing from airline windows with normal color or black and white films. Fig. 4 illustrates some of the possibilities when certain film and filter combinations are used.

Regional Analysis

Nearly every scientific discipline concerned with some aspect of the earth can find use of aerial photography. Quality aerial photographs are fascinating in details of natural environment and human occupancy which they contain. Each user who repeatedly employs medium and large scale aerial photography discovers it to be a relatively inexpensive, highly precise, and extremely versatile tool as a source of geo-science data extraction.

A geographer has the interest and motive to synthesize and integrate his own data and observations with those of other scientific disciplines within the framework of geographical regions. The region may be natural, man-made, micro or macro, but always a working unit whose analysis considers many elements of the region's landscape. LUKERMAN (Itek, 1961) has said:

"Recognizing and delineating regions is a difficult problem which geographers discuss in spirited and sometimes acrimonious fashion. If the geographic idea of the "total region" or "Landschaft," hitherto generally regarded as a theoretical entity, has any reality, [aerial] photography will surely reveal it . . . In most subject fields small photo scales have been tolerated as a means of getting cheap photography, complete coverage, or some other advantage; they are not merely tolerated but positively welcomed by regional geographers, who already value scale reduction as a method of generalization."

Efforts to manage and conserve natural and cultural resources, which often cross both minor and major political boundaries, require regional analysis and planning. Furthermore, such analysis requires understanding of the relationships between physical, climatic, biologic, human, and other elements comingled on the landscape. Need it be stated that aerial photographs provide a powerful tool for this analysis? And herein lies an important application of very high altitude, small scale aerial and spacecraft photography which has become increasingly available to the regional geo-scientist in the past decade.

Conclusion

There is an ever increasing demand for inventory, planning, and management data regarding natural and cultural resources of the world. With this demand there has been continuing development of photographic and other remote sensors. Although the most conventional of remote sensors, aerial photography's fundamental elements and techniques for acquisition and interpretation provide a most versatile and valuable reconnaissance tool for the earth scientist. Information that is permanently recorded on an aerial photograph commonly finds many uses, in many disciplines, in scientific evaluation and development of the earth's resources and in planning for the earth's human occupancy.

Acknowledgement

Photographic acknowledgements are given to R. N. COLWELL (1a, 1b); R. A. MINNICH (4e); R. W. PEASE (4b); NASA (2a, 3a, 3c, 3d, 3f). Research support by U. S. Geological Survey and Office of Naval Research.

SUPPLEMENTAL READING ON AERIAL PHOTO INTERPRETATION

ETHERTON, DAVID

Mathare Valley, A Case Study of Uncontrolled Settlement in Nairobi. Housing Research and Development Unit, University of Nairobi, 1972. pp. 10-11 and 18-22.

Ad THE HISTORICAL DEVELOPMENT OF MATHARE

10

Squatters have lived in the Mathare Valley area for at least fort years. Eight African villages on the east side of the town were recorded as early as 1921 and in 1931 when the City Council was debating the destruction of 'African Housing' outside the 'Native Location' (Pumwani). Some of this housing was built on 'Land rented from Indian owners' and it seems likely that these were the plots between Mathare River and Juja Road which had been subdivided and sold as quarry sites

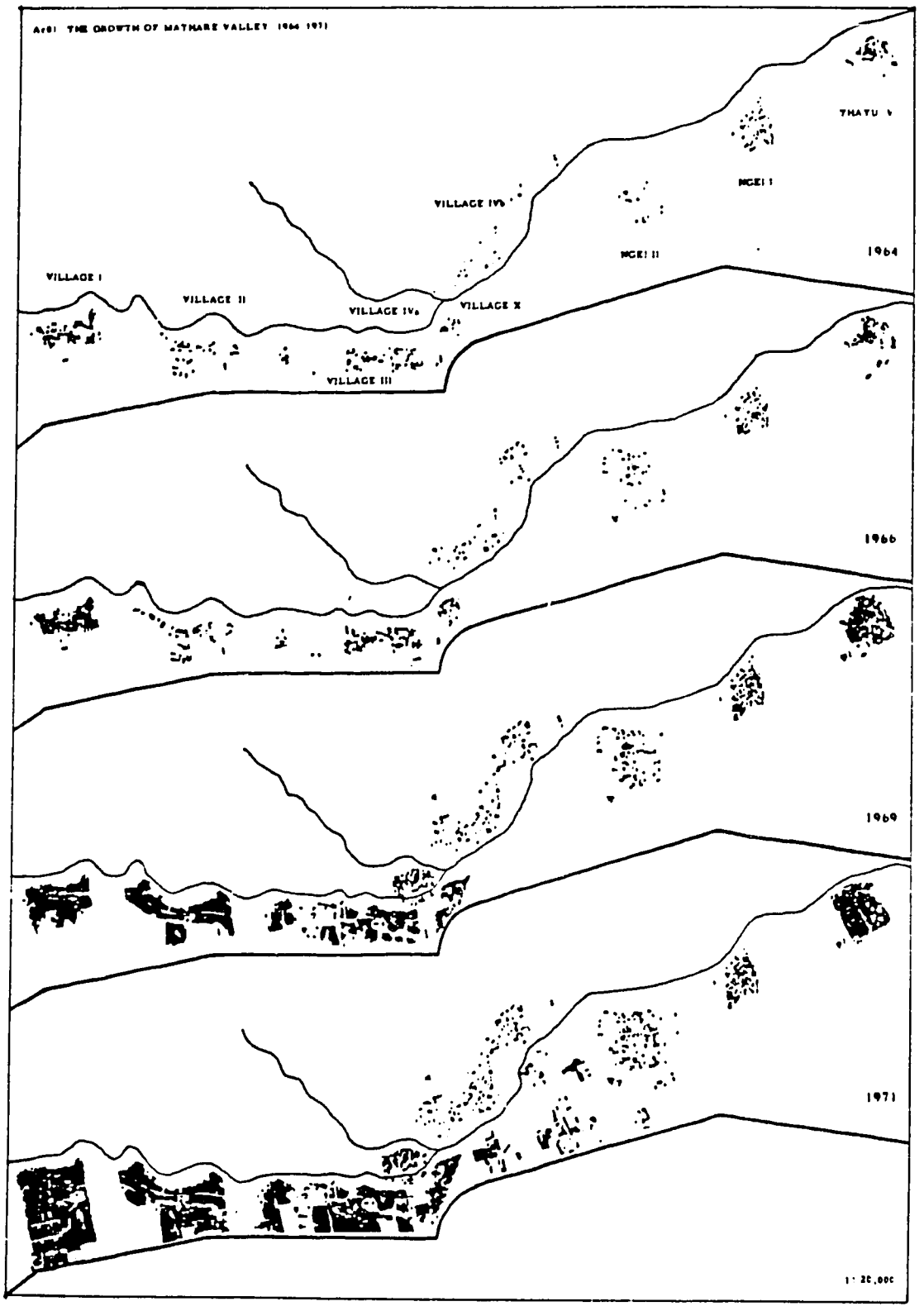
When the Emergency was declared, it was believed Mathare sheltered a Mau Mau core, so the 150 or so huts on the site where Village I now stands were bulldozed in 1954, and most of the people were taken into detention. The Government felt its suspicions were confirmed when many bodies were dug up at the bulldozing, which were presumed to be from political murders. However, Mau Mau did return to Mathare during the Emergency, holding meetings at night there, but being invisible during the day.

After the Emergency some of Mathare Valley's previous inhabitants returned to the City but it is difficult to say how many actually re-established themselves in the Valley. Aerial photographs from 1959 show only 9 structures in Village I, 10 in IVb and 5 in Thayu Village which together could account for no more than 300 people. An increase must have occured between 1959 and 1963 when one of the first acts of the new independent government was to try to clear Mathare Valley. Messengers with loud-hailers were sent to tell the inhabitants to get out within a week, but the opposition aroused amongst politicians as well as those living there, was sufficient to prevent the intention ever being carried through.

The growth of the Valley between 1964 and 1969 has been recorded from aerial photographs taken at two-year intervals. Village IVb is on Government land and part of it was settled before the First World War and part in 1968. Village I was settled in 1962 by a group of Kikuyu who made beer and originally lived in old Pangani, but had moved to the land of an Indian Muslim further up the Valley. When their homes were destroyed they moved downstream.

Apart from any genera' increase in the population there have been large injections of people into the Valley in recent years. In 1968, 102 families moved in from Eastleigh Section VII to make way for the Pumwani resettlement scheme although only 24 had been given plots. In June 1969 a large number of people moved into the Valley when part of the Kaburini squatter settlement was burned down by the City Council.

The most dramatic changes in Mathare Valley have occurred during the last 16 months. The population has doubled due to the addition of 7,628 room-units built by companies which formed in the Valley to buy the land. These companies were originally planned on a co-operative basis and attempted to include each head-of-household in the squatter village as a share older. This proved to be quite impossible and the original objectives were soon swept aside in a surge of speculative tenement building.


THE GROWTH OF MATHARE VALLEY 1964 1971
THATU
NGEI I
NGEI II
VILLAGE IVb
VILLAGE I
VILLAGE II
VILLAGE IVa
VILLAGE X
VILLAGE III
1964
1966
1969
1971
1 : 20,000

III THREE VILLAGES COMPARED

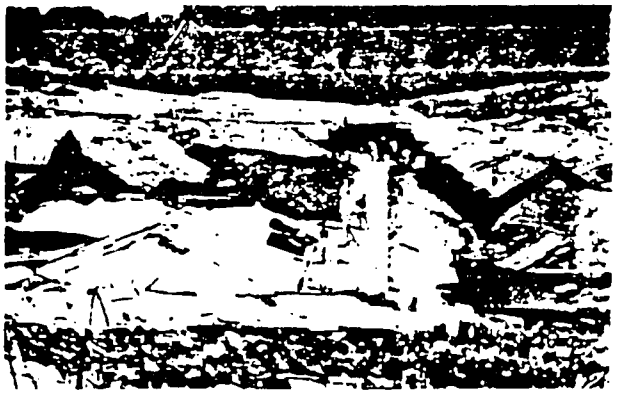
Three of the nine villages have been chosen to illustrate the main physical aspects of the survey.

Village I is typical of the denser urban settlement at the western end of the Valley
Ngei I and II are rural villages

Improvement plans for all three villages are described in Section E pp 65-69

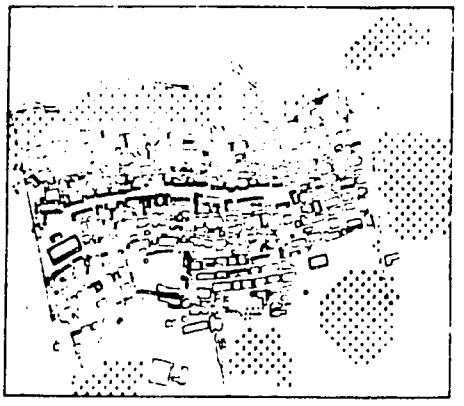
THE DRAWINGS OF EACH VILLAGE ARE THEN ADDED

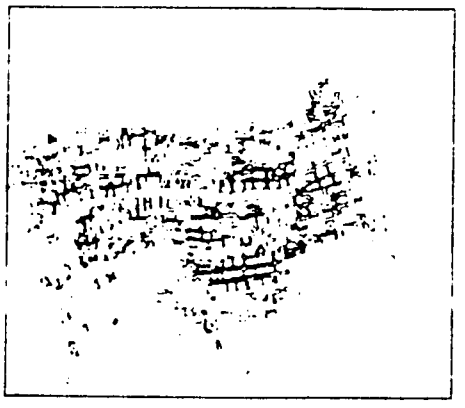
A village meeting in the community hall

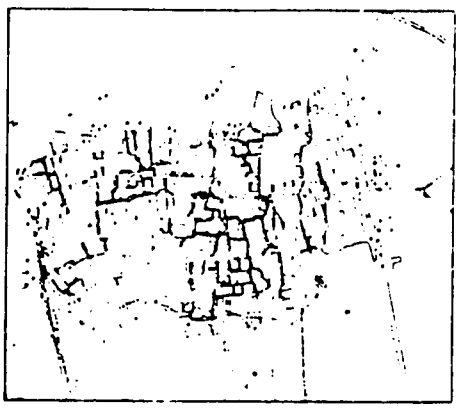


Cardboard, felt and corrugated iron are the most usual roofing materials in the urban villages

Two metered taps connected to city mains and one spring provide water for 4,294 people in Village I







BUILDINGS AND CULTIVATION

RESIDENTIAL — Total number of rooms 1,227

number of rooms per structure: 1 [illegible]; 2 [illegible]; 3 [illegible]; 4 [illegible]; 5 [illegible]; 6 [illegible]; 7 [illegible]; 8 [illegible]; 9 [illegible]; 10 [illegible]; 11 [illegible]; 12 [illegible]; 13 [illegible]; 14 [illegible]; TOTAL 10

COMMERCIAL — 10% of all rooms are used commercially

general store [illegible]; tailors shop [illegible]; 2nd hand clothes shop [illegible]; rain/hotel [illegible]; cobblers shop [illegible]; laundry [illegible]; butchers shop [illegible]; charcoal stall [illegible]; woodwork shop [illegible]; vegetable shop [illegible]; barbers stand [illegible]; inactive/stall vacated [illegible]; TOTAL 105

COMMUNAL — 1 school building with primary and secondary classes; 1 community hall; 1 village committee office. No clinic nor health centre

CULTIVATION — Cultivation takes place between the river and its flood line and elsewhere outside the village. Maize and banana are the predominant crops. There is no cultivation between the houses.

MATERIALS, CONDITION AND SPACE BETWEEN BUILDINGS

MATERIALS

	% walls	% roof
wattle	[illegible]	[illegible]
grass, banana leaves	[illegible]	[illegible]
cardboard	[illegible]	[illegible]
scrap roofing felt	[illegible]	[illegible]
metal	[illegible]	[illegible]
timber	[illegible]	
mud-and-wattle	[illegible]	
100% TOTAL	walls	roof 100% TOTAL

A number of mud and wattle walls are plastered with ash or cow-dung and some are painted. There is one stone building and a larger metal drum used as a house. Cardboard walls consists of sheets nailed to a wooden frame with bottom cap wattle.

Foundation — Wattle poles firmly wedged into 3"(7.5cm) holes in the ground.

Floors — Compacted soil, except for one [illegible]. Floor levels up to 3"(7cm) below ground level in 10% of the houses.

SPACE BETWEEN BUILDINGS — The majority of structures are less than 10 [illegible] apart. In view of the large number of infammable roofs there is danger of fire in many parts of the village.

PUBLIC UTILITIES

ELECTRICITY — Two branches have been taken from the sewage pump station connection to supply lighting and power for an electric guitar in the community hall, and for TV in one room.

ACCESS — Referred road access through Pangar 3 a steep track from Juja Road can only be used in dry weather. Within the village a single cul-de-sac street is suitable for vehicles. Footpath access between buildings.

DRAINAGE — Surface and waste water drains into a network of open channels running across the village into the cultivated area next to the river.

WATER SUPPLY — 1 spring located 400(1/2mi) from a group of pit latrines used only for clothes and utensil washing. 2 protected taps centrally located in a mud-and-wattle building. The village committee pays the NCC water bills and charges 10 cents per 4 gal. (15 l) tins.

WASHING WATER — People wash themselves, their clothes and cooking utensils at 6 points along the river.

RUBBISH — Rubbish-tips collected in number and distribution with pit latrines. NCC could only collect from the western edge of the village. Refuse is sometimes burned.

PIT LATRINES — 125 1 per 35 people - located in groups on the perimeter of the village. Average number in a group 7. Largest group 17.

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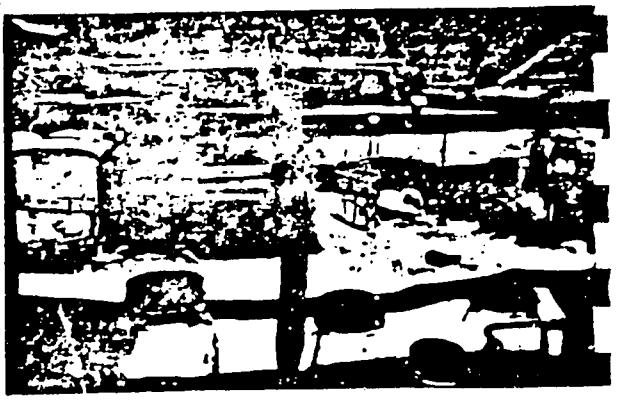

View from a shop counter. Almost all the rooms facing the main street are used commercially in Village I

Typical mud-and-wattle construction. Many of the walls are left unplastered

In the urban villages refuse-tips often coincide with pit latrines

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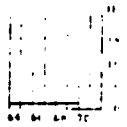

Housing area 9%
Cultivated area 30%
Open space 61%

BUILDING USE AND CULTIVATION

RESIDENTIAL Total number of rooms 226

number of rooms per structure	%
1	10
2	24
3	15
4	21
5	4
6	4
TOTAL	100

COMMERCIAL 7% of all rooms are used commercially

general store	11
cafe/bar	2
butchers shop	1
tea room	1
TOTAL	15

COMMUNAL 1 incomplete community-hall
No schools nor clinics
Children go to school in Kariobangi or Ruaraka

CULTIVATION The predominant crops are maize and sweet potato grown on 'shambas' located within the village

KEY

COMMERCIAL
RESIDENTIAL
COMMUNAL
TREES AND HEDGES
MAIZE
CASSAVA
SWEET POTATO

MATERIALS, CONDITION AND SPACE BETWEEN BUILDINGS

MATERIALS

	wall %	roof %
grass/ banana leaves		61
felt card		1
metal		42
timber	2	
mud-and-wattle	98	
100 TOTAL	wall	roof 100 TOTAL

most of the metal roofs are flattened tins

Foundations Typical mud-and-wattle construction see p. 24

Floors All compacted-earth some below ground level

SPACE BETWEEN BUILDINGS There is very little danger of fire except in the case of clusters of buildings where thatched roofs are less than 10 (3m) apart

CONDITION
Class A 19%
Class B 62%
Class C 49%

STRUCTURES IN CLASS B AND C
STRUCTURES LESS THAN 10 (3m) APART

PUBLIC UTILITIES

ELECTRICITY None

ACCESS A single track with two cul-de-sac branches is suitable for vehicles
Footpath access to houses also defines plot boundaries

DRAINAGE Due to the relatively flat site and the amount of vegetation between buildings, the only drainage channels run along the side of the main tracks

WATER SUPPLY 1 spring on the edge of the village
No mains water supply. Most water obtained from Kariobangi about 1 km from the village

WASHING WATER Clothes and utensils washed in the river. One main point where the river is nearest to the village and two smaller ones

REFUSE 41 separate rubbish-tips which do not coincide with latrines. Refuse burned regularly

PIT LATRINES 30 - 1 per 26 people - distributed evenly throughout the village
7 centrally located public latrines

KEY

VEHICLE ACCESS TRACK
PEDESTRIAN TRACK
OPEN DRAINAGE CHANNEL
WATER SUPPLY
CLOTHES WASHING POINT
RUBBISH-TIP
PIT LATRINES

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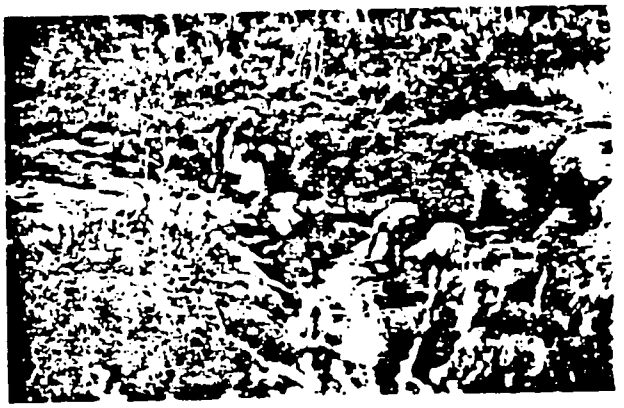
rural villages cultivation takes place on 'chambar' between uses

drainage channels run through the villages to the river



People wash themselves their clothes and cooking utensils at convenient points along the river

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SUPPLEMENTAL READING ON AERIAL PHOTO INTERPRETATION

from: Proceedings of Annual Conference of American Society of Photogrammetry: Engineering Applications Division, 1978.

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AERIAL PHOTOGRAPHY FOR RESIDENTIAL SUBDIVISION SITE SELECTION

Professor Douglas S. Way
Department of Landscape Architecture
Harvard University
Cambridge, Massachusetts

BIOGRAPHICAL SKETCH

Douglas S. Way is Associate Professor of Landscape Architecture at Harvard University where he specializes in techniques of terrain analysis and remote sensing applied to issues of land planning and design. Way studied civil engineering at Iowa State, received his BS in landscape architecture at the University of Wisconsin, and MLA from Harvard University. He is currently on leave from Harvard pursuing a PhD in Geography at Clark University under support of a NSF faculty science fellowship. Mr. Way is a principal in Steinitz Rogers Associates, Inc. and Douglas Way Associates and has directed or consulted on over fifty projects. He published "Terrain Analysis" which is widely used as a text on photo interpretation and numerous other papers. He has organized and directed over twenty short courses on photo interpretation and has been a faculty director of ten short courses on resource analysis techniques. For the past four years he has been a principal investigator on a NSF funded "The Interaction Between Urbanization and Land" project.

ABSTRACT

Predevelopment site analysis can play a critical role in site selection/evaluation of low-medium density subdivision housing. A more efficient and sensitive planning process can be developed if techniques of aerial photographic interpretation and computer data analysis are utilized. The data needs relevant to the location of low-medium density subdivision housing are identified and organized to form a location (site selection) model. The specified data needs were interpreted from aerial photographs evaluating the most suitable film type, scale, and date. Black and white, color, and color infrared photographs were obtained for five New England sites that served as test areas. Scales ranged from 1:4800 to 1:70000 and dates of coverage included spring, summer, and fall. Upon completion of the photo evaluation, the previously developed locational model was implemented comparing conventional hand mapping techniques to computerized data analysis/mapping.

INTRODUCTION

Many regions are experiencing growth pressures concentrated along the metropolitan and suburban fringe. Housing developers and towns have little, if any, existing physical site information that can be applied to a more sensitive predevelopment analysis and site locational evaluation. Quite often, decisions are made prematurely resulting in higher site development costs or non completion of the project. Professional planning services are not used because of the high fees. Techniques of aerial photographic interpretation/terrain and computer analysis may offer a more efficient procedure for obtaining and manipulating critical site data. If so, planners/engineers may be able to provide their services on a more affordable level. Locational criteria for low-medium density subdivision housing are identified

and the ability of aerial photographic interpretation to supply the data needed is explored. In addition, two analysis methods will be compared and evaluated: the first using conventional hand mapping techniques, the second applying a digital computer.

PROCEDURE

The data needs relevant to the location and evaluation of sites for low-medium density subdivision housing were defined from the formulation of the analysis model. This was generated by a review of housing locational models (Ingram, G., 1972, Brown, J., 1973) and interviews with housing developers active in the New England region (Poulis, G., 1974, Sugarman, D., 1975). Several sets of aerial photographs were utilized to determine what types of films, scales, and dates best satisfy the data requirements. The photographs included black and white, color, and color infrared taken during the spring, summer, and fall at scales ranging from 1:4800 to 1:70000. The locational model was then initiated testing conventional hand prepared maps and those created by a digital computer. Relative time, expense, system flexibility, and map readability provided an evaluation comparison.

ANALYSIS AND RESULTS

Several assumptions were necessary to formulate a site locational model for low-medium density housing. The model output can be used to identify the best sites for development within any one town. Land cost is not considered because of difficulty in obtaining this data, but several prime sites, once identified, can be further evaluated by comparing land cost or other factors. Low-medium density residential is defined as single family detached dwellings built in 50-80 acre subdivisions on $\frac{1}{2}$ - 1 acre lots with municipal water but with no municipal sewage collection/treatment system available. Sewage disposal must be onsite with septic tank leaching fields. These definitions typify much of the housing being built in New England. The final model output can identify for a planning board or developer which areas have the highest capability and potential marketability for low-medium density housing.

To identify prime housing sites in New England the following factors must be considered: construction costs, onsite sewage disposal requirements, existing zoning, potential land availability, type of and proximity to adjacent land uses, and site amenities. The flow chart outlined in figure one illustrates how a site locational model can be formulated from these factors. Septic tank leaching fields have different requirements in each state, but these standards usually specify information also needed for the determination of relative site construction (excavation and grading) costs: soil characteristics, soil depth to bedrock, depth to seasonal high watertable, and topographic slope. Satisfying the septic disposal regulations also describes sites of low excavation and grading cost. The existing zoning and potential land availability are contributing factors. Compatable zoning is desireable since zoning categories are increasingly difficult to change. The property acquisition process is simplified if large (greater than 10 acre) parcels are found. Some adjacent land uses can be positive and increase property value such as some types of agriculture, schools, recreation facilities, and other low density housing. Conversely, being next to airports, industry, commerce, high density housing, certain utilities, and heavily traveled highways is not desired. Other amenity features, if found

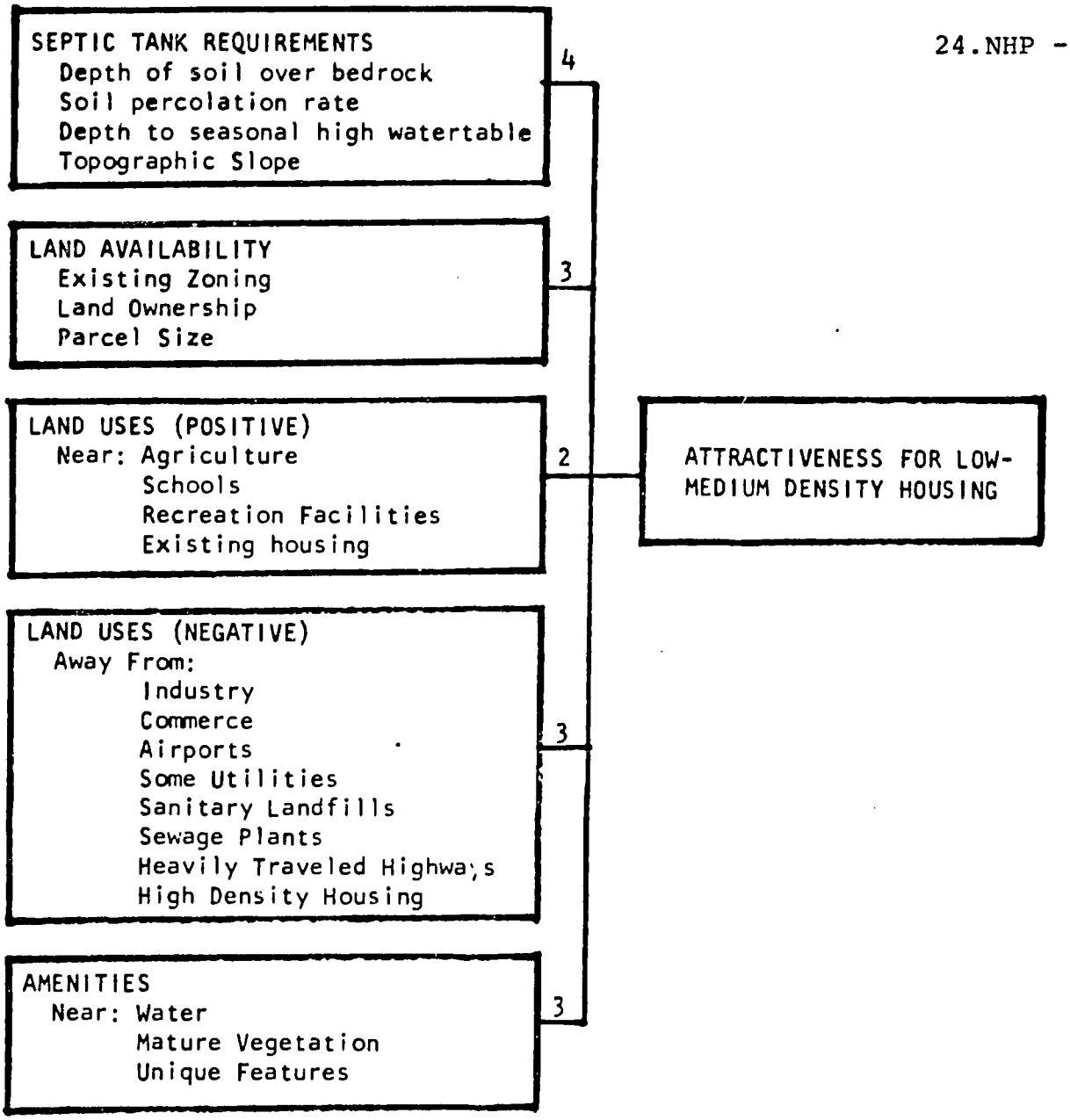


Figure 1. Locational model for low-medium density subdivision housing. The numbers after each box indicate the relative weighting. The top box, septic tank requirements, also summarizes relative construction (excavation and grading) cost areas. The final output identifies sites of high attractiveness for this type of housing.

on the site, can contribute greatly to its character and marketability. Proximity to or view of water, stone walls, unique rock outcroppings, and mature forest stands are examples.

The data categories outlined in table one summarize the specific criteria needed for identifying attractive housing sites. Most of this data can be interpreted from aerial photographs applying techniques of terrain analysis developed by Belcher, Kiefer, Mollard, Way, and others. Figure two shows these techniques applied to soil depth to bedrock and depth to watertable mapping.

Table I. Specific data requirements of low-medium density housing locational model. The underlined categories are those to be interpreted from aerial photographs.

Soil Category (Unified Classification)
GW, GP, GM, GC, SW, SP, SM, SC, ML, CL, OL, MH, CH, OH, PT

Soil Depth to Bedrock (in feet)
Exposed Rock, 0-3, >3-7, >7

Depth to Seasonal High Watertable (in feet)
0-1, >1-5, >5

Soil Percolation Rate (inches per hour)
1, 1-2, >2-4, >4-6, >6

Topographic Slope (percent)
0-3, >3-6, >6-10, >10-15, >15-25, >25-35, >35

Existing Zoning
Follows categories of town under study

Parcel Size (in acres)
<10, >10-40, >40-80, >80

Land Ownership
Public, Private

Existing Land Use
Agriculture, Schools, Recreation Facilities, Housing, Industry, Commerce, Airports, Utilities, Sanitary Landfills, Sewage Plants, Institutions, and Highways

Water
Reservoirs, Ponds, Lakes, Rivers, Streams, Intermittent Streams

Vegetation
Associations*, Height, and Density

0-20'	<30%
21-40'	31-50%
41-60'	51-80%
61-80'	>80%
80'	

* The specific associations recorded vary for each site.

The testing process used several photo interpretors each working with one combination of film type, scale, and date delineating the data units listed in table one. These were compared to a set of ground verified base maps which were assumed to be correct. The relative accuracy and effectiveness of satisfying the data needs was rated for each photo combination. Sites in five towns (figure three) were selected for interpretive testing and aerial photographs obtained. Many of these towns had multiple sets of photographs available of different film type, scale, and date. Spring photos were taken under leafless conditions, summer in full bloom, and the fall during peak 'fall coloration'. Table II lists the photo resources available for each site.

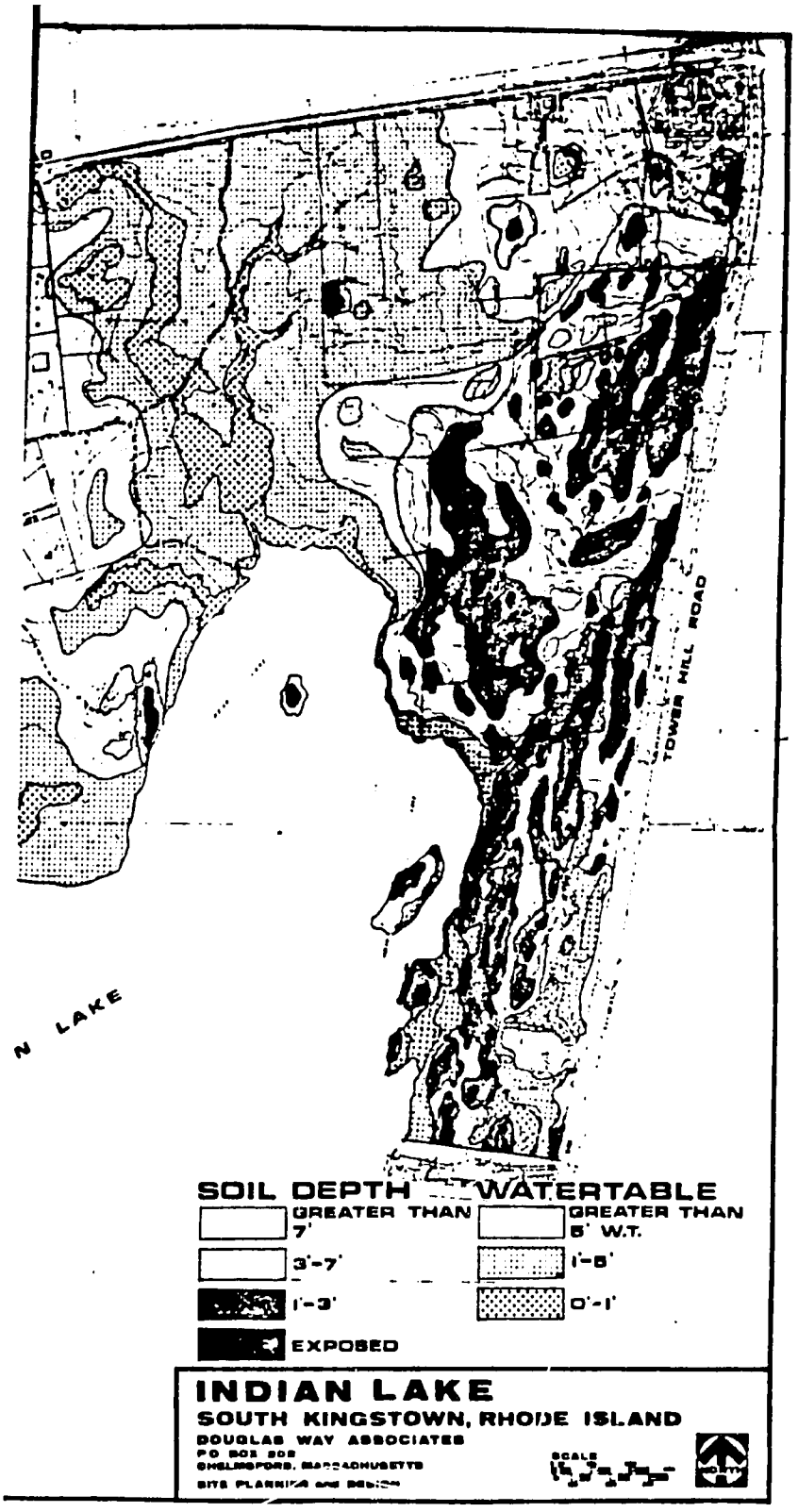


Figure 2. A sample of the depth of soil to bedrock and depth to seasonal high watertable mapping completed from aerial photographs of site five, S. Kingstown, Rhode Island. The photos used were 1:7200 black and white taken in early spring.

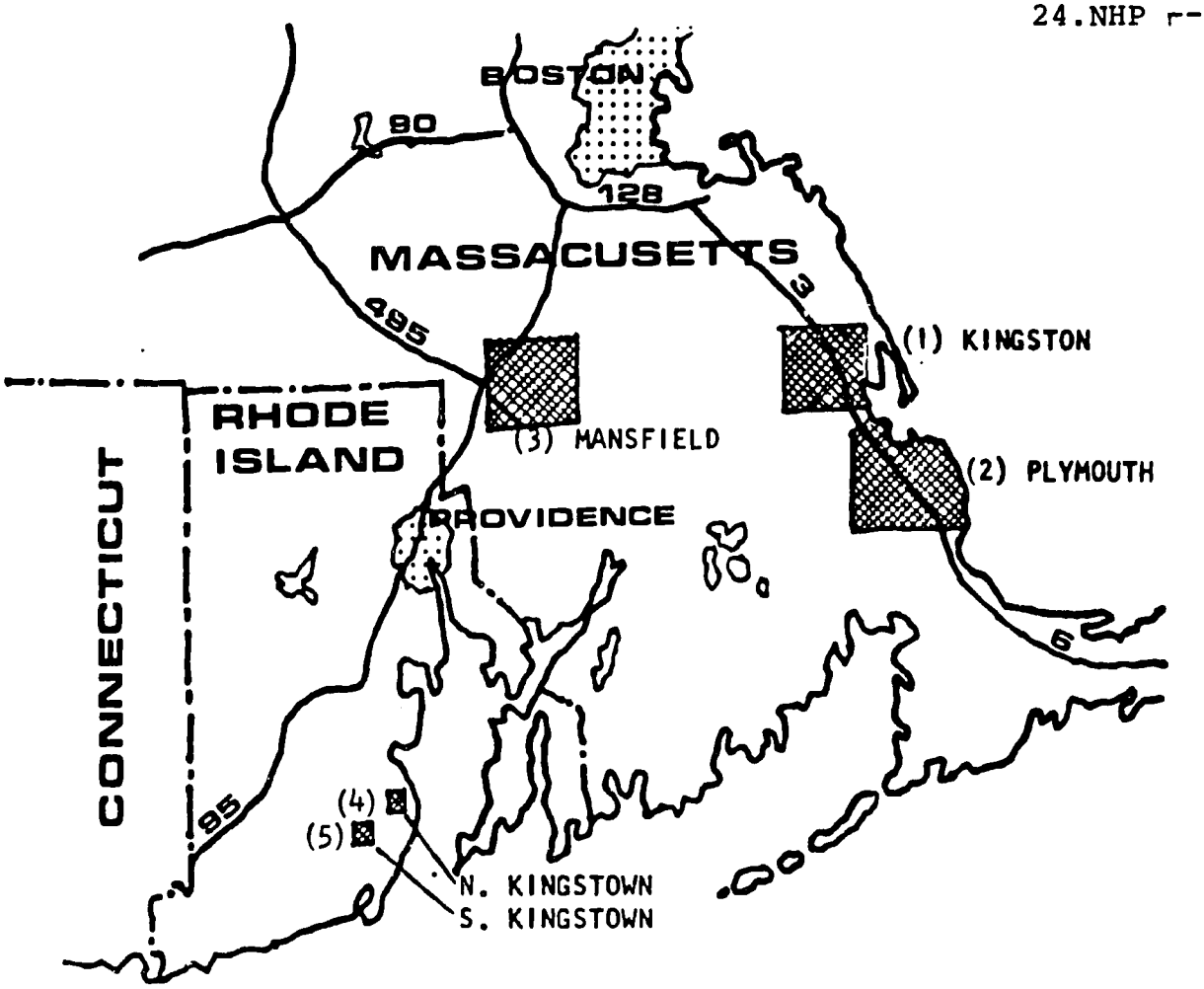


Figure 3. Five sites have been selected for aerial photographic interpretive testing.

Table II. The aerial photographic resources available for the five sites is listed indicating scale, film type, and season.

SCALE	SEASON	BLACK & WHITE	COLOR	COLOR INFRARED
1:4800	Spring	4, 5		
1:7200	Spring	1, 2, 3		
	Summer			1
	Fall		1, 2, 3	2
1:12000	Spring	4, 5		
	Fall		5	
1:20000	Spring	4, 5		
	Summer	1, 2, 3		
	Fall	2, 3		
1:40000	Fall	1, 2, 3		
1:60000-1:70000	Spring	1, 2, 4, 5		
	Summer			3
	Fall	3	3	3

Site Numbers: (1) Kingston, Mass.,(2) Plymouth, Mass., (3) Mansfield, Mass., (4) N. Kingstown, R. I., (5) S. Kingstown, R. I.

The results of the photo analysis are shown in table three. The large scaled photos (1:4800 and 1:7200) taken in the spring were equally able to supply the data needs. No advantage was gained by the larger scale, therefore, the 1:7200 photos covering more area per photo would provide coverage of lower cost. Increased accuracy of vegetation data were obtained with either color or color infrared fall photography, but in both instances the ability to do accurate soil interpretations significantly decreased. The 1:12000 scaled photos were less effective for soil mapping because detailed signitures of microrelief, erosional gullies, rock outcroppings, and tone became more difficult to observe. Fall 1:12000 color or color infrared photos still provided detailed vegetive information. Black and white photos of 1:20000 were most useful for soils interpretation if taken during the spring. However, at this scale the detail of data units begins to be adversely compromised. The 1:40000 scaled photos provided little useful soils information but some general vegetive interpretations were possible. A general site overview could be gained from these images but the detailed categories identified here could not be accurately satisfied. The 1:60000 and 1:70000 scaled photos did not offer much toward the data requirements. The most useful set were taken in black and white during the fall and could provide a general overview of soil/landform conditions. The color and color infrared films no longer provided useful vegetive data. The color distinctions and crown textures became homogeneous and detailed delineation of units was difficult.

Table III. Summary Evaluation of Photo Interpretation Test

			SOIL (UNIFIED)	SOIL DEPTH	DEPTH TO W.T.	PERC. RATE	EXISTING LAND USE	WATER	VEGETATION TYPE	VEGETATION HEIGHT	VEGETATION DENSITY	TOTAL RATING
1:4800	Spring	B&W	A	A	A	A	A	A	B	A	A	35
1:7200	Spring	B&W	A	A	A	A	A	A	B	A	A	35
	Fall	C	D	D	D	D	A	B	A	A	A	23
		CIR	D	D	D	D	A	A	A	A	A	24
1:12000	Spring	B&W	A	B	B	B	A	A	B	A	A	32
	Fall	C	D	D	D	D	A	B	A	A	A	23
1:20000	Spring	B&W	B	C	C	C	B	B	C	B	B	23
	Summer	B&W	D	D	D	D	B	C	C	B	B	17
	Fall	B&W	D	D	D	D	B	C	B	B	B	18
1:40000	Fall	B&W	D	D	D	D	B	C	C	C	C	15
1:60000-70000	Spring	B&W	C	C	C	C	B	D	D	D	C	16
	Summer	CIR	D	D	D	D	B	C	D	D	C	13
	Fall	B&W	D	D	D	D	B	D	D	D	C	12
		C	D	D	D	D	B	D	C	D	C	13
		CIR	D	D	D	D	B	C	C	D	C	14

Relative ratings: A is best, D worst. Total number of points determined by assigning 4 to A, 3 to B, 2 to C, and 1 to D.

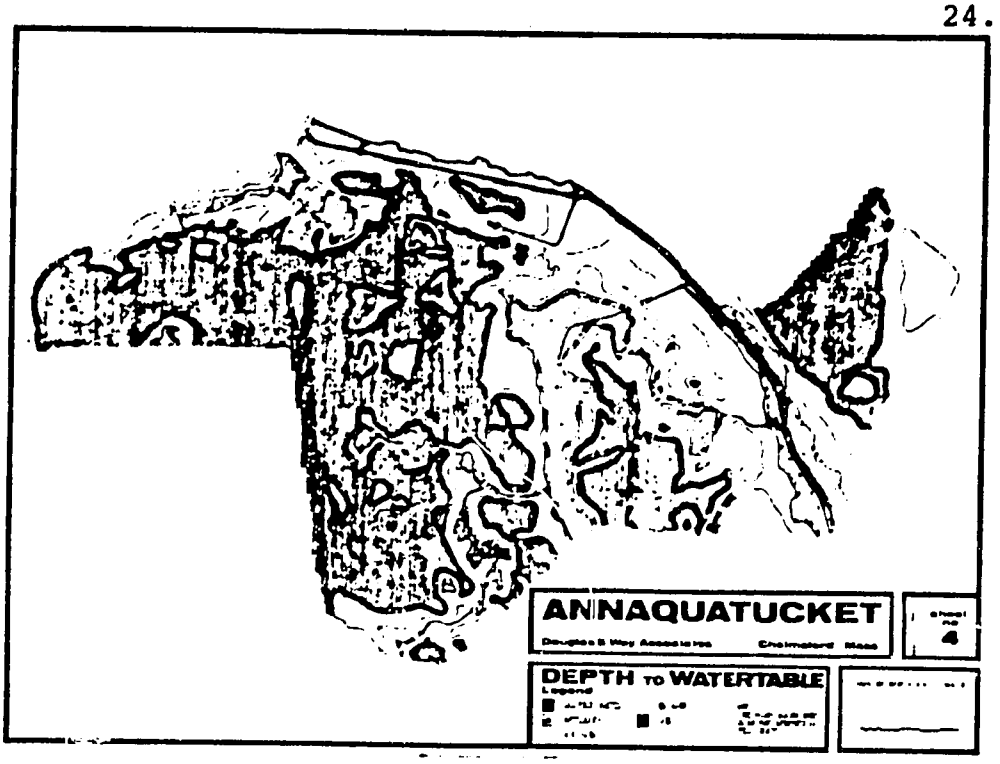
The interpreted data was mapped using two different techniques: conventional hand mapping (mylar base maps to provide black line prints) and a gridded data base input into a digital computer. The hand drafting method typifies what is done in most professional offices; preliminary data maps are prepared on a controlled base map and drafted in final form on mylar or sepias. Black line prints can be inexpensively made and later colored to clearly delineate the data characteristics. The computer system also requires the same data on a controlled base, but, in addition, it is segmented into cells whose size correspond to the required analysis 'grain' (Steinitz, Rogers Associates, Inc., 1970). Cell size for the five sites under study ranged from one square hectare to ten meters square (total cells for any one site were less than 9600). The gridded data were keypunched and provided as input to a digital computer accessed by programs that efficiently deal with gridded data structures (Sinton, D., 1976). The data was manipulated upon command to make maps and analysis.

The amount of time required to prepare data maps was approximately the same for both methods. The computer system could print a map inexpensively ($.80 per map) and provide a camera ready copy for publication. The hand method required running prints and graphically preparing them for display. The readability of the final maps was judged higher for the conventional hand maps; public audiences have some difficulty in orienting spatially to the computer maps. (See figure four)

For analysis preparation the conventional hand colored maps had to be overlayed on a light table. Data units were combined and transferred to a final analysis map (a mylar or sepia). If the analysis contained more than five items, or if different weightings were required, the overlaying process was very difficult. Errors could easily be made; some combinations were hard to see. The computer could very easily produce analysis maps. The only limit to the number of variables combined was the user's ability to comprehend the complexities of the combinations. The maps cost an average of $1.00 per map and were obtained in a two hour or overnight turnaround. After considering all expenses, the computer was much less expensive during the analysis phase. Many more analysis could be prepared within a short period of time providing for a more thorough analysis of site conditions.

SUMMARY AND CONCLUSIONS

Aerial photographic interpretation can supply most of the data needed for analysis of potential low-medium density housing areas. Given the list of physical site data the best photos for interpretation are black and white large scale (1:7200) taken in the spring before vegetation bloom. For soils related information black and white spring photos were most useful. The ability to make the required detailed interpretations severely decreased at scales smaller than 1:20000. Vegetation identification was most accurately prepared from 1:7200 fall photos using color or color infrared when leaves were exhibiting peak coloration. Some specific species could be identified by their color signitures. Photos smaller than 1:20000 did not provide detail in the vegetive analysis. Land use was easily interpreted from all of the photo sets. The different scales, dates, and film type did not present any significant differences. However, it was concluded that untrained interpretors could more easily identify land use categories from the color photographs; no



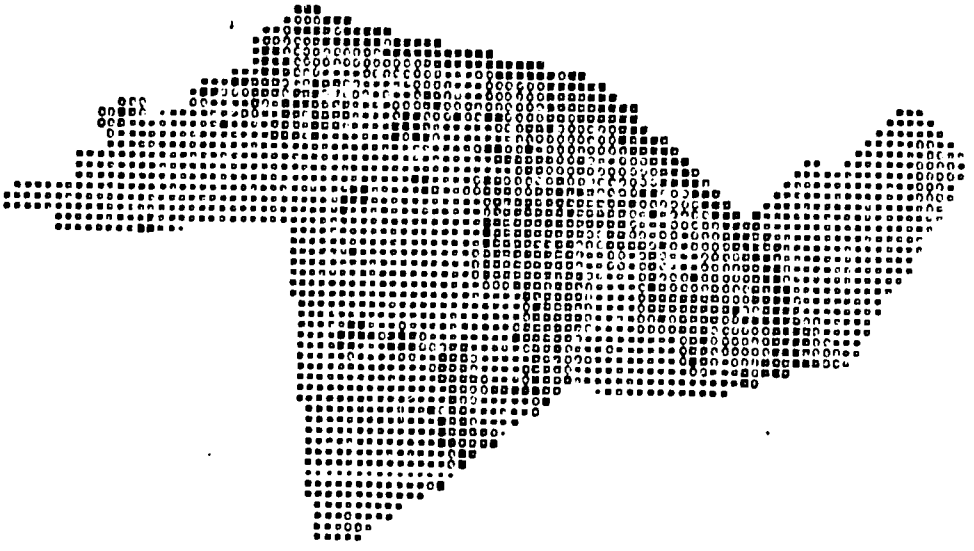


Figure 4. Two maps showing depth to seasonal high watertable illustrate the different graphic formats. The top map was prepared by hand (orginally in color); the bottom printed by computer. The grid cell size is fifty feet square. The site illustrated is number four, N. Kingstown, Rhode Island.

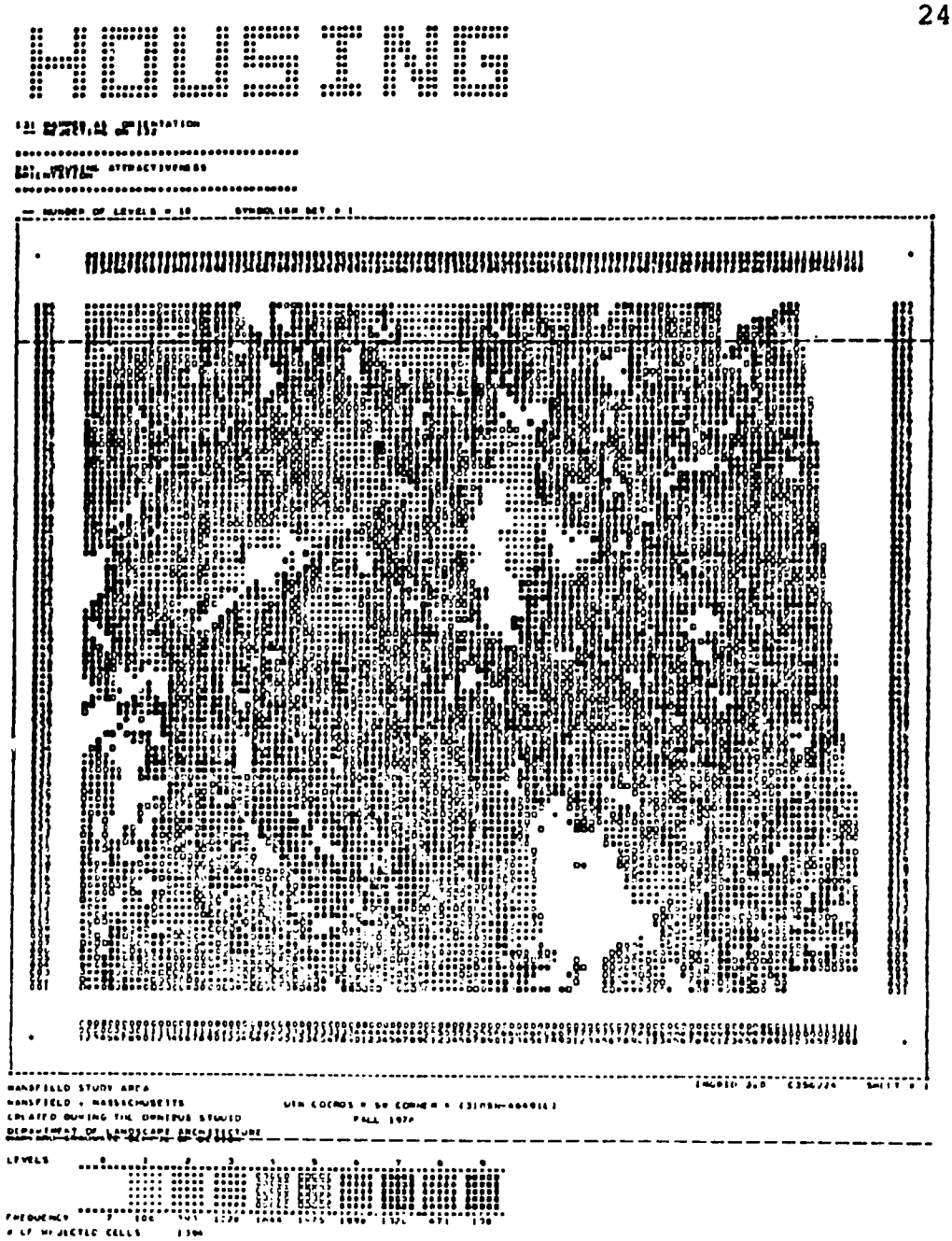


Figure 5. The analysis output (low-medium subdivision housing attractiveness) for site number three, Mansfield, Massachusetts. Grid cell is one square hectare.

compensation has to be made for gray scale or false color. Wetland and water categories were clearly shown on spring black and white photos but color infrared more accurately indicated water. The interpretors agreed that working with multiple sets of photos was desirable. This allowed for cross checking of the various indicators and interpretive hypothesis. Black and white 1:7200 spring and color or color infrared 1:12000 fall photographs provided the most beneficial combination; all of the listed categories could be accurately interpreted. The type of analysis model formulated in this study requires detailed soils and vegetive data. In other regions the analysis factors may be different and a similar testing to determine the most appropriate photo resources would be necessary.

The analysis of the collected data with conventional versus computer techniques indicates an area where costs can be diminished and a more sensitive analysis gained. With the computer a greater number of complex analysis could be completed at the same cost compared to the conventional hand drawing techniques. The efficiencies increase as the site becomes larger, the number of possible solutions or options larger, and as the required analysis becomes more complex. The computer map output is inexpensive but may not be suitable for public presentation. The conventional maps using graphic techniques were more effective as communication tools.

Aerial photographic interpretation and computerized analysis can provide techniques resulting in a more efficient, accurate, and sensitive site selection, analaysis, and evaluation. Professional services could be offered at lower costs attracting a range of clients not previously identified.

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Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ESTABLISHING A NATIONAL HOUSING FINANCE SYSTEM

Wednesday, November 14, 1979

2:00-5:00 p.m. Code 26.NHP

Presented by:

James W. Christian

SHELTER TRAINING WORKSHOP

November 5-30, 1979

A. THE IMPORTANCE OF INCREASING EFFECTIVE DEMAND . . . . . 26.NHP -- 1

B. THE MEANS OF INCREASING EFFECTIVE DEMAND . . . . . 26.NHP -- 2

C. THE FOCUS OF RESOURCE MOBILIZATION . . . 26.NHP -- 3

D. THE TASK OF THE NATIONAL HOUSING FINANCE SYSTEM . . . . . 26.NHP -- 5

E. THE RELATIONSHIP OF HOUSING BANKS AND HOUSING DEVELOPMENT AGENCIES . . . . 26.NHP -- 6

F. SYSTEM OPERATIONS: THE TECHNICAL OPTIONS. . . . . 26.NHP -- 6

ESTABLISHING A NATIONAL HOUSING FINANCE SYSTEM

A. THE IMPORTANCE OF INCREASING EFFECTIVE DEMAND

The absolute amount of housing investment which can be undertaken depends critically on at least two factors--the availability of financial resources with which to make the investment and the effective demand, as distinct from the need, for the housing units. For completeness, we might add a third and a fourth factor, the availability of land and the ability of the construction industry to build housing. For present purposes the critical factors remain financing and effective demand.

The distinction to be made between need and effective demand is that effective demand means that both the willingness and the ability to buy the product exist. Expanding the scale of housing investment to meet housing need and to realize the beneficial economic effects of housing investment on growth and development implies mobilizing the necessary financial resources and expanding the effective demand for housing.

Expanding the effective demand for housing means, in turn, reaching down through the range of income groups.

Failing to reach the lower income groups limits the potential of housing investment to generate income and employment for the total economy.

B. THE MEANS OF INCREASING EFFECTIVE DEMAND

One of the most widely used methods of increasing effective housing demand is the long-term mortgage loan. Many developing countries lack the specialized institutions to provide this type of financing. Consequently, effective housing demand tends to be limited to the wealthy who can gain access to commercial bank loans, usually on three- to five-year terms at commercial rates of interest.

The administration of long-term mortgage loans requires an institutional framework--a financial infrastructure--comprised of technically qualified and experienced personnel, armed with established procedures for judging the creditworthiness of the borrowers, for disbursing and accounting for loan funds, and for collecting loan payments as they fall due. This financial infrastructure can provide the means for extending long-term housing finance to lower-income families.

The obvious constraint on mortgage lending is the availability of financial resources. Conceptually it makes little difference whether these resources are mobilized through the tax structure, through a postal saving system, or as funds placed on deposit with the lending institution itself. Experience with developing countries in all parts of the world has taught us, however, that mobilizing savings for housing investment is most effectively accomplished when the saving function and the lending function are lodged in a single institutional entity--a national housing bank or a savings and loan or building society system--since the identification of a savings institution with mortgage lending facilitates the mobilization of saving.

C. THE FOCUS OF RESOURCE MOBILIZATION

There is among these considerations a happy coincidence of circumstances. Typically, the largest source of untapped savings in a developing country is that of individual families, for commercial banks tend to specialize in serving the needs of business enterprises. Concurrently, obtaining decent housing is one of the most cherished goals of individual families. Therefore, a financial institution whose lending activities are specialized in long-term mortgage lending to facilitate the achievement of this goal can successfully mobilize as new savings the idle financial resources of these families. Moreover, the loan repayment flow also

constitutes saving and provides a revolving fund through which loans can be extended to still more families.

Other approaches are, of course, possible. Postal savings systems offer the convenience of a nationwide branch network and there is no reason why such saving could not be channeled into housing finance, given an institutional framework for loan administration. The tax system also provides a means of mobilizing financial resources for housing reinvestment.

It should be noted, however, that tax system approaches are too often associated with subsidization schemes, particularly when housing for lower-income groups is involved. Subsidies for lower-income housing are, of course, granted with the very best of intentions and usually in the interest of expanding the housing market.

In fact, however, the most common effect of large-scale subsidization is to limit the expansion of the market by eliminating part of the loan repayment flow and, hence, restricting the availability of funds for relending.

Therefore, while the source of savings flow channeled into housing investment need not necessarily be a matter of great concern, the savings must be recovered through loan repayment to provide the ever-expanding pool of financial resources needed to sustain the expansion of the housing market.

Given the need for an institutional infrastructure to administer mortgage loans, however, the optimal approach is to vest in it the responsibility for savings mobilization as well as loan administration.

D. THE TASK OF THE NATIONAL HOUSING FINANCE SYSTEM

Such an institutional framework cannot, of course, be created overnight. Preparing and enacting legislation for the establishment of housing finance institutions, recruiting and training personnel, preparing and implementing operating procedures, and nurturing the flow of new deposits all take time and dedicated effort, as well as advance planning and, usually, technical assistance.

To persuade families to depart from their traditional patterns of saving, a convincing case must be made that housing finance institutions will, in fact, make long-term mortgage loans and that housing units appropriate to the needs and tastes of the people will, in fact, be built and sold at prices they can afford to pay. Such a case can usually be made with good planning, good management, and a strong initial effort in the implementation of the national housing policy; it usually cannot be made with a token effort. When families have been convinced that these things will happen, they have shown a remarkable capacity to save.

E. THE RELATIONSHIP OF HOUSING BANKS AND HOUSING DEVELOPMENT AGENCIES

In some cases, national governments have chosen to combine the financial and construction tasks in one organization. This condition probably results from a perception of expedience.

In fact, experience suggests that it is not expedient to combine these functions under one roof since the financial management required usually takes a back seat to construction, with undesirable long-term consequences.

F. SYSTEM OPERATIONS: The Technical Options

1. Management Objectives

A system of internal planning that sets attainable goals and objectives for the institution as a whole and for each of its major components is essential for effective system management. Typically, the objectives are expressed in quantitative terms and are dimensioned in time; for example, savings deposits are targeted to increase to a particular level during the next three months or the next year. Failure to achieve the target forces an examination of the reasons therefor, often resulting in the discovery and correction of weaknesses in the management system.

This approach also provides important feedback to employees in their performance, both individually and as a

departmental unit, which promotes high performance and morale.

Cost effectiveness of effort is also an important element of a modern management system, and for financial institutions, overall cost effectiveness is quickly reflected in the capital-to-assets, or net-worth-to-assets, ratio. This ratio, which can be expressed in several variations, reflects the adequacy of the institution's capital to sustain losses and remain solvent.

2. Maintenance of Capital Adequacy

An institution's capital must grow with its assets and liabilities to maintain capital adequacy. After initial capitalization, the principal means by which capital is increased is the retention of earnings, which are, of course, net proceeds from operations or net income.

The major revenue-producing assets held by housing finance institutions are mortgages and other interest-bearing securities; their major expense items are interest on deposits and personnel and administrative costs, including overhead. In developing countries, housing finance institutions seem to have the most difficulty in controlling personnel and administrative costs and, therefore, in generating a flow of retained earnings adequate to maintain the growth of net worth.

3. Portfolio Management

Portfolio management is concerned primarily with balancing liquidity needs against the need for earning assets, with maintaining an adequate spread between the average cost of funds to the institution and the average yield on assets, and with balancing the asset maturity structure which produces a cash flow for reinvestment against the net inflow of new deposits. In short, portfolio management deals with assets and liabilities in such a way as to satisfy liquidity and cash flow constraints while maximizing net earnings.

4. Loan Administration

The lending policy of a housing finance institution and its administration of that policy determine, to a very significant extent, the degree to which the institution reaches its full market potential and the extent to which its capital reserves grow. Two elements of loan administration are of prime importance:

(a) Underwriting: Every financial institution attempts to grant only those loans that can confidently be expected to be repaid promptly and in full. This concern is reflected in every institution's underwriting standards. Most lending policies and standards recognize that interruption or irregularity of a borrower's income is

the most common cause of default and delinquency. Consequently, many underwriting standards screen out potential borrowers whose income are not derived from salaried employment and refuse to consider secondary sources of income in qualifying a borrower for a loan. Such standards unnecessarily limit the institution's market and the access to long-term shelter finance of many otherwise qualified families.

(b) Delinquency Control: Sound underwriting is the most important step in an effective delinquency control program. If the method of repayment is adapted to the borrower's economic circumstances, delinquency control is generally assured.

The repayment process must, however, be continuously monitored and enforced. Delinquent borrowers must be reminded promptly and the sanctions provided for in the loan contract (foreclosure, eviction, penalty charges, etc.) applied in all cases.

Forebearance and debt rescheduling should, however, be included among an institution's collection procedures to provide an organized method of distinguishing between unavoidable circumstances affecting the borrower's ability to repay and

simple failure to live up to the terms of the loan contract.

5. Savings Administration

Both the management and the staff responsible for opening new accounts and servicing existing accounts must be especially sensitive to depositor convenience and service; the depositors' funds are the lifeblood of the institution, and prompt, courteous, and personalized service should be a hallmark of the institution. This feature, more than any arrangement of the teller line, the banking floor layout, or the type of equipment employed in savings administration, will assure customer satisfaction and, therefore, deposit retention and growth.

Whatever the institutional form of a housing finance system--housing bank, building society, savings and loan association, or even a department of a commercial bank--the financial instrument or instruments used to attract household savings is of special, even critical, importance. Three main types of instruments have enjoyed favor and deserve to be discussed here.

(a) Long-term Bonds: It is often argued that financial institutions must match the maturity of their assets to the maturity of their liabilities. This

view is the principal basis for restricting commercial bank lending to short-term maturities.

A commercial bank's deposits are short-term; therefore, its loans must also be short-term. It follows from this argument that the long-term lending of a housing finance system should be based on long-term liabilities, such as long-term bonds.

Matching the maturities of assets and liabilities is surely desirable from the point of view of prudence in lending, but if savings are to be drawn from the household sector, long-term bonds seldom offer characteristics that can appeal to a significant number of households.

(b) Contract Saving Plans: Contract saving plans also seek to extend a housing finance institution's liabilities into longer maturities. At the extreme, however, a pure contract saving system ties each saving contract to a home acquisition loan; every depositor is scheduled to become a borrower at a predetermined time in the future. Inasmuch as deposits made under a contract saving plan typically cannot be withdrawn prior to maturity of the contract without significant penalties to the depositor, households participating in contract saving plans must continue to hold at least some

"contingency" balances outside the system. The extent to which idle balances can be mobilized from households by contract saving plans is, therefore, limited.

(c) Volu ·ary Saving Systems: Voluntary saving systems offer the broadest appeal to households and, hence, the greatest potential for savings mobilization. They also pose the greatest financial management problems for the institution. Since voluntary savings deposits can be withdrawn by the depositor with short prior notification, the institution must always be concerned about experiencing a net savings outflow. Given that a housing finance institution's assets consist primarily of long-term mortgage loans, which generate stable but relatively slow repayment flows, any significant net savings outflow threatens the ability of the institution to pay its depositors unless it has a strong secondary source of liquidity.

In spite of this feature of the system, the most successful housing finance systems throughout the world employ voluntary saving as their primary approach to savings mobilization.

Many savings systems are designed and operated as mixed systems to provide the best features of each of several approaches.

In all of this, the issue is designing a system that has a broad appeal to the largest number of potential savers; the mechanical aspects of assuring that the system also promotes the viability of the institution are the responsibility and function of the institution's management.

6. Savings Promotion

Each promotional program will be somewhat unique, though housing finance institutions typically appeal to the family's desire for homeownership and stress the advantages of long-term mortgage credit in facilitating the family's aspirations in this regard. But families have other needs and aspirations that should not be overlooked--education, marriage, acquiring household furnishings, etc.--and the savings promotion program should also stress the advantages of systematic saving for such purposes.

Among other elements of a successful promotional program are the interest yield to the depositor and the safety of the deposit. With regard to the latter, insurance of deposits by the government is a common means through which governments support savings mobilization efforts and one

that has proven effective in reassuring families that their savings will be safe in the hands of the institution.

Savings promotion must be supported by convenient access to the institution's facilities--branch offices must be located in major market areas. Mobile branches can often extend convenient access to an even broader market area. In any event, a savings promotion program has been successful when the prospective depositor walks in the door of the institution. Retention of the depositor as a satisfied client of the institution is the responsibility of the management and staff engaged in savings administration.

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

OFFICE OF HOUSING PRESENTATION

Thursday, November 15, 1979

9:00-10:30 a.m. Code 27.S

Presented by:

Peter Kimm

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

ECONOMICS OF HOUSING SUBSIDIES

Thursday, November 15, 1979

10:30 a.m. - 12:00 noon Code 28.NHP

Presented by:

Richard T. Pratt

SHELTER TRAINING WORKSHOP

November 5-30, 1979

INTRODUCTION . . . . . 28.NHP -- 1

THE NATURE OF SUBSIDIES. . . . . 28.NHP -- 2
Definition of Housing Subsidies. . . . . 28.NHP -- 2
Misconceptions . . . . . 28.NHP -- 2
The Rationale for Subsidy. . . . . 28.NHP -- 3
Problems with Subsidies. . . . . 28.NHP -- 5
Consumption of Scarce Resources. . . . . 28.NHP -- 5
Equity Problems in Housing Subsidy . . . . . 28.NHP -- 6
Dissolution of Housing Capital . . . . . 28.NHP -- 7
Intertemporal Subsidy Problems . . . . . 28.NHP -- 7
Market Disruptions . . . . . 28.NHP -- 8
Methods for Subsidizing Housing. . . . . 28.NHP -- 8

INTRODUCTION

The Popularity of Subsidies

The existence of housing subsidies is found in many countries ranging from the least developed, agrarian societies to the most highly developed, industrial nations. The proliferation of housing subsidies indicates the political popularity.

Goals

The generally stated purpose of such subsidies is to improve the quality of housing in that nation and a broader, implied purpose is to improve the quality of life. While the goals may be worthy, their accomplishment is unlikely both because of the economic realities of the concerned countries and the generally counterproductive nature of the subsidy programs themselves. The achievement of housing goals is often actually hampered by the misuse of subsidies and the consequent adverse economic effects. Many housing policies are economically unrealistic and tend to generate unachievable expectations on the part of both housing administrators and households. Too often these high expectations are a result of a basic misunderstanding of the potential and the nature of subsidies. The inevitable consequence of misapplied and misunderstood subsidy programs is the disillusionment and unrest of the nation's citizens and the wasting of resources on vain hopes.

THE NATURE OF SUBSIDIES

The Definition of Housing Subsidies

Housing subsidies are transfers of income to purchasers of housing, or non-owner consumers of housing services. The transfer of income is a restricted one in that the income either in a money form or in kind must be directly applied to the purchase of housing and housing services. Because housing subsidies represent a type of transfer payment, they also require an offsetting transfer in the form of a tax on other entities within the economy. The total concept of a housing subsidy then is the imposition of a tax on certain segments of the economy combined with a restricted income transfer to the recipients of the subsidy. For a given level of production or investment the economic cost of the housing services produced is essentially independent of the existence of the subsidy. The real cost of providing housing services, that is the use of capital, materials, labor, and land, is not reduced by the existence of the subsidy. Subsidy programs may redistribute housing costs among groups but they cannot reduce these costs. As will be shown later, most housing subsidy programs provide households with more housing services than they would consume given complete control over their expenditures.

Misconceptions

In attempting to assess the true nature of subsidies it is necessary to clear away some of the misconceptions concerning them.

Housing subsidies do not reduce national cost of the subsidized service. For a given level of production or investment, the economic cost is essentially independent of the existence of subsidy. The cost of housing, for example, is the cost of capital, material, and labor resources which are devoted to the housing sector. Subsidy programs may redistribute housing cost among groups but they cannot reduce these costs. A housing subsidy is a transfer of income to a household for the purpose of providing them housing services greater than that which they could or would consume from their incomes.

The Rationale for Subsidy

Housing subsidies (as with other forms of subsidy), whether to all households or limited to lower income groups, are rooted in the belief that households will choose a less than optimal level of housing investment and must be induced to purchase, or consume, greater housing services than they would choose in a market setting. The existence of poverty level households does not provide sufficient rationale for housing subsidies. The existence of impoverished households within an economy may be a justification for downward income redistribution, however, it does not justify channeling redistributed funds directly into housing.

In the absence of major housing market imperfections housing subsidies will always be economically inferior to income supplements. Under most circumstances, households do not have a "housing problem"; they have only an "income" problem. Housing is generally available for those who have the ability to pay. Housing services are inadequate,

based on physical standards, because households do not have sufficient income to afford higher housing standards. Unless it is believed that "special" social benefits are derived from housing, households will benefit more from an unrestricted increase in their income than from being provided housing services of equal value. While frequent claims are made concerning the existence of positive externalities associated with housing there is little evidence to support these claims.

An example may make the suboptimization of housing subsidies clearer. Assume that a household has an annual income of $10,000, and that based on its need for food and other necessities, the household wishes to spend 15 percent of its income in acquiring a housing unit. This household then will spend $1,500 per year for its housing services (.15 x $10,000). This housing payment will allow the purchase of a unit requiring a debt service of approximately $14,140[1]. If the government is willing and able to provide this family with a dwelling costing $25,000, the debt service required for this unit may be approximated as $2,652 per year[2]. By providing this unit, the government has theoretically increased the household's income by $1,152 per year, or 11.5 percent; and has substantially increased the percent of income used for housing.

If, instead of providing the house, the government were to provide the family with an additional $1,152 per year, the family

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[1] $14,244 is the size of a loan which could be paid off with monthly payments payable with $1,500 per year over a 30-year period at 10 percent interest.

would have a total spendable income of $11,152 per year. If the household had received this income as case, and if their desire for housing still approximated 15 percent of income, the actual desired housing expenditure would be $1,673 per annum. This would be consistent with a housing unit having a value of $15,771. Thus, the government has placed the family in a home having a value approximately $9,000 greater than the one which would provide them the highest level of satisfaction given the total resources available to them. By providing a deep housing subsidy, the government has provided more housing services than the individual household wishes to consume given its income.

Problems with Subsidies

Several problems may be associated with housing subsidy policies. Five common problems are:

1. The incentive to consume scarce resources,
2. Inequitable income distribution effects,
3. Dissolution of housing capital,
4. Intertemporal implications for taxation and spending, and
5. Market disruptions.

Consumption of Scarce Resources

The laws of supply and demand dictate that the lower the price of a commodity, the more of that commodity will be demanded and consumed. Subsidy programs which mask the true cost of resources to the housing services consumer result in an inefficient use of these resources. For example, in Korea, a rapidly growing economy,

capital for that growth is very limited. The practice of subsidizing interest rates by making housing finance loans at rates as low as three percent, when market rates may range from 20 to 40 percent, both misallocates capital toward housing and at the same time assures a shortage of funds at the subsidized rate. Consumption of scarce resources is not only encouraged through lowering of cost, but, as was pointed out in the previous section, consumption of housing services in excess of those desired by low income assisted families given their total income is encouraged when the government provides a housing subsidy as opposed to an income supplement.

Equity Problems in Housing Subsidy

The provision of widespread deep subsidies results in demand exceeding supply even in wealthy countries. The fact that governments must limit the amount of resources transferred to the housing sector typically results in the granting of large subsidies to a small proportion of the populace. Recipients may be chosen on an arbitrary basis or perhaps more commonly on the basis of their perceived political power. Civil servants, police, and military are frequently favored groups. Frequently housing subsidies result in the development of uneven housing stock composed of a few units with excessively high physical standards and a great proliferation of substandard units. Subsidy programs are often used to provide a showcase for government involvement in social programs. The result is inequitable income distribution between a few households receiving high quality subsidized housing and the many households receiving no housing assistance at all.

Dissolution of Housing Capital

Many housing subsidy programs lead to the depletion of scarce housing funds. Subsidies are often in the form of low interest rate loans with the payment schedule requiring fixed, periodic payments. When loan rates are inadequate to cover the real cost of funds, the value of the housing finance fund diminishes over time and eventually is insufficient to finance a meaningful volume of sales. Governments frequently fail to make a vigorous attempt to recover the payments from their debtors, further reducing the amount of capital recovered. In some cases the combined effects of inflation and initial deep subsidies has made the cost of collecting housing payments greater than the value of the payments. In addition, the government has made a subsidy to the borrower in excess of that which was anticipated and in excess of that which the government felt the recipient needed at the time the subsidy was made. This reduces the ability of the government to spread the subsidy benefits to a larger group of citizens.

Intertemporal Subsidy Problems

Many subsidy programs can be misleading in that their expenses can balloon over time. Often decision makers unintentionally commit future resources under conditions which will generate problems for succeeding governments. For example, interest rate subsidies appear very favorably in initial years but can prove to be intolerably expensive in later years. An example of this will be shown later. Cost runaways can also occur

if the government fails to set up sufficient accounting methods to constantly monitor the real cost of their program.

Market Disruptions

Subsidy programs, especially those which attempt to control factor prices may substantially distort and hamper the operation of markets. For example, many countries impose rent controls under the guise of a rent subsidy. For example, in Egypt rental levels in private units under rent control and in public housing units have been so low that, in many cases, the payments collected from occupants are not sufficient to provide maintenance and replacement services for the projects involved. As a result the existing rental stock is deteriorating and the market is not providing any new housing for the rent controlled sector. These kinds of subsidies tend to impose a direct tax on owners of rental units. This direct tax lowers the expected rate of return on new housing construction below other market opportunities and effectively stops investment in rental units.

Methods of Subsidizing Housing

There are endless direct and indirect subsidies for a wide variety of purposes. For example, consider the following example of housing subsidies existing in both developing and developed countries.

1. The sale of land by the government or public sector firms at a price below the fair market value,

2. Provisions of infrastructure, utility hook-ups, and utility services at less than the cost of the service,

3. The provision of rental housing by local authorities at less than the market value or full cost of such housing,

4. The provision of funds from the banking sector at rates that may be below the true cost of long term capital,

5. The provision of mortgage loans from local government and cooperatives at interest rates less than cost,

6. Fixed payment schedules whose real value falls in inflationary economies,

7. The failure to vigorously collect existing contractual housing payments from occupants,

8. The provision of funds from the central bank to the housing banks at rates that are below the true cost of funds,

9. Direct government contributions and other government loans to public sector firms for the construction of low income public housing to be sold at less than fair market value.

Despite the apparent variety, all subsidies can be expressed and should be evaluated as one of two major types. The first of these is the interest rate subsidy involving the lending of funds by a government supported unit at less than the market rate of interest. The second general type is the capital subsidy which is provided at the time the housing asset or improvement is provided at less than cost or fair market value.

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

FORMULATING NATIONAL HOUSING STANDARDS AND THE HOUSING PLAN

Thursday, November 15, 1979

2:00-5:00 p.m. Code 29.NHP

Presented by:

Alfred P. Van Huyck

SHELTER TRAINING WORKSHOP

November 5-30, 1979

AFFORDABILITY OF MINIMUL LEGAL STANDARDS. . . . . 29.NHP -- 1

I. Introduction. . . . . 29.NHP -- 1

II. Land Subdivision Regulations. . . . . 29.NHP -- 1

III. Conclusions . . . . . 29.NHP -- 2

PREPARING THE HOUSING PLAN

I. Introduction. . . . . 29.NHP -- 7

II. Establishing Construction Targets . . . . . 29.NHP -- 8

III. Allocating the Financial Resources. . . . . 29.NHP -- 8

IV. Analysis of the Capital Investment Program. . 29.NHP -- 9

V. Additional Housing Plan Actions . . . . . 29.NHP -- 10

FORMULATING NATIONAL HOUSING STANDARDS AND THE HOUSING PLAN
29.NHP

AFFORDABILITY OF MINIMUL LEGAL STANDARDS

I. INTRODUCTION

A. Most countries have legislation which establishes minimum legal standards for new urbanization. If a subdivision does not meet those standards, it is considered illegal.

1. As such, its inhabitants may not be eligible for urban service benefits such as water supply, sewerage, and solid waste collection.

2. Illegal status may even affect land tenure. Private ownership may not be protected by law, even in cases where occupants have purchased their plots.

3. Minimum legal standards often reflect the values and urbanization standards of middle-class people rather than those which are actually affordable by most of the population. They were often imposed during colonial eras and have not been altered.

B. Each minimum standard has its cost.

1. When the costs of all the minimum standards are considered together, it is often impossible for the vast majority of urban populations to afford them.

2. Most urban residents have no alternative to illegal subdivisions.

C. Analysis can be used to determine the proportion of an urban population that cannot afford a given set of standards.

1. When combined with a map of land costs, these data can be used to show the areas of the city which low-income households cannot afford to settle in.

2. This approach can also be used to calculate the affordability of zoning regulations.

II. LAND SUBDIVISION REGULATIONS

A. The urban household income distribution in the developing country is given in Table 1, together with the percent of income

and the amounts which households in each income group can afford for plot purchases.

1. The price that each group can afford for land must be determined if the minimum legal standards for subdivision are to be met.

2. The minimum legal standards for subdivision are summarized in Table 2.

3. It is further assumed that mortgage financing is available for land purchase in legal subdivisions at 9.5 percent for 15 years with 10 percent down-payments.

B. Using actual unit costs and the PADCO/Bertaud Model, the data sheet can be filled out and the land cost determined which each group can afford under the minimum standards.

III. CONCLUSIONS

A. The results shown in Table 22 are also plotted in Figure 7.

1. Because no land is available in urban areas for less than $2 per square meter, no household with a monthly income of less than $100 can afford housing under the minimum legal standards.

2. This affordability threshold falls on the 66th percentile of the income distribution. This means that 66 percent of the urban population cannot afford minimum legal standards.

3. Negative land values indicate that large subsidies would be required to bring the minimum standards within the reach of most households.

B. The equations of the model can be used to calculate the standards affordable by any income group. However, estimates of affordability should be frequently updated for changes in prices or income distributions.

1. The usefulness of any fixed minimum standard should be periodically reviewed, taking into account the issues raised in this chapter.

2. Particular attention should be given to the need for standards affordable by even the lowest income groups.

Table 20

Affordable Monthly Payment for Plot Purchase

Monthly Income ($)	Cumulative Percentage (%)	Part of Income Available for Plot Purchase (%)	Payments Affordable for Plot Purchase ($/mo)
20	3	7	1.4
40	11	8	3.2
60	27	9	5.4
80	48	10	8.0
100	66	11	11.0
150	77	12	18.0
200	82	12	24.0
300	88	11.5	34.5
400	92	11	44.0
+	100		

Table 21

Minimum Legal Standards
for Subdivision in Country "X"

Type	Standard
Land Use Standards	
Minimum plot size	60 m^2
Minimum plot frontage	6 m
Minimum access street width	7 m
Minimum vehicular street width	12 m
Maximum distance between vehicular streets	100 m
Mandatory land reserve for parks	10% developed
Mandatory land reserve for schools	2.5 m^2 each child
Infrastructure standards	
All streets have to be ashpalted and have a cement sidewalk of a minimum 1.5 m width.	
All plots should be connected to water supply and sewerage network.	

Program 1 Data Sheet 6	TITLE: Affordability of Minimum Standards		Data Register	Affordability 3rd Percentile	Affordability 11th Percentile	Affordability 27th Percentile	Affordability 48th Percentile	Affordability 56th Percentile	Affordability 77th Percentile	Affordability 82nd Percentile	Affordability 88th Percentile	Affordability 92nd Percentile
Page of		symbol		1	2	3	4	5	6	7	8	9
Monthly payment		f	24	1.4	3.2	5.4	8.0	11.0	18.0	24.0	34.5	44
Density		d	22	445	445	445	445	445	445	445	445	445
Plot size		j	28	60	60	60	60	60	60	60	60	60
Land cost/m^2		e	23	-6.89	-5.19	-3.10	-0.64	2.20	8.83	14.51	24.45	33.45
on site infra. cost/m^2		c_1	29	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55
Off site infra. cost/m^2		c_2	30	0	0	0	0	0	0	0	0	0
Construction cost/m^2		a_1	15	0	0	0	0	0	0	0	0	0
Connection cost/plot		a_2	16	75	75	75	75	75	75	75	75	75
Special feature cost		a_3	17	0								
Comm. facilities cost		a_4	18	0								
Core house size		b_1	19	0								
Number of households per community facility		y	45	0								
Persons per plot		i	27	5	5	5	5	5	5	5	5	5
Park and open space (%)		m_1	33	10	10	10	10	10	10	10	10	10
Commun. facil. m^2/person		m_2	34	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Circulation (%)		p	36	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8
Down payment		h	26	10	10	10	10	10	10	10	10	10
Yearly interest rate		I	46	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Recovery period		N	47	15	15	15	15	15	15	15	15	15
Total capital/hshld.		k	21									
Capital recovery factor		g	25									
Network cost per l.m.		c_3	31									
Circulation cost/m^2		c_4	32									
Width of primary street		u	41	7								
Width secondary street		v	42	12								
Block length		w	43	100								
Plot ratio (length:front)		x	44	1.66								
Circulation (%)		p_{var}	37	34.8								
Plot frontage		r	38									
Plot length		s	39									
Network length/m^2		t	40									

Data in shaded area are output of the model

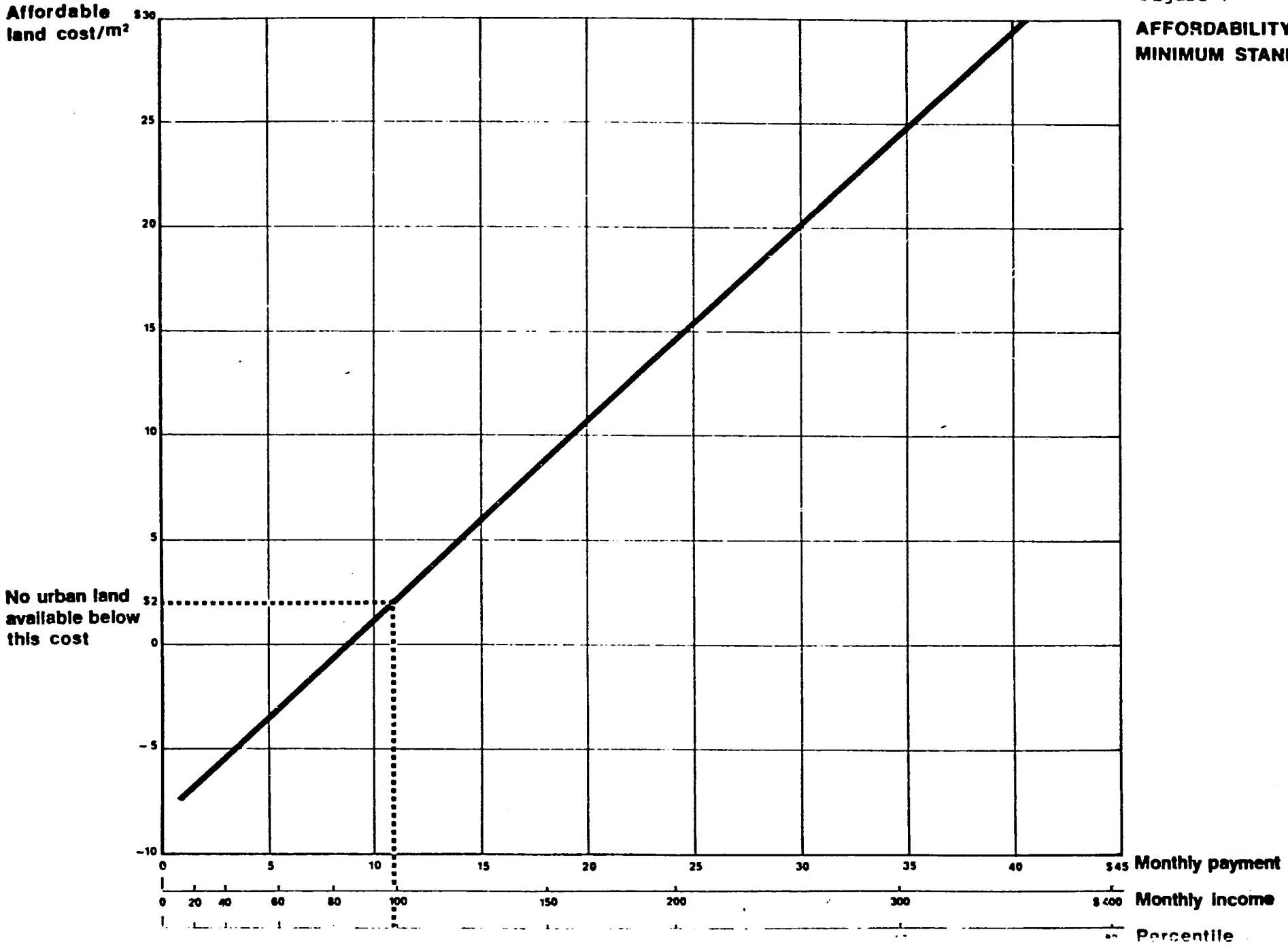
Table 22

Land Prices if Minimum Standards are to be Met

Monthly Household Income ($)	Percentile ($)	Affordable Monthly Payment for Housing (%)	Land Prices Affordable by Each Income Group if Minimum Standards Are to be Met ($)
20	3	1.4	- 6.89
40	11	3.2	- 5.19
60	27	5.4	- 3.10
80	48	8.0	- 0.64
100	66	11.0	2.20
150	77	18.0	8.83
200	82	24.0	14.51
300	88	34.5	24.45
400	92	44.5	33.45
+	100		

Figure 7

AFFORDABILITY OF MINIMUM STANDARDS



PREPARING THE HOUSING PLAN

I. INTRODUCTION

A. The housing policy document when complete should serve as the broad guideline for the housing plan, which should describe the implementation strategy for the housing policy and establish specific time targets for the number of units to be constructed, upgraded, or improved and the levels of investment from the public and private sector required.

B. In addition, the housing plan should identify specific steps to be taken by government to facilitate achievement of the housing policy.

C. It will be best to coordinate the time period of the housing plan to the national economic development plan (usually a period of three to five years).

1. In this way the housing plan and the national economic development plan can be directly supportive, and the housing implications of the latter can be fully considered.

2. For example, the national economic development plan might stress decentralization of industrial development, which in turn will require housing to be available for workers in the locations selected; or the national economic development plan might give priority to retarding growth in the capital city, in which case the housing plan might give priority to upgrading existing settlements and lowering the rate of new construction to remain in coordination with national objectives.

D. There should also be an annual housing plan which works within the longer time frame.

1. This permits more accurate monitoring of progress under the national economic development plan and adjustment of the annual housing plan to reflect actual needs.

2. For example, if the proposed decentralization of industry begins to be delayed for one reason or another, it is extremely important that housing not be built before it will be required because it would only result in a waste of resources which could best be utilized elsewhere.

II. ESTABLISHING CONSTRUCTION TARGETS

A. The housing policy will have developed overall priorities and objectives for housing unit construction and will have defined construction responsibilities between the public, private, and popular sector organizations and individuals.

1. The capital resource pool will have been identified (see discussion of housing finance below).

2. It remains then to establish the actual construction targets.

3. A sample of construction targets is shown in Chart III.

(a) The horizontal columns identify the target groups of concern as well as the sector responsible for delivery of housing (public, private, or popular in the case of low and lowest-income groups).

(b) The vertical column calls for the "estimate of total need" for the time period to be covered by the plan and the "estimate of total effective demand." "Need" and "effective demand" should be distributed by target group requirements. The purpose of this overview is to relate the actual program proposed to overall requirements and to see what percentage of effective demand can be met by the construction program.

(c) The remainder of the vertical column should identify the housing types to be constructed. A hypothetical listing is shown to illustrate the housing types which are likely to be of concern. The housing plan should then distribute the actual construction targets by housing type and target group. Naturally, housing construction targets must be related to the available housing finance available, discussed below.

III. ALLOCATING THE FINANCIAL RESOURCES

A. Construction targets can only have validity if there are clearly sufficient capital resources available to support them. Chart IV shows the pattern of distributing capital resources which will match up against the construction program presented in Chart III.

1. The horizontal columns show the disbribution scheduled by target groups broken down into public sector funds, private sector funds, and (in the case of low and lowest income target groups), popular sector funds. An additional column will be useful to show the average cost per unit. This can be derived by dividing the number of units (from Chart III) into the total capital investment. The average unit cost indication does not appear in Chart IV because of the lack of space.

2. The vertical columns in the top half of the chart show the housing types. The housing types should be the same as those identified in Chart III. The total housing investment from the public and private sectors by target group for each type of housing can then be shown.

3. The bottom half of the vertical column identifies the individual sources of capital related to the total investment program shown in the top half. The sources of capital are divided into public sector sources and private sector sources. Obviously, it is essential that the amounts of capital to be mobilized from the respective sources must be based on realistic estimates of availability.

4. The capital cost estimates should include all of the costs for the units to be provided. This would include not only construction costs, but related land and infrastructure as well.

IV. ANALYSIS OF THE CAPITAL INVESTMENT PROGRAM

A. The housing plan should also identify the terms and conditions of the sale, lease, or rental of the units to be constructed, including the down-payments to be obtained and the terms of all loans to be provided for each housing type.

1. The financial implications should be analyzed over the term of the mortgage loan; in the case of rental units, the expected useful life of the unit should be analyzed.

2. This analysis should specifically reveal any subsidy elements included in public sector housing programs.

(a) At the heart of any public financial policy for housing is the basic issue of subsidies. The subsidy element implied in some public housing programs in Asia may be as high as 75 to 85 percent of the total cost of units for the lowest income groups in 1976. This rate will actually increase in the years ahead as

the real income of the target group lags behind the increased cost of construction. Indonesia has a large subsidy element insofar as its formal low-cost housing program is concerned (although it is also well along with settlement upgrading and sites and services which have much reduced subsidy elements).

(b) All too often subsidies in housing are not even known in quantified terms. Subsidy estimates frequently fail to consider land costs, trunk infrastructure and community facilities, steadily increasing estate management costs, and the important need for a reserve for uncollected payments. When these items are considered, it is possible that cash flows will be negative and that the agency will become decapitalized unless new sources of capital are tapped or government subsidies continued.

(c) This has been the case in every country which has ever attempted heavily-subsidized housing programs. Most have failed, and the programs have died.

(d) The reason that so many housing professionals and various international agencies which lend for housing programs are so much against subsidies is not a lack of concern for the poor but rather a recognition that in their present form most subsidies substantially damage the viability of the public house building agency and call into question their ability to continue operations over the long run.

V. ADDITIONAL HOUSING PLAN ACTIONS

A. The last section of the housing plan should be a listing of those actions proposed by government to facilitate housing. This set of proposed actions will be directly related to the local situation but possibly include items such as the following:

1. Actions to facilitate the building materials industry.

2. Incentives for private construction companies.

3. Proposals for any new housing institutions or major changes in existing institutions.

4. Any legislative actions proposed to facilitate housing.

5. Recommendations for appropriate building technologies.

6. Proposals for training programs related to housing institutions or programs.

7. Proposals for housing or building materials research.

8. Proposals for evaluation of housing programs.

B. The housing plan should develop such proposals as are appropriate in the most specific action terms possible. Each program should be specific as to the action required, the assignment of responsibility, and the objectives to be achieved.

CHART II
HOUSING POLICY OBJECTIVE TABLE
THE RELATIONSHIPS BETWEEN AREAS, SECTORS, ACTIONS AND TARGET GROUPS

AREA	SECTOR	ACTION	INCOME GROUPS					SPECIAL GROUPS		
			HIGH	UPPER MIDDLE	MIDDLE	LOW	LOWEST	CIVIL SERVANTS	VETERANS	IND WORKERS
Large Cities	Public	To Build To Finance To Facilitate								
	Private	To Build To Finance								
	Popular	To Build To Finance								
Inter-mediate Cities	Public	To Build To Finance To Facilitate								
	Private	To Build To Finance								
	Popular	To Build To Finance								
Market Towns	Public	To Build To Finance To Facilitate								
	Private	To Build To Finance								
	Popular	To Build To Finance								
Rural	Public	To Build To Finance To Facilitate								
	Private	To Build To Finance								
	Popular	To Build To Finance								

HOUSING PROGRAM RELATIONSHIPS BETWEEN UNIT TYPES
AND TARGET GROUPS

	Total		TARGET GROUPS															
			General Public Income Groups												Special Target Groups			
			High		Upper Middle		Middle		Low			Lowest			Civil Service	Military	Ind. Workers	
	Units	%	Pub	Pri	Pub	Pri	Pub	Pri	Pub	Pri	Pop	Pub	Pri	Pop	Pub	Pub	Pub	Pri
Estimated Total Need																		
Estimated Total Effective Demand																		
Planned Construction Program																		
HOUSING UNIT TYPES																		
URBAN																		
A. Complete Units																		
Apartments-High Rise																		
Apartments-Walk Up																		
Row Houses																		
Duplex																		
Single																		
B. Sites & Services																		
Core House Units																		
Plots & Services																		
C. Settlement Upgrading																		
RURAL																		
A. Complete Units																		
B. Settlement & Services																		
C. Rural House Upgrading																		

Pub = Public Sector Pri = Private Sector Pop = Popular Sector

CHART IV

HOUSING CAPITAL INVESTMENT RELATIONSHIPS BETWEEN UNIT TYPES AND TARGET GROUPS

HOUSE UNIT	Total Capital Investment	General Public Income Groups												Special Target Groups				
		High		Upper Middle		Middle		Low			Lowest			Civil Service	Military	Industrial Workers		
		Pub	Pri	Pub	Pri	Pub	Pri	Pub	Pri	Pop	Pub	Pri	Pop	Total	Total	Pub	Pri	Unit Cost
PUBLIC SECTOR SOURCES OF FINANCE 1. EQUITY CAPITAL																		
2. PUBLIC LOANS																		
3. INTERNATIONAL LOANS																		
4. REINVESTMENT OF PUBLIC HOUSING COST RECOVERY																		
5. PRIVATE SAVINGS IN PUBLIC INSTITUTIONS																		
PRIVATE SECTOR SOURCES OF FINANCE 1. COMMERCIAL BANKS																		
2. INDIVIDUAL PAYMENTS																		

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

SUBSIDY ISSUES WORKSHOP

Thursday, November 15, 1979

2:00-5:00 p.m. Code 30.NHP

Presented by:

Richard T. Pratt

SHELTER TRAINING WORKSHOP

November 5-30, 1979

FIELD TRIP TO COLUMBIA, MARYLAND

Friday, November 16, 1979

9:00 a.m. - 5:00 p.m. Code 32.S

Presented by:

Malcolm D. Rivkin

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

WORKSHOP II: COMPREHENSIVE APPROACHES

Saturday, November 17, 1979

9:00 a.m. - 12:00 noon Code 33.NHP

Presented by:

Kenya and Sri Lanka delegations

Office of Housing
Agency for International Development

SHELTER TRAINING WORKSHOP

November 5-30, 1979

FIELD TRIP TO METRO HEADQUARTERS

Saturday, November 17, 1979

2:00-5:00 p.m. Code 34.S