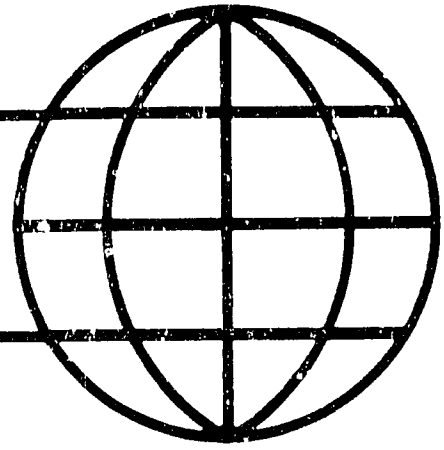
COOPERATIVE AGREEMENT ON HUMAN SETTLEMENTS AND NATURAL RESOURCE SYSTEMS ANALYSIS

RURAL-URBAN DYNAMICS IN DEVELOPING RURAL REGIONS

Proceedings of the First SARSA/SSC Seminar,
18-22 April, 1984



Clark University
International Development Program
950 Main Street
Worcester, MA 01610

Institute for Development Anthropology
Suite 302, P.O. Box 818
99 Collier Street
Binghamton, NY 13902

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PREFACE

In 1981, Clark University and the Institute for Development Anthropology entered into a cooperative agreement with the U.S. Agency for International Development on the subject of Human Settlements and Resource Systems Analysis (SARSA). The purpose of the cooperative agreement is to provide technical assistance to Third World countries through USAID's programs and missions and to pursue a research effort which would provide insights to general issues of regional development. To date, SARSA has been involved in planning efforts in some twenty countries in Africa, the Middle East, Asia, South America, Central America, and the Caribbean, and SARSA has been responsible for a wide array of publications, seminars, and conferences in which the details of the research effort have been presented.

One major theme in the SARSA program has been the place of the settlement system in proposed strategies of regional development so that the benefits of investment and growth might better reach both small farmers as well as city firms and residents. Referred to as rural-urban dynamics, this research and experience have proven to be a useful way of encouraging local planners to decentralize their investments so that mutually positive effects can be gained by both the rural and urban populace.

As research progressed on the rural-urban dynamics theme, it became clear that Israel has had considerable experience in the planning of settlements, not only in Israel but in the Third World as well. Beginning with the pioneering work of Raanan Weitz, as insightfully presented in his book, From Peasant to Farmer: A Revolutionary Strategy for Development, Israeli planners carefully orchestrated the development of the regions of their country, and in those plans they explicitly pursued a strategy which symbiotically promoted both urban and rural growth. Furthermore, Professor Weitz captured the essence of that experience in his theoretical work and proceeded to develop a methodological framework which has come to be known as the "Rehovot Approach." As Chairman of the Board of Directors and Founder of the Settlement Study Centre, Rehovot, Israel, Professor Weitz has actively experimented with this approach in numerous Third World countries. The Settlement Study Centre, for 22 years, has conducted about 60 courses, each with 30 students, and as part of each course the students spend 10 weeks in a Third World country in which the Rehovot model is applied in its entirety.

Because of the obvious similarities between SARSA's goals and the Settlement Study Centre's experiences, it was felt that a seminar would be a useful way of exchanging ideas and fostering continued experimentation. That first seminar was held in Rehovot, Israel on 18 to 22 April, 1984. The American participants were: Gerald Karaska (Clark University), Avrom Bendavid-Val (USAID), Fred Glickman (USAID), Robert Hackenberg (University of Colorado), Mike McNulty (University of Iowa), and Gerald Rushton (University of Iowa). The Israeli participants were: Raanan Weitz, Rafi Bar-El, Julia Margulies, Avshalom Rokach, Gideon Vitkon, Israel Prion, Ariela Nesher, Neal Sherman, David Pelley, Zvi Weininger, Shalom Zamir, Daniel Freeman, Deboira Auerbach, Aaron Dehter, Rachel Wilkansky, David Bentolila, Moshe Schwartz, and Dafna Schwartz.

The major focus of the seminar dealt with the process of rural development and its dependence upon urban development, highlighting the extent to which rural productivity depends upon the support and functioning of cities. In this context, three themes came forth as significant aspects of the rural-urban dynamics issue. First, the Rehovot model and its inherent methodology were seen as an invaluable theoretical device to guide regional planning strategies. While the Rehovot approach was more highly sophisticated and far better developed, there was considerable similarity with the approach in the SARSA experience. The latter, as exemplified by the Urban Functions in Rural Development methodology, was still in the formative stages and lacked a meaningful planning experience wherein it could be assessed as a true implementation exercise; the SSC experiences already demonstrated the utility of the Rehovot approach.

The second theme which became an issue in the seminar focused upon the distinction between planning as a theoretical exercise and as an actual on-the-ground or implementation strategy. At the core of both the Rehovot and the SARSA approaches is the concept of integrated rural development, wherein the planning process not only recognizes the "interrelatedness" of all activities but also wherein each sectoral or line agency makes decisions whose effects are carefully coordinated with other sectoral agencies. The experiences of both SARSA and the SSC showed that this was indeed a critical and fundamental problem, that the gap between theory and practice was enormous. Discussions focused upon experiences and situations in which the integrated rural development approach may be readily implemented (hence in conformity with the Rehovot model) and also in cases wherein decision making was too far removed from the demands of the theoretical models. For example, in

Israel, the successful development of the Lakhish Region stands as testimony to the utility of the Rehovot approach, while the example of planning in the Beer Sheba Region highlights the difficulties and limitations of cooperation between a city and its rural hinterland.

The third focus of the seminar was an initial attempt to direct attention to extensions of the theoretical models so that they might better perform as guides to actionable projects and meaningful investment strategies. Those discussions suggested that it might be opportune to formulate models and methodologies which view regions, and their problems and development strategies, to be at different stages in a growth process. Or, put another way, discerning a typology of regions would not only highlight the critical differences among regions but also suggest key indicators along a desirable path of growth and development. In this way, a finer tuning of the general models might allow local institutions to define a constructive role in the planning process. This theme has now become the subject of a continued collaboration between SARSA and the Settlement Study Centre, and it is to be the focus of the next seminar in the Fall of 1985.

This volume presents selected papers by the Israeli participants of the April, 1984 seminar. It strives to convey the essence of the integrated rural development context of the Rehovot approach, while at the same time demonstrating serious attempts to relax the rigid constraints of that model so that more realistic attempts at implementation planning might be more feasible. The papers by the American participants are not presented here because they are already well documented in other publications of the SARSA series. Interested readers should carefully examine the SARSA experiences in Panama, Bolivia, Philippines and Ecuador.

The participants of the seminar wish to acknowledge the assistance and support of the U.S. Agency for International Development and, particularly, Eric Chetwynd and Robert Walter.

Gerald J. Karaska
Rafi Bar-El
Avrom Bendavid-Val

INTEGRATED RURAL DEVELOPMENT

The Rehovot Approach

Raanan Weitz

Development of the rural areas of the poor countries has become a major challenge both to policy-makers and professionals working in the field. It was the World Bank's Pearson Report that identified agricultural growth as the weakest link in the development chain - and this view has gradually gained general acceptance.[1] It has also become apparent that agricultural growth cannot be integrated by direct intervention in the agricultural sector, but requires comprehensive or integrated development of the rural space.

General acceptance of these ideas has been spurred by deep disillusionment with the events of the past two or three decades following the Second World War. It was assumed that the benefits of development would trickle through the system; and, as the economy moved toward take-off, the rural sector, would be carried along by the urban-industrial sector. The tradition-bound peasantry would only be required to marginally modernize and to provide their own food and raw material needs.

It appears, however, that this approach, once generally accepted, has failed for both external and internal reasons. External aid was insufficient and unsuitable for transforming, in general, the rural area and, in particular, agricultural production. Internally, the general development resources demanded of the rural areas themselves alienated the exploited

peasantry. The transfer of surplus labour for economic production was diminished to the point that it virtually disappeared.[2]

This approach to development harmed not only the rural areas, but also the developing countries as a whole. Local technology was smothered by borrowed foreign technology, forcing the developing nations to neglect their own research capabilities and perpetuate their dependency. Even the most promising technological transformations produced disappointing result, for the Green Revolution exacerbated problems of inequality in an already unequal rural social structure. Overall production showed a modest increase in some areas, but rural society as a whole grew increasingly polarized.[3]

The problem of borrowed technology is now widely recognized. W. Hague and others of the D. Hammerskjold Foundation (1977)[4] wrote: "It took two decades to build the optimistic vision of a steady developing world community depicted in the report 'Partners in Development' (1969)[5]; it has taken barely five years for the disenchantment with the process to grow to universal proportions. It is no longer possible to defend either the past strategy of development or its all too visible results. Literature is overburdened with post-mortem critiques of development history which are unanimous on the appalling results and generally candid on the causes of the failure." The basic admission is of continued exploitation, both internal and external, by the metropolitan core of the peripheral areas.

We now face an uncertain future. We know what went wrong in the past, but have no accepted understanding of what should be done - either conceptually or methodologically - to achieve better results.

Despite the gloomy picture of worldwide rural development, however, there have been a few success stories. Israel, Taiwan, Japan, Yugoslavia, and, recently Mainland China may serve as examples, and from their

experience some insight into the basic principles constituting the common denominator of their success may be gained.

It is both from disillusion with the past and from the search for new development approaches that 'integrated rural development' has been formulated. This term is now commonly used by academic, institutional and financing agencies, international technical assistance bodies, and national institutions dealing with the problems of the rural areas. A brief review of the literature of this subject clearly shows, however, that the term is widely used for varied and sometimes conflicting approaches.[6]

DEFINITIONS OF TERMS

Researchers in the study of development use the term "integrated" to try to describe a different approach to planning and implementation from the one which has been used in developing countries for the last thirty years. Several efforts have been made recently to clarify and define this term, so as to arrive at an accepted meaning. Two such efforts, both of a general nature are Rainer Wolf's paper "On the Concept of 'Integrated' Rural Development,"[7] and John M. Cohen's "Integrated Rural Development: Clearing Out the Underbush."[8]

The first author came to the conclusion that at least three different approaches are nowadays being called "integrated," while the second found that there are four such approaches. Both came to the same conclusion, summarized by the following quotation:

> Despite the logic inherent in each of the four major perspectives presented, none of these views seems to be dominant. Indeed, most proponents of any one view seem to ignore its conceptual competitors. The diversity of definition and the lack of conceptual rigor that surrounds their efforts increasingly leads to confusion and frustration.[9]

Several institutions have also recently tried to clear out the underbush surrounding the term "integration." They, too, have seemingly failed. The FAO report of 1976 concluded:

> The review of various concepts of rural development - with or without the prefix "integrated" - does not leave us with the comfortable feeling that a consensus on the concept is about to emerge.[10]

As a matter of fact, a rcent study group meeting in Giessen, Germany, consisted of scholars and practitioners from Germany, United Kingdom, The Netherlands, Sweden and Israel has pointed to the existence of at least two conflicting approaches to rural development both using the 'integrated' umbrella.[11] One might be designated as a "vertical" or sectoral approach and the other as a "horizontal" or area approach. The first, whose disappointing results were summed up in the famous Pearson Report, is a variation on the strategies and methods of rural development which have been used for the past three decades. This approach, in which the fashionable term "integrated" occasionally appears, is certainly not new. At the same time, those who maintain that drastic changes should be brought to bear upon the accepted methods of development and who uphold the so-called "horizontal" or "area" development approach, differ widely about the strategy and methodology to be used.

This position paper presents a certain concept of integration and its application, which originated among a group of scholars and planning practitioners at the Settlement Study Centre in Rehovot.

While there may be some confusion about the term "integrated," there is general agreement that the term "rural related to all those areas which are not eminently urban or metropolitan, including rural towns which act as

urban centres, as well as the classic rural elements, village or homesteads.12

The term "developing" we take to apply to countries where available capital and skills are still insufficient to generate all the employment needed in the non-agricultural sectors at a rate concomitant with the increase in job seekers. In these countries, usually ranking low in terms of per capita income, the percentage of agricultural workers in the total labour force should ideally be decreasing, however, we find all too frequently that the absolute number is still increasing. Embodied in our definition is an awareness that the planned generation of employment in agriculture is an absolute necessity.13 When we juxtapose the terms or concepts, the term "rural development" aims at the eradication of poverty by meeting the basic needs of the rural population through an increase in production and, if necessary, a re-distribution of production assets.

Until recently most development planning approaches have one common denominator, namely, the assumption that by acting on one or more "leading factors" the whole system can be transformed and development can thus be achieved. The emphasis on the leading factor shifted continuously over the past decades. It was "industrialization" in the fifties and "community development" in the sixties and "agricultural production" in the seventies.14

We maintain that the state of any rural area in the developing countries is determined by the factors which are the most scarce. Thus, any action capable of making this factor less scarce will affect the rest of the system. However, there is a problem here: acting on a certain factor which is "scarce" immediately causes another factor to become scarce, and so on.

Therefore, the "law of scarcity" implies that in any given rural area the state of all the factors affecting its development should be known and that simultaneous actions be taken in proportion to each factor's scarcity. This, which we call the "integrated" approach to rural development, should be capable of diagnosing in each particular area the set of factors which should be acted upon simultaneously so as to make all of them less scarce at the same level, according to the resources slated for the area as well as those available within it.

This theoretical definition of "integrated" is meaningless unless the approach includes three basic prerequisites: the definition of a general clear strategy; a practical methodology for planning; and an implementable framework for the organizational set-up.

The "Rehovot Approach" to rural development takes into account the political, organizational, social, and economic situations prevailing in most of the developing countries, in order to give a practical answer to the basic problems confronting the rural areas. It is geared to adapt itself to the myriad situations existing in the rural space of those countries.[15]

A BRIEF HISTORY OF THE "REHOVOT APPROACH"

The "Rehovot Approach" started with the basic problems which confronted Israeli society at the beginning of the 1950's as a result of the mass immigration from Afro-Asian countries. These immigrants came to Israel as whole communities transferred from small villages and remote hamlets where they lived for hundreds of years. They brought with them the traditional way of life and tribal patterns derived from a subsistence farming economy.

We, the 'old timers' who lived in Israel, representing European or Western civilization,[16] tried to deal with these newcomers in a way that

had already been tried and found successful in Israel, through the "kibbutz," "moshav shitufi," and "moshav" communities. However, it quickly became apparent that when dealing with an entirely different human being, everything that we had learned from our past experience was inadequate. As a matter of fact, the programme of rural development which was undertaken on such a vast scale - over 500 new rural settlements or villages were planned and implemented during that period - started to crumble and seemed doomed to failure.[17]

In 1955, due to the terrific pressure to solve the basic economic and social problems of Israeli society the planners and policy makers were forced to take an entirely different approach. This approach was initially elaborated through a planning and implementation model which was proposed to the minister then responsible for rural development, Mr. Levi Eshkol and the Prime Minister, Mr. David Ben Gurion. When faced with what was probably one of the most critical problems of a nation, the integration of a traditional society into a modern pattern, the leaders gave the support necessary for a new experiment in rural development, the now famous Lakhish Regional Plan.[18] It took some ten years to show that the results of the approach applied to the Lakhish region were successful. Thus there evolved a new way of solving the basic economic, social, and civic problems of a rural population with an entirely different background from the predominant Western one. When the results of the Lakhish Pilot Plan became evident, its methods were then applied to all the rural regions of Israel resulting in a reorientation of the whole structure of rural development at the national, regional and local levels.

Here we should stress that our practical experience has shown the importance of understanding the social background and traditional patterns

as being part and parcel of the whole development system and the need for them to form an integral part of the approach towards "human transformation." The Israeli experience was described and analysed in "Agricultural Development - Planning and Implementation - an Israeli Case Study."[19]

In 1963 the Settlement Study Centre was established with the specific aim of trying to distinguish between phenomena which are uniquely Israeli and those which could be applied to other countries. Based on the Israeli experience, a group of professionals at the Settlement Study Centre, began to develop an approach which could generally be applied to developing countries in Africa, Asia and Latin America.[20] Through post-graduate courses in integrated rural development and pilot projects in various countries, we gradually crystallized a general approach for rural development based mainly on practical experience.[21]

The conceptual framework was first presented in an article entitled "On Integrated Rural Development ("Sur le Principe du Développement Rural Intégré").

Towards the end of the 1960s two publications appeared which expanded upon this approach. MIT sponsored a study-group of scholars and practitioners, all experts in rural development, to compare the history of rural development in the western world with the present situation of the developing countries. The contributions of the study group were published in "Rural Development in a Changing World."[22] As editor, I summarized the general opinion of the group in the introduction, "A New Approach to Rural Development." Concurrently the Twentieth Century Fund supported an extensive research project to investigate the problems of rural development. The results of this research appeared in "From Peasant to Farmer - A Revolutionary Strategy for Development."[23]

It took another ten years to develop and sharpen the practical methodology and streamline the strategy so as to enable the Rehovot Approach to cope with the myriad problems of rural areas in the developing countries. The results were published recently in "Integrated Rural Development - The Rehovot Approach."[24]

BASIC RULES OF STRATEGY

The Rehovot Approach is based on a clearly defined strategy and planning methodology which details the sequence of activities leading to implementation. While details of methods and structures of plans and execution vary from place to place according to the specific conditions of each, the overall approach may be applicable to all countries at a level of economic growth in which the agricultural sector is, both in volume and efficiency, still the main economic sector.

The proposed strategy is built on three basic assumptions: that agricultural growth is the key to rural development; that the development of agriculture requires the concomitant development of the secondary and tertiary sectors; and, that social forces play an important role in agricultural development. This last principle is very important since agricultural production results from the efforts of a multitude of individual producers whose willingness and ability to participate in any programme of change is crucial.

The assumptions were translated into three basic aims for rural development:

First: to create in the rural areas of developing countries sources of economic livelihood by generating new employment possibilities. Success here depends, of course, on the economic and natural

resources of the locality, but the proposed approach ensures optimal use of resources and distribution of income - resulting from the development effort - while providing a minimum income for the local population.

Second: to develop an efficient system of economic, social and civic services given the economic possibilities for supporting and running such a system.

Third: to generate a large number of employment opportunities to accommodate the increasing population within the rural areas and obviate a flight to the cities. If geographical mobility is reduced, the society's traditional kinship pattern and the bases of community life will be preserved, and the over-concentration of population in large urban centres which endangers their very existence will be checked.

To achieve these three aims a clear and practical framework is required. Six basic rules define the broad strategy of policy in the conceptual framework of our approach to I.R.D. They are:

1. **Agricultural Growth Is and Must be Gradual and in Definite Stages:** Farm development advances from subsistence to market-oriented economy through three well-defined stages, diversification, specialization and automation.[25] In the following table, the most important characteristics of the agricultural production unit (farm) at each stage of development are summarized. Rural development programmes must take into account the inevitability of the gradual process of transformation in the structure of the farm unit and thus the conditions of employment opportunities in the agricultural sector since planning and implementation of rural development policies depend on these factors.[26]

2. Agricultural Growth Depends on Economic and Social Factors:

Rural development can be accomplished only when based on economic growth, which is in itself impossible without the effective and profitable deployment by the rural population of its full resources in manpower, land and capital. At this stage, when a country strives to come out of subsistence, agricultural transformation is essential. Thus, we maintain that economic growth is the lever to rural development and any plan must be able to propose a concrete programme to achieve it. But this is not enough.

One of the most important issues involved in rural development programmes concerns the ownership and management of farm units. Policy makers and planners must make a choice between two basic patterns of farm organization. The family farm, in which almost all the labour requirements of the farm, from field-work to management are met by the farm family itself, and the managed farm, which is based on the separation between management and other types of labour and which utilizes more labour than the family can provide. For our purpose, all forms of managed farms are grouped together: commercial estates or plantations employing many hired labourers; small private farms employing a few hired hands; various kinds of government farms, and collective farms, such as the kolhoz in the USSR, the ejido in Mexico, the kibbutz and moshav-shitufi in Israel, since they all lack the trait of family labour which characterizes the family farm. In most cases, the farm structure is determined on the basis of economic considerations. It is often forgotten that the pattern of ownership is also a strong social force and has a direct effect on the motivation of the farming population. There is enough evidence to indicate that, in general, the

Main Characteristics of the Farm-Unit at Four Development Stages

	Development Stage: / Characteristics	Subsistence	Market Farming		
			Diversified	Specialized	Automated
	G.N.P P.C.	130-450	650-2,800	2,800-5,000	<6,500
1	Farm structure by branches	Mainly staple crop*	Varied field & livestock	One main branch w/some auxiliary	One branch
2	Production destination	Predominantly home consumption	1)Direct marketing 2)Some processing 3)Home consumption	1)Direct marketing 2)Processing	Mainly processing
3	Output value $	300-1,000	2,000-6,000	10,000-30,000	Over 50,000
4	Ratio Value added/ output %	90-60	50-40	35-25	> 20 depending on farm type
5	Investment per one day work $	2-6	15-35	50-85	350-500
6	Technological level:				
	a)Nature of technology	Pre-Newtonian	Intermediate	Highly specialized	Automated Computerized
	b)Added Value/day work $	2-4	5-15	15-30	<35
7	Farmer's professional skill	Traditional & specialized	Medium but varied	Specialized	Highly specialized
8	Labour schedule - year	Seasonal (in-built under-employment)	Balanced	Depends on farm type	Mostly seasonal (leisure)
9	Dependence upon community organization	Insignificant	Complete	Partial	Insignificant
10	Dependence upon supporting system	Insignificant	Partial	Complete	Essential

* Excluding the cases of subsistence plantations.

peasant strives to operate his own farm. The fellah in the Middle East, the campesino in South America, the coolie in South-East Asia - all want a farm of their own and regard it as the fulfillment of their most cherished aspirations. This commonly shared desire for a private holding derives from social, psychological and economic motives. The roots are deep both in the past and current conditions of the developing countries. In most contemporary and traditional societies, land ownership is a source of economic and political power, as well as social status, recognized by all members of the society. It is only natural that the landless labourer who depends upon his landlord for subsistence sees his own farm as the only way to achieve economic independence, security, and social status. Status and freedom are no less important to the peasant than the hope of improving his economic circumstances. Therefore, those who would grant his wish for a family farm, and are responsible for development, can provide strong motivation for him to participate in the development effort.

3. **The Supporting System is a Prerequisite for Agricultural Development:** The growth and development of the agricultural sector are determined by the supporting system, which includes economic, social and municipal services, as well as the facilities for handling and processing agricultural produce. The supporting system consists of three principal elements: the physical infrastructure and facilities required for its operation; the institutional structure adapted to local conditions; and the availability of skilled, motivated manpower.

In the early stages of development, with which IRD is concerned, the operation of services is often hampered by limitations inherent in the system - the low output of agriculture, low level of technical ability,

absence of an infrastructure network, scarcity of capital, and above all, acute shortage of manpower. At this critical stage, the supporting system has to meet three fundamental requirements: accessibility to service facilities, efficiency in terms of economies of scale, and spatial concentration in specific locators.[27]

The first requirement is maximum territorial dispersal of the service facilities in order to reach a large number of small producers, scattered over a wide area with little or no transportation facilities. Accessibility to the services is essential in order to compete successfully with the more expensive and less effective traditional service suppliers, usually found in or near the village itself. The term "accessibility" applies to the distance and time required to reach the service facility, as well as to the method of dispensing the service.

The second requirement is for the services to be efficient in terms of both price and quality. Efficiency is a function of scale. For each service facility there is a minimum level below which it cannot operate effectively. The larger the population base and the volume of goods it handles, the more efficient the service is likely to be. At the same time, the scale of operation remains limited by the amount of capital that is available for developing the supporting system, and by the ability of the clients to pay for the services.

The third requirement is that services which function on a similar scale be located in a single place, i.e., a "service centre."[28]

The advantages are manifold. First, concentration of services is especially important in areas where transportation is inadequate. Second, infrastructure costs are reduced as roads and other installations serve a number of facilities. Third, the proximity of the various services

facilitates cooperation. Last, such a service centre can attract skilled personnel.

4. **Organization By and For the Farmers:** Organization of the agricultural producers, be they peasants, farmers, or agriculturalists, is a precondition to the sector's transformation. The transition from traditional subsistence farming to diversified commercial farming requires an adequate organizational structure to ensure the maintenance of the interrelations between individual producers and the supporting system. Such organizations can help the peasant to adapt to the necessary changes in the individual farm unit and in the rural community. It can be formulated by either locally initiated or government enforced law.29

Most development programmes designed for rural areas prescribe the cooperative as the main instrument for the transformation, renewal and expansion of the existing supporting system. There is, however, a great deal of confusion with regard to the nature and functions of cooperatives.

Cooperatives may be divided into two distinct groups each with entirely different objectives and functions. One group includes multipurpose cooperatives which operate on the village level only; the other is single-purpose cooperatives which operate outside the village.

The farmer in the developing countries today has not yet adapted to the services necessary for the transformation of his farm, mainly because he lacks the skill, means and the power to meet the intermediaries on an equal footing. For that reason, those who operate the services, do not compete with each other, but, in fact, dictate their own terms to the producers. Instead of serving the farmer, they often

exploit him. It is, therefore, necessary for the farmers to join forces in creating an organization whose strength and volume of operations can confront the intermediaries. Such an organization is the village cooperative.[30]

The cooperatives outside the village are not necessarily better or worse for the farmer than any other service supplier, private or public. They should be judged in each case on their merits and compared to other suppliers as to the efficiency and the degree to which they meet the farmer's needs.[31]

5. **Industrialization is a Must for Rural Development:** Agricultural growth and rural development depend on industrialization for production of inputs; processing a growing share of the agricultural produce and also absorption of raw materials from agriculture; increasing employment; as well as to increase local demands for agricultural products, especially, perishable foods. Within the developing countries, industrialization as practises up to now, has not created these results, since it has remained an imitation of the process which today's affluent world underwent some time ago.[32] As such, inadequate introduction of sophisticated capital- intensive and labour-short industrial enterprises into the developing world succeeded only in creating the undesirable modern phenomenon of "dualism."

To be successful, industry must adapt to the conditions prevailing in any specific region according to three basic rules:

a. The rule of "parallelism" which determines the technological level of the industrial enterprises to be used in the rural areas. The level of production technology is one of the most important factors determining the economic results of any multisectoral development

project. It is determined in each case according to the level in other sectors as they relate to the general economic conditions and the specific conditions of the particular region.

b. The rule of "compatibility" which denotes the adequate reciprocal exchange of specific inputs and outputs in each of the stages of the planned growth of industry, agriculture and services. The general framework of input-output relationships determined only on the national level is inadequate to achieve optimal results in a particular rural area. Planning for industrialization requires compatibility with conditions in the other sectors in the particular area.

c. The rule of "location," which is the placing of various industrial enterprises as related both to non-industrial activities and to each of the planned industrial enterprises. Location is of prime importance and should be considered both from the viewpoint of the industrial requirements and of the general distribution of activities as determined by the physical spatial planning.

These three rules are necessary to determine the profiles of the most adequate industrial enterprise for each locality.33

6. **Urbanization as a Factor for Promoting Rural Development:** The developing countries neither can nor should copy the territorial pattern of population distribution of today's developed countries. Not only is such a pattern inappropriate to their requirements for economic development, but even in the developed countries themselves, doubts have arisen about its suitability for the needs of society.

An approach is needed for urban-rural relationships that can lead to the creation of a spatial structure unlike the one developed in the advanced countries. Urban decentralization is not merely possible; for

the developing countries, it is essential. In order to speed up the process of development, a system of rural towns based on a hierarchy of functions is needed.[34] Rural towns fulfill three main functions of the development process in the developing countries.

a. They provide the basis for activating the supporting system. Their function is the active support necessary in the transition from a farm with a closed economic structure to one able to produce increasingly large varieties and quantities of produce for market. Such a framework depends upon professional workers and entrepreneurs such as, teachers, doctors, engineers, technicians, planners, agricultural instructors, etc. Since these people are usually not prepared to live either in the village or in inter-village centres, they require an urban centre where they can live and find acceptable services and amenities.

b. Rural towns can serve as an appropriate location for the development of industries that must be dispersed in the rural regions.

c. Rural towns can bring a different culture to the countryside and hasten the process of modernization. The proximity of the town provides the farmer with greater prospects. He can find markets for his produce, better services, and an alternative source of nearby employment should he wish to leave agricultural work. Those who leave their farms are able to maintain contact with their home villages since the distance between the rural town and countryside is not great. In certain cases, they can even live in the village and work in the town.

These rules define only a general framework which needs a concrete planning methodology to translate them into practical projects for implementation.

INTEGRATED MEANS SIMULTANEITY OF MULTI-PURPOSE PLANNING ACTIVITIES

Integrated rural development in terms of the Rehovot Approach is a programme for the simultaneous implementation of multi-purpose planning activities. These activities include, at the macro and micro levels, the three economic sectors: agriculture, industry and services; and the economic, social, spatial and organizational aspects of the development process. "Simultaneous" refers to the coordinated planning of those activities in space and time. It is self-evident that the implementation of these plans can only be done step-by-step through prescribed stages, in an order determined by the general framework of the plan.[35]

1. **Coordination of Top and Bottom:** Development planning concepts and methods used in the developing countries during the last three decades were mostly macro-planning, or, as they are now being called, "top-down" approaches. Their failure has recently pushed revisionists to take a completely antagonistic stand. They now give allegiance to micro-level planning methods, or, as they call it, the "bottom-up" approach. "In the Third World countries the critical structural changes relate to a shift of decision-making power towards the poor by initiating a 'bottom-up' process - the village becoming the focal point of development - and a change in the educational system redirecting it towards raising mass consciousness and remodeling elites."[36]

   Past experience has shown a lack of consistency between the aims defined on the national level and actual needs of the individual. The mechanism of the free market and price system which was presumed to act as a coordinating mechanism cannot create a balance without grave social repercussions which are economically detrimental. There is, therefore, the need for a suitable method of planning that is capable

of integrating the levels of macro and micro-planning and implementing the results.[37] This can be realized only at the intermediate or regional level between the "Macro" (national) and "Micro" (local), farm, village, etc., levels. Even so, the planner must be aware of the overall national policy for development, as well as of the imposed constraints and have firsthand knowledge of all the factors operating on the local level.

2. **Inter-Sectoral Integration:** The generally accepted method of planning deals with each of the economic sectors (agriculture, industry and services) or their related subsectors separately and, usually, in a vertical manner. A recent study conducted for the International Labour Office shows clearly that inter-sectoral integration at a level as near as possible to the field is one of the most important factors.[38] It is only through a careful analysis of the linkage between the three sectors in the prevailing conditions of each locality that the maximum multiplier effect is obtainable. Similarly, it is only through the simultaneous planning of the three sectors that employment generation in any given area can be doubled and sometimes tripled compared to development projects drawn for each of the sectors separately.

3. **Interrelationship of Four Basic Aspects:** The third facet of simultaneity is the capability of a plan to deal at the same time with the four basic aspects of development, namely, economic, social, spatial and organizational.

It is universally accepted today that the human and institutional factors in rural development in the developing countries assume prime importance in the development process and are vital in any planning and implementation approach.[39]

The approach must be capable of circumventing the limitations inherent in the analytical tools of planning. These limitations include the static character of the analytical models; the many factors operating in the rural areas that cannot be accounted for by such models; unfortunately, they deal with only one or two aspects involved in the process of development and none are capable of dealing with all four aspects mentioned above.

Any practical planning approach must be able to cope with some of the basic requirements of the environments in which it operates. It should be capable of identifying the factors affecting the development process and operating within it. The planners should be concerned with the possible effects of changes in all of the various factors and understand their role in development. This implies that an adequate planning method must be sufficiently flexible and adaptable to accommodate the quantitative or qualitative factors related to situations or interrelated factors that are perceived during the time that the plan is being carried out. The nature and number of the factors that affect a development plan and their interdependency comprise an awesome complex. It is a complex which crosses disciplinary lines, reaches beyond the quantifiable and demands teamwork to fathom and establish the relationship with the practical problems at hand. For this reason, any plan which aims at changing the existing situation in any Third World rural area must be carried out by an interdisciplinary professional team who can cope simultaneously with the economic, social, physical and organizational aspects of development.40

PLANNING AS A "CROSS-FUNCTION"

The above prerequisites impose on planning demands which can be met only through adequate methodology. The basic method we suggest may be characterised as a "cross-function," namely a merger of two planning activities - vertical and horizontal - at the regional level.[41]

The vertical function of regional planning is the coordination of micro- and macro-planning within the intermediate regional spatial framework. The regional planner must be aware of the natural and human features of the region as well as the constraints imposed by the overall national plan on separate regions. Coordination is usually the result of trial-and-error, pursuant to a "dialogue" between the local, regional and national levels.

Experience has shown that the goals and projects determined at the level of macro-planning seldom accord with the circumstances prevailing at the micro-economic level. Micro-planning deals with individual units of production and aims at securing the greater possible benefit for them. It is intimately linked to human behavior and social factors that do not always lend themselves to quantitative expression. Macro-planning is not - nor can it be - an arithmetic sum of the results of micro-planning. In the economic sphere, classical theory expects the market mechanism of an economy based on free competition to direct the behavior of firms according to projections computed from macro-economic analyses. But this is not at all true. Macro and micro-planning tend to lack a common denominator due to different degrees of immobility of production factors, differences in technological levels between regions, and the absence of an overall framework for evaluating behavior patterns in economically less developed countries.

Integration of macro and micro-planning is the objective of the regional planning whose task it is to blend the two, relying on knowledge of the overall plan and familiarity with the specifics of the region.

The horizontal function of regional planning embraces a wide range of activities of intersectoral coordination; the expression of development principles in physical plans suited to the specific conditions of a region; and the translation of a general development plan into concrete implementation projects.

Integrated development results from a system of relationships between agriculture, industry and services, within a specific spatial framework. These relationships are dependent on existing resources and their exploitation, the stage of economic development, and physiographic features. Plans to increase agricultural production require service facilities, industrial enterprises and the development of urban markets and transportation networks. The development plans of each economic sector must be coordinated for effective implementation and this coordination, part of the horizontal function, is the responsibility of regional planners.[42]

Development programmes are realized through suitable physical plans adapted to local conditions, and to succeed they must relate to the region's natural and human resources. A successful programme can never be implemented in isolation; it must be an integral part of the regional development plan within the national programme. Every project should be composed of integrated actions bound together in a coherent, logical and practical form.

The "region" is the space in which the "cross-function" is implemented, even though the scope and boundaries of the regions within which the "cross-function" operates will change with time and should be determined according

to each stage of development. In general, it can be said that at the earlier stages of growth, implementation of the development programme requires direct personal contact between planners and the local farming population. Planning regions will, therefore, tend to be small. At later stages, as the local population undertakes an increasing number of functions, the level of detail in the development programmes will lessen and the size of the region appropriate for planning will grow. When regional planning is regarded as a cross-function, the intermediate, or regional level, at which integration of economic and physical planning and social understanding takes place, can be clearly defined.

Thus, the rural space of any nation should be subdivided into regions for development. The region should be large enough to constitute a definite unit within the national development programme and to permit execution of the three simultaneous planning actions described above.

Bearing in mind the nature of agricultural development and its possible variations, the region can be divided into subregions or "areas." The area is the spatial unit within which the development of agriculture and its associated activities are directed. The delineation of areas within a region is dictated partly by ecology, which determines the type of agricultural development programme, and, partly, by any existing administrative frameworks which will facilitate the organizing of integrated development of agricultural growth.[43]

The proposed approach is intended for the intermediate or regional level. The "region," composed of areas where the agriculture, industry and services sectors are dealt with simultaneously, includes the towns and the villages of the hinterland. In practical terms, since planners must work with existing organizations, structures and subdivision, regions are

delineated along the existing organizational frameworks. The boundaries of a "region" may, therefore, coincide with those of states or provinces.

PLANNING METHODS AND PROCEDURES

The "cross-function" concept applied by the teams from the Settlement Study Centre to many development regions, has slowly developed into a concrete planning methodology.

The first phase is to become acquainted with the region and to delineate its areas through data collection and surveys, related to the physical, ecological, social, organizational and economic factors of the region. The data must be systematically arranged for further elaboration in the planning procedure.

Conducting a survey appears to be routine, but many planning projects have been bogged down at this stage. Planners tend to gather a mass of data in the belief that quantity assures an accurate plan and a more certain selection of the best alternative. Such an approach cannot only harm but also distort the final results. Analysing data takes much time and effort. Often the planner is unable to distinguish between the relevant and irrelevant. For this reason very concrete and precise instructions have been elaborated so that the planning team can really have all the tools necessary for the main objectives namely, the planning of the development of the region under consideration.[44]

The second phase evolves while drawing up the first approximation of the region's macro-plan, the framework in which the objectives and the constraints of the region as one functional unit can be quantitatively formulated. The macro-plan must be in accord with the general national plan or

at least be coordinated with the national-level objectives and constraints. This phase is usually known as planning from above.

An important and much debated problem should be stressed at this point. It is well-known that regional development cannot be studied in isolation and that to regard the national objectives and constraints as exogenous factors is an inadequate palliative for the dynamic forces at work in the real world. However, the cross-function concept which is the basis for our methods with the vertical function of coordination between the national, regional and local levels, is one of the main-stays of the approach. Unfortunately, the state-of-the-art at which our approach has arrived today does not allow it to deal fully with the panoramic picture from the national point of view. The methodology of interregional distribution policy at the national level and the interaction between regional programmes and projects which are of national importance and range has not yet fully evolved. When we reach the position of dealing more efficiently and more rapidly with the regional planning, the stage will be ready for the subdivision of the national space into regions and the regional plans will be coordinated by interregional policy and programming at the national level. We are already looking for ways and means to achieve this aim by building a computer model to be used as a tool in the application of our approach in practise.[45]

The third phase is micro-planning for the agricultural, industrial and services sectors, according to the specific conditions prevailing in the region. Agricultural development planning is based on the farm-type methodology; industry is derived from the micro-planning of industrial enterprises following the profiles of possible and necessary industries; and the services sector is planned according to scale and accessibility factors prevailing in the region. The service sector demands particular attention

because it is only through adequate handling of this sector that the role of the supporting system is adjusted to the realities of the rural areas. Each of the economic sectors is planned both from below and on the macro-level. The actual production cells, farms, factories, as well as the various institutions composing the service sector are minutely examined while the sector is treated as one regional functional unit.[46] The aggregate results of the indicators of the three sectors planned from below should coincide quantitatively with the parameters which were calculated for the region by macro-planning. In practise this rarely happens. To arrive at the same results from below and above, an iterative technique was developed through which the macro-plan and the sectoral and micro-plans are recalculated and adjusted until the common denominator is reached.

The final result, the "integrated" economic plan for the region, is the outcome of two simultaneous iterations: the iteration between the local conditions through the micro-plans and the macro-plan of the regional conditions, and an iteration between the three economic sectors, determined by the nature and number of the production cells.

Again, ideally the economic plan for the region should be the result of three iterations, two within the region and a third between the region and the national level. This stage may be reached when a computer model could replace the present technique of iterations.

It should be stressed that the specific ecological conditions prevailing in each region and, more specially and emphatically, the specific social and human conditions (the type of societies, patterns of behavior, motivations systems, existing bodies, agencies and institutions) are taken into account and are decisive in the drawing up of details of the micro-plans. The integrated economic plan for the region, therefore, is not

solely the result of economic methods of analysis and projection but also the fruit of social and institutional understanding, programming and planning.

The fourth phase is the translation of the economic and social programme into spatial distribution and physical plans for the region, areas, and community levels. A detailed and elaborate model is constructed in which the location and hierarchy of the various functions and their linkages is determined, according to the local conditions. The model takes into account, of course, the relations and connections between the region and the country through the national network.[47]

The main difficulty facing any development plan in this phase, is that physical elements are durable and form a rigid framework. Yet, they serve a process which by its very nature should be flexible and adaptable to continuous change since every phase of economic growth requires a specific physical layout optimal to the requirements of the particular stage. A flexible physical layout that adjusts to the successive stages of the economic growth without due loss of previous investments in physical elements is a prerequisite to the integration of economic and physical planning. The need for flexibility is particularly acute in the early stage in which a subsistence economy and traditional way of life are transformed into a commercial economy.[48] Therefore, integrated development planning should conceptually respond to two basic requirements: (1) understanding and design of the optimal physical layout for each stage of economic growth; (2) devising a layout sufficiently flexible to adapt itself to the transition from one stage to the succeeding one.

The physical layout of any rural space is constructed around the farm, including its fields, the villages, intervillage service centres, and urban centres. In most developing countries the development of regional towns is hindered by a continuous exodus of manpower, endowed with education, skills and managerial ability, to the metropolitan centres. A well-planned layout may be the key to a decentralized development approach as long as it expresses in concrete, implementable terms an economic and social programme which aims at retaining all the groups of the local population in the region.[49]

The fifth phase deals with the preparation of concrete projects for implementation as well as the institutional and organizational set-up needed to carry out the detailed planning of the various projects.[50] Thus, the plan for the region is ready.

Construction of the proposed computer model referred to previously needs a considerable amount of information as well as very concrete skills in order to account for the non-quantifiable factors which form part and parcel of the approach. The criteria proposed for measuring the results or for comparison with other alternative plans is the generation of "employment units," as determined by "employment density" and "employment cost." These criteria are simple and easy to use, applicable for different human economic ecological conditions, and meaningful at all stages of economic growth. They were initially introduced into the simulation model developed for the ILO Research Project which assessed and evaluated new settlement projects.[51]

LOCAL PARTICIPATION AND GOVERNMENT DECENTRATLIZATION

Development is the fruit of a multitude of activities initiated by individuals voluntarily using their private means ("private actions"), and by governments using public means through legal enforcement ("government actions"). Private government actions are the only two motivating forces that push the economic system into activity.[52] No growth is possible without properly harnessing these two faces in tandem. This is true for each and every stage of the economic growth process. The question is: Are these two driving forces to be harnessed and used in the same way, in the same proportions, and in the same strength in all situations? Unfortunately, there is no general answer to this basic problem.

Those who identify with capitalist theories maintain that the individual's freedom of action leads to maximization of the economic benefits of society. On the other hand, those who adhere to socialist theory maintain that in order to reach the goal of maximum utilization of economic resources, government should assume full responsibility for the economic activities of the country in all situations. Neither approach starts out among the different stages of economic growth. The two theories neither allow for variations in human or natural conditions, nor do they recognise that different individuals and societies behave differently in different situations.

My own experiences both in the field and through academic studies have lead to another direction, that for each particular situation different proportions of private initiative to government intervention exists which will bring about the best use of resources.

The two forces which drive the economy express themselves through two channels: one is investment, and the other is organizational patterns. The term "investment" in this context should be understood broadly as including all labour and capital inputs designed to stimulate economic growth.

It is assumed that for any given situation there is a certain ratio between government and private investment which will bring about the best use of the resources available to society. This ratio is the "optimal-mix" of the specific case; these ratios are not accidental or random, and there is a general method to establish the values of the "optimal-mix" of investments and organizational patterns in each situation.

The planning strategy and methods developed by the Rehovot Approach furnish clear indications of this "optimal-mix" in each region with which the two groups have dealt. But planning is not enough. Two basic elements; local participation and government decentralization are needed to transform the proposed approach into a practical tool for rural development.

The active participation of the local population through the planning and implementation step is crucial to the integrated approach because of the necessity of changes in the social structure and to ensure the maximum possible mobilization of local resources both human and natural.

Changes in the social structure and way of life are concommitant with the economic growth of countries characterized by traditional societies. Other changes can then be expected to follow the new economic possibilities as they develop. It is especially important to introduce specific measures that evoke strong personal responses so as to bring about the necessary changes from within. Too many programmes have had disappointing results because they were imposed on the people from outside and failed to win their

cooperation and support. A development programme can succeed only if it is designed both for the people and with the people. It must express their desires, aspirations and values.

It is often claimed that rural development programmes in developing countries are doomed to failure because the peasant will resist innovations that interfere with commonly accepted practises and procedures.[53] Those who uphold this view believe that this attitude derives from an inherent contradiction between the social norms of traditional societies and the readiness to accept them.

This explanation is, at the very least, rather simplistic. Nevertheless, it has served in many instances as an excuse for those who failed to achieve positive results in development activities. The history of rural development in the developing countries, short as it is, abounds with examples of acceptance and successful adjustment to proposed changes and innovations. Despite the evidence, the myth of resistance is still very popular and is often accompanied by a feeling of superiority and disdain for the uneducated but supposedly contented peasant.[54]

In the search for effective measures to promote development, policy-makers and planners have often tended to emphasize the economic aspects of development, while little attention has been paid to social considerations in general, and the population's participation, in particular. In recent years, however, the important role played by social forces in the development process has been gaining recognition by an increasing number of people involved in development activities.[55] After coming into closer contact with the population, many development workers learnt that social institutions, customs and traditions exert a powerful influence. While this is

true in any society, the traditional society is especially affected by such influences, primarily because its social institutions date back many generations and, consequently, are deeply rooted in the consciousness of the people.[56]

The term "social planning" is most commonly used to denote the planning of social services, that is those services which contribute to the improvement of living conditions and social advancement of the populace. Under this heading are included nutrition, health, education and, occasionally, housing. In this sense, however, "social" planning actually constitutes the planning of certain activities in the tertiary sector of the economy, i.e., the service sector. It is, in fact, nothing but a branch of economic planning.

The term "social planning" has, to our thinking, an entirely different meaning. It is defined as the complex of principles and methods of planning designed to utilize the social forces for attaining the goals of development.[57] The aim of social planning is to provide policy-makers, planners and implementors with guidelines for dealing with the people for whom the development programmes are designed and to help them establish a relationship of mutual understanding and cooperation.

After studying development over the last three decades, one cannot escape the conclusion that the form of the regime and its ideology have no relationship to the results of development programmes. Thus, we find successful outcomes in democratic regimes like West Germany and Japan, and in dictatorial regimes like Taiwan, Yugoslavia and Spain. It is obvious then that it is not the type of regime or its ideological motivations which decide the success or failure of its development efforts. Instead, the key

to this most important problem is to be found in governmental organization and institutional arrangements.

It has gradually become clear that there are general rules of governmental organization which can aid the development planner and the policy-maker to achieve success in development programmes. On the whole, it appears that as society slowly climbs the ladder of economic growth, the importance of voluntary institutions increases while the emphasis on government activities moves from lower to higher levels of organization. In the initial stage of economic growth, the main administrative and financial effort must be concentrated in the periphery and, therefore, government intervention should be felt most at the regional level.[58]

For historical reasons, governmental organization in most countries is centralized. Decision-making and control over implementation are concentrated in the capital, usually in the hands of people without direct knowledge of conditions prevailing in the countryside. Most important, no real coordination exists between the various branches of the central government. Each ministry acts independently, along a vertical chain of command.[59]

Since it is obviously impossible to introduce development systems of the kind we have described, many countries have come to feel that the achievement of their development aims depends upon coordination among government agencies by a central planning agency. However, such a central planning authority usually acts solely at the national level and has no powers of implementation at the regional and local levels where it is most needed. Since the organizational structure of government agencies is strictly vertical, matters of regional or local importance requiring inter-agency negotiations are often referred to administrative bodies in the national capital. Suggestions and ideas originating in the field have to

climb up the ladder within each ministry until they reach the top. Even then it is most difficult to find the necessary tools for evaluation and coordination between the ministries. The result is a bureaucratic set-up that hinders the fulfillment of the requirements for successful development programmes.

To overcome the difficulties that arise from the conflict between the needs of development and the usual structure of government administration, many governments have begun looking for alternative organizational patterns. Some of the solutions lead to the establishment of special authorities for development at an intermediate or regional level.[60] The manner in which a regional authority is established determines to a considerable extent its relations with government agencies operating in the field and with various forms of local government. The regional authority can originate in two ways, from above and from below. Establishment from above involves the creation of a completely new organization with full control of all functions and facilities connected with the development plan. When the regional authority originates from below, an agency existing in the area is granted the power required to perform the functions of planning and of coordinating development actions. If necessary, new units that are lacking may be added. The simplest and most common method is the use of the district organizations operating in the field. However, the approach most likely to achieve particular development aims can be decided upon only after careful examination of all the factors in a specific situation.[61]

It should be stressed that in most cases the prerequisites of local participation and government decentralization are not generally met. This probably constitutes the most difficult obstacle in the way of applying our approach. Considering the efforts exerted during the last thirty years in

the Third World countries and the disappointing results, we firmly believe that our approach is an effective tool, if not the only one, for solving the pressing problems of the rural areas. We maintain that in all cases where, for any reason all the prerequisites of the development plan cannot be met, there exists no practical and operable alternative. This statement may sound rather discouraging, but a situation cannot be changed by good intentions. The proposed approach is conditioned by different prerequisites whether we like it or not.

To sum up briefly, we say that integrated rural development according to the Rehovot Approach operates within the context of the total rural population and places special emphasis on poverty eradication. It is action oriented through the formulation projects, which are adjusted to the conditions prevailing in each particular area. It is coordinated in the sense that it coordinates policy, investment and manpower programming between the local and the regional level, on the one hand, and the objectives and constraints at the national level, on the other. It is also comprehensive in the sense that it takes into account within the rural space all the relevant sectors of the economy, and uses the interrelationships so as to identify and exploit the linkages and the external effects within those sectors, namely, agriculture, industry and services. It should be described also as democratic in the sense that active, local participation is an integral part of the approach.

The pressure of the rural masses in the poor countries is growing steadily and finds expression in political terms. Unless the rural population is convinced, understands, and accepts the promise of the development plans and that the necessary means to solve the basic problems are being

adapted by the policy makers, any government will find itself thrown out, however strong it deems itself to be. The recent example of Iran - to cite one case only - speaks for itself.

This is why the author believes that the proposed approach has the possibility of becoming a potent, practical and efficient tool for whoever is ready to use it. The only absolute essential condition for using the proposed tool is awareness and understanding of the situation which exists today in the rural areas of the poor countries. It is intolerable and must be changed without delay. This change cannot be achieved by easy ways or by short cuts. It demands from the policy-makers not only understanding and well wishing but also a very resolute and determined policy for development of the rural areas, and when necessary, overcoming entrenched interests of relatively small groups.

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THE IMAGE OF A RURAL TOWN ACCORDING TO THE REHOVOT APPROACH: AN INTEGRATED LINK IN THE REGIONAL SYSTEM

Israel Prion

The developing countries neither can nor should copy the territorial pattern of population distribution existing today in the developed countries. Such a pattern is not specific to their requirements for economic development. What is needed in the developing countries is urban decentralization.

There is nothing today to prevent the decentralization of urbanization in comparatively small towns widely distributed throughout the country. Energy can be transported over large distances at relatively low costs. Many kinds of industry do not require locales with special conditions, such as those found only in big cities, and new methods of infrastructure-building are relatively quick and cheap. In order to speed up the process of development, a system of rural towns based on a hierarchy of functions is needed. Without such a system, it becomes almost impossible to set up the supporting services and the industrial structure necessary for the development of agriculture.[1] This definition of R. Weitz reflects one of the basic elements of the Rehovot Approach.

According to the Rehovot Approach rural towns fulfill three main functions of the development process in the developing countries.

First, they provide the basis for activating the supporting system necessary for the transition from a farm with a closed economic structure to one able to produce increasingly large varieties and quantities of produce

for market. Such a framework calls for professional workers and entrepreneurs, such as planners, agricultural instructors, engineers, technicians, as well as teachers and doctors. Since these people are usually not prepared to live in the village, they require an urban centre where they can find acceptable services and amenities.

Second, rural towns can serve as an appropriate location for industries required for the development of the rural regions. Less capital-intensive industries do not have to be located in the big cities. They can be dispersed throughout the rural areas centred in rural towns, where they can contribute to the development of the interrelations between agriculture and industry. There is no need for large-scale investment. Industrial enterprises together with improvements in agricultural production can close the economic cycle, a vital measure for the development process in the developing countries.

Closing the cycle through joining industry and agriculture in the early stages of the development process can be a practical possibility if appropriate industrial enterprises are dispersed throughout the rural areas. This involves locating relatively small suitable factories in small urban centres scattered throughout the country. However, the feasibility of different types of industry must be carefully examined in light of the special conditions of each separate region.

Third, rural towns can bring urban culture to the countryside and hasten the process of modernization. The proximity of the town provides the farmer with greater prospects. He can find markets for his produce, better services, and an alternative source of nearby employment, if he should wish to leave agricultural work. Those who leave their farms are able to

maintain contact with their home villages since the distance between the rural town and country is not great. If they wish, they can even continue to live in the village and work in the town.[2]

THE RURAL TOWN - ITS PLANNING PROFILE IN A REGIONAL SYSTEM

According to the "Rehovot Approach," the term "Comprehensive and Integrative Regional Planning" should be interpreted as a planning operation in which coordinated development programmes for the main economic sectors - namely agriculture, industry and services - are drawn up simultaneously. In it the four basic groups - the economic, sociological, organizational and physical aspects - are taken into account comprehensively and viewed as integral parts. In other words, it is a method capable of making optimal use of the resources intervening in the development process, through an "integrated" understanding of the components of that process, at the precise stage of economic growth with which the planner is concerned.[3]

At a first glance, this definition does not seem to indicate a conceptional change in comprehensive regional planning since the single aspect approach has already and persistently been rejected in works published during the preceding years. However, the willingness to adopt an intersectorial and multilateral treatment of the subject professed in these works is, in fact, not sufficiently matched by a comprehensive perception and by a balanced treatment of all the disciplines involved. A unilateral disciplinary approach by the author (or the planner) is still prominent in each of the publications referred to. For instance, the planning of a new town is commissioned to a physical planner. Even though reference to the economic aspects (such as the costs of infrastructure, transportation expenses, etc.)

or the sociological ones (such as population characterization) can be found in the project, the work in its entirety still falls short of removing the planning from a unilateral course of a predominantly physical approach (centred on subjects such as location of the town, gradual expansion feasibilities, construction alternatives, aesthetic considerations, types of public and residential buildings, etc.).[4] Thus, the insufficiency of the professed change is evident.

The design of a regional town derives, to a large extent, from the development potential embedded in its rural hinterland. At the same time, the future of that rural area depends, largely, on the quality and size of a support system that its regional town is able to offer.

Indeed, town-planning as central a factor as it may be, is not practicable without taking into consideration the regional fabric surrounding it. This fact is illustrated in questions like: With what kind of regional hinterland can the rural towns be most effective? What are the regional functions assigned to the town? What population size will be served by the town's services? What is the nature and the extent of the economic activities anticipated in the region for the next ten to twenty years? What is the expected income level in the region and in the town and what kind of living standards will it generate?

Other pertinent questions derived from the above ones: What range of services should be developed in the new town? What type of industrial establishments? The sum of these questions leads to one conclusion: development inevitably should be regarded in its regional and integral context.

The physical planning of a town should be preceded by the maximal elaboration of a detailed programme encompassing the demographic, economic, sociological and organizational aspects. This can be accomplished only in the framework of a comprehensive and integrative regional planning strategy. As a preliminary step, the variety of complex interrelations existing between a rural town and its rural hinterland should be articulated and, concurrently, the location of the town linked to its correct place in the corresponding hierarchical layer of spatial organization.

THE CHARACTERISTICS OF SPATIAL ORGANIZATION IN DEVELOPING COUNTRIES

According to the accepted concept, spatial organization is defined as a hierarchy of central places and their spheres of influence. The range over which each central place exercises its influence is determined, on the one hand, by the nature and quality of services available and, on the other hand, by the capability of the spatially dispersed population to avail itself of those services and use them. According to this concept, each kind of service has its own accessibility range and its own characteristic threshold value. Accessibility is generally defined in terms of physical distances, given that the effective operation of the various kinds of services depends on the ability of the customers to reach them easily and frequently. In the end, this ability proved critical in underdeveloped regions where the majority of the service users was comprised of low income individuals or families who did not have at their disposal a regular and efficient transportation system. In contrast, the physical distance criterion weighs less in developed countries, which are equipped with the appropriate organizational facilities, such as: (1) cooperatives, public or private commercial

enterprises, and efficient dealers who offer most services at reasonable prices, and (2) a better developed infrastructure including good roads, a transportation system and communications.

The term "threshold value" means that the operationalizing of a service is contingent on a minimal size of user population. This is necessary to assure the efficiency and profitability of the services in the quantitative (cost of the service) sense as well as in the qualitative (standard of the service) sense. Actually, this concept corresponds to the rules of the "economies of scale." That is the reason wherefore, in the course of the historical development of most countries described today as "developed," a kind of pyramidical hierarchy of "central places" evolved, at the top of which there is a primate city and below, town groups decreasing in size from layer to layer. The larger the town is, the higher up on the scale it is found. It is superior to lower layer towns in range, extent and level of available services. Notwithstanding, all the functions of the service system existing in towns situated at the lower layers of the spatial hierarchy can also be found in the layers above them.

In this respect, the structure in developing countries is different. Though there are towns of varying sizes scattered over an area, they do not fit the hierarchical model of central places, insofar as it is hard to discern any of the extensive hierarchical links between the lower and the higher urban layers. In addition, the flow of urban services to the lower (rural) layer is insignificant. Granted, several publications did appear in recent years by authors who misinterpreted their findings and claimed that a hierarchy of central places did exist in some developing countries. However, even if the emergence of sections of the "central places" structure

may be identifiable in several developing countries, the classical hierarchical structure has not been and could not be replicated at the development stage in which most of those countries are to be found. This state of affairs is evidenced by the existing gap in the spatial links system between the basic (rural) hierarchical layer and the urban layers above it. This situation, however, may not have been outlined sharply enough in some of the developing countries. In many cases, the existence of some form of links between the small town and its rural hinterland can, in fact, be identified, but even in this case, the impact of those links on the overall spatial interrelations is questionable. The contribution of the village dweller as a supplier is relatively limited, as he still lives on a subsistence economy. About 85 percent of the farm products are consumed by the farmer's family and the surplus is transported to the small town market on his back or by other primitive means. This may create romantic images for folklore lovers, but does nothing to enhance the integration of the village people into the urban sector. Since the production for marketing is restricted and, consequently, cash income insignificant, the farmer's ability to "buy" services in the town is also negligible.

Essentially, the immediate periphery of the rural town encompassing the areas in which the villagers live in walking distance from the town, contributes modestly, in one form or another, to strengthening of the town's hierarchical status. The rest of the widely dispersed rural population outside the limits of reasonable accessibility--as is characteristic of many communities at an early stage of development--lives in a state of desolate isolation during the larger part of the year.

The services available to the more widely dispersed are poor in form and narrow in range. The situation is best illustrated by the rural educational net. The village school of the developing countries has been labelled, in technical terms (and in reality), the symbol of backwardness. These schools are scattered over a large area because most children are unable to reach a distant but central elementary school. Therefore, the population living within a reasonable accessibility range is small and the distinction of classes according to age is almost impossible. Thus, in the Acaraú Valley (state of Ceara, Northeast Brazil) for instance, a rural population which counted 328,400 inhabitants in 1978 had 1,452 schools, whereof 1.076 (i.e., 74 percent) were single class schools. In each of these schools, a single teacher was assigned to simultaneously teaching groups of children drawn from the whole scale of primary educations ages.[5] Obviously, there is no need to elaborate on the quality of studies at such an educational institution. The situation is still more appalling when taking into account the health services in the rural area; the extent of medical services is a single hospital situated in a remote municipal centre.

Only recently clinics attended by an auxiliary nurse have started operating in various places in South America. This is still only a pilot project which has not been given the due momentum. In reality, a large sector of the village dwellers who live too far from the nearest town still depend on the will and whim of unqualified traditional healers. Other services, like loan facilities, stores for low consumption buyers, etc., are generally in an unsatisfactory state, if they exist at all.

It is generally agreed that in developing countries the mere transition from a subsistence farm economy to a market production economy is practically impossible without a radical change in the structure of the spatial organization. For such a transition, from, say, a subsistence to a mixed economy farm, the farmer will need a whole range of farming services (seed supplies, fertilizers, pesticides, packaging materials, equipment, machinery) as well as marketing channels, loan institutions, etc. It will be impossible to establish such a supporting system if the planners do not succeed in their endeavour of reshaping the spatial organization of developing areas, initially by strengthening the lower layers in the hierarchy. What is needed, essentially, is an organizational effort at the basic level of rural communities and, subsesquently, at the levels thereabove, i.e., the rural centres and the rural towns intended to constitute subregional centres. An attempt will be made to outline the transition in patterns of spatial organization adapted to the requirements of a mixed economy farm's developmental stage.

In many developing areas, two main target groups throughout the area should be distinguished: (a) settlement centres (villages); or (b) family holdings dispersed over the entire area. If the rural population is concentrated in villages, the planner should try to "organize" them in groups, each receiving the services provided by a rural centre. If the population is dispersed, such a move would be much harder, albeit indispensable, to plan and carry out.

FORMATION OF SPATIAL ORGANIZATION MODELS AT THE RURAL LEVEL

Let us assume that we have been assigned the task of outlining patterns of spatial organization for the future of a rural area settled by family holdings and dispersed throughout the area with no settlement centres. Furthermore, let us assume that the settlers should not be "moved" and resettled in settlement centres. The regional development plan requires first the advancement of the rural sector, both economically (increased profitability) and socially. It is clear that such a programme imposes, as a prerequisite, the necessity for developing the supporting system of that area (agricultural and personal services, industrial enterprises and infrastructure). To achieve that aim, the preliminary planning of a net of rural and urban centres, deployed at reasonable accessibility ranges from the users' residence, is essential. This means creating a hierarchical regional structure which has as its base the scattered rural population. It cannot be excluded that this population may set specific organizational patterns whereby tens or hundreds of dispersed families will collectively form a "dispersed rural community." Rural centres will be relocated at a higher level of the hierarchy. The accessibility range of such a centre will be set according to the population's "walking habits" (walking, bicycle riding or use of domestic animals). Our experience derived from various projects in developing countries shows that an accessibility range of approximately 5 km to the rural centres is a fair estimate. Based on such planning, several tenths of non-farming families will reside in the rural centres and make their living from supply farming, and public and personal services supporting the population within the accessibility range.

Since attended portions of the farming population living within a reasonable accessibility range will subsequently be linked to the services of the rural centre, the population size serviced will grow to several hundreds of families. This alone constitutes a significant "improvement" in the "threshold value" with relation to servicing and enables services to operate at a reasonable level of performance. For example, the establishment and operation of an adequate elementary school (single or dual study line) may be made possible. This implies not only an increase in tuition to sustain full-time employment of teachers for every class but also a decrease in the average teaching cost per pupil. This would be accompanied by the prospect of expanding school activities and facilities: establishing a library, laboratory, gymnasium, crafts and artisan shops, school nurse, etc. In short, the dream of operating an elementary school for a dispersed rural population at an urban level could become a reality.

To further elaborate on the subject of spatial organization, we shall change the basic postulates and assume a different population group - a settlement concentrated in villages (e.g., a region earmarked for development in an agrarian reform project). In practical terms, this implies a wholesale shift of the population followed by its resettlement in villages and governed by an action of replanning and redistribution of farm land.

The agricultural planner of the planning team will be assigned the task of formulating an agro-economic programme for the region in question. The programme would be based on "adopted" family holdings in terms of the basic prerequisites for development and with respect to regional conditions such as soil types, water supply, climate and other prescribed constraints. To illustrate this idea, let us assume that the area is intended for intensive

farming and that the land allocated to a family holding, depending on the type of farm, is about 4 hectares. Consequently, the size of the farming population that can be settled within an accessibility range of 5 km from a rural centre, will be of roughly 600 families. A further assumption is the proposed size of a planned rural settlement should not exceed 100 families. Therefore, within the quoted accessibility range, there will be room for 6 rural settlements around the rural centre. Clearly, the tendency in physical planning will be to locate each settlement (or at least the developed sections) at the centre of its land allocation, in order to reduce, as much as possible, the average walking distance to the fields.

By concentrating the settlement's residential area and locating it in the centre of the land, an additional reduction in distance of about 3 km from the farmer's house to the rural centre may be achieved, thus, further improving the accessibility range.

It should be pointed out that a small village centre consisting of a restricted number of services (kindergarten, first aid clinic, grocery store, recreational centre, secretariat, storage facilities for farm products) will be located in each of the rural settlements (and would require about 100 families for efficient operation). In order to make a more accurate calculation of the total population size in the rural centre and the corresponding rural settlements, the estimate should be increased (aside from the 600 farming families) by presumably another 100 families. These families will reside in the rural centre and earn their living in jobs that supply a wide variety of services to the farms and the village inhabitants (a cumulative total of about 700 families). Such a population size makes it possible to offer a whole array of services to an adequate degree, both for

farming and that the land allocated to a family holding, depending on the type of farm, is about 4 hectares. Consequently, the size of the farming population that can be settled within an accessibility range of 5 km from a rural centre, will be of roughly 600 families. A further assumption is the proposed size of a planned rural settlement should not exceed 100 families. Therefore, within the quoted accessibility range, there will be room for 6 rural settlements around the rural centre. Clearly, the tendency in physical planning will be to locate each settlement (or at least the developed sections) at the centre of its land allocation, in order to reduce, as much as possible, the average walking distance to the fields.

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the farms and the population. To mention a few: elementary school, general health clinic, emergency medical care, assembly hall, library, youth centre, sport and athletic facilities, cooperative store or a number of special shops, spare parts, fertilizers and pesticides, farming machinery and equipment, fruit, vegetable and egg sorting stations, milk tanker, etc.; cargo and passenger transportation service; workshops for locksmiths, tinsmith, plumbers, carpenters, electricians, tailors, shoemakers, etc.; and personal service shops like barbershops, restaurants, etc. Moreover, the enlarged population linked to the rural centre will put into operation public services, such as an elementary school, a health clinic, etc., on a scale and at standards comparable to urban conditions. Naturally, the composition of the service "basket" in each of the rural centres will vary in extent and standard, commensurate to the degree of development and the income level of the served population.

PATTERNS OF SPATIAL ORGANIZATION AT THE SUBREGIONAL LEVEL

Not all the service demands of the farming sector can be satisfied by the rural centres, given the restricted size of the population concerned (some 300 to 600 families are linked to a rural centre). Higher standards and more efficient personal and public services than those available at rural centres will be provided to the rural population at subregional centres. These locations will also include industrial plants based partially on agricultural raw materials and partially on production of materials needed in agriculture.

In the developing countries, a rural town may serve the purpose of such a subregional centre that caters to a vast area. Its inhabitants are commonly tied to the rural hinterland by virtue of their occupation.

It is well known that in many developing countries the demand for services is generated mainly by a large body of small producers who have no modern means of transportation at their disposal. Therefore, it is hard to determine precisely the reasonable range of accessibility to the urban junctions. However, there is some empirical evidence that a distance of 25 km is an accepted standard measure for the accessibility range of a rural population to a rural town. This rests upon the premise that the frequency of service use by a rural population of more complex services at subregional centres, is much lower than the frequency of use at a rural centre. While the former type of services is only sporadically required, the latter type is needed almost daily. Hence, it is reasonable to assume that the term "accessibility range" can be defined as the distance that can be covered by a farmer, back and forth in a single day, by means of a horse-drawn carriage or some other domestic animal. That distance is equal to roughly 25 km in each direction. Eventually, with the development of the area and the corresponding rise in the living standards of its inhabitants, the use of primitive transportation means will gradually be replaced by mechanized means. The accessibility range to a subregional centre, in turn, will be significantly increased. Usually, an existing rural town in the area is chosen for the location of a subregional centre and is subsequently adapted to the requirements of its new function. However, unsettled areas with no urban settlements nearby require that new rural towns be established in the pattern of a subregional centre. As previously mentioned, most of the daily

required services will be provided in the villages and in the rural centre (kindergarten, elementary school, health clinic, agricultural extension, post church community centre, youth centre, youth club, grocery store, personal services, workshops, etc.). The corresponding services for the inhabitants of a rural town will be operating within that location. In addition, "higher level" services will be established therein, for use by both the inhabitants of the town and of its rural hinterland, such as: secondary schools, vocational schools, medical clinics, pharmacies, hospitals, emergency health care, cultural institutions (movie theatre, theatre, library), stadium, swimming pool, shopping centre, market place, regional and national administrative offices, police, religious institutions, workshops, fire brigade, transportation terminals, etc. Commonly, agricultural-industrial processing plants or supply centres for agricultural inputs will also be located at subregional centres. This applies, in general, to plants that are based on the local raw materials.

The dimension of the service system in a rural town depends on its population size as well as on that of its rural hinterland. It is a reasonable assumption that the overall magnitude of the population in developing countries, linked to the services operating in a rural town, should not be under 50,000 individuals.6 Evidently, if the population magnitude of a rural town and its hinterland is larger than that, there will be a proportional increase in the extent, standard and operational efficiency of the services.

In order to illustrate the aforesaid, one type of a more complex service will be described, as a characteristic representation of the interdependence between the service and the size of the served population. The example chosen is that of a hospital. The threshold value of efficiency for

a hospital is approximately 100 hospital beds. According to the author's experience, an applicable norm is that of about 2 beds for 1,000 inhabitants in areas which are at a transitional stage from a subsistence to a mixed farming economy; this takes into consideration the ability of the population to contribute financially to the operation of the hospital. Thus, the number of beds in a hospital required to serve a population of 50,000 individuals, will be around 100; to the extent that the population grows beyond that figure, an expansion of the hospital and an improvement in its functioning will be made possible.

ESTIMATING THE POPULATION SIZE IN A RURAL TOWN

There is an occupational correlation between the three economic sectors, on the one hand, and the rural and urban population, on the other hand. The larger the portion of the population which earns its living from agriculture or manufacturing, the more will be employed in the services. Any increase in the latter estimate will bring about a further proportional addition of employees to the same services (and so on). Subsequently, any population increase which goes to the services implicates a proportional additional increase in manpower needed to service the former addition. Hence, to calculate an approximative figure of the population size anticipated in a rural town and its hinterland at the target date of the planning, the formula of the "multiplying factor" can be used.[7]

If the planning previews the turning of a rural town into a subregional centre, the limits of its rural hinterland will match those of the relevant subregion. Consequently, the appropriate numerical data can be incorporated

in the "multiplying factor" formula according to the comprehensive development plan of the region. The formulas to be used are as follows:

(1) $P_{SR} = \frac{(A + M)\ K}{mf_1}$

Where: P_{SR} : Total population number of the subregion

A : Number of persons employed in agriculture

M : Number of persons employed in manufacturing and mining

K : The Dependency Ratio (ratio of the region's total projected population over the Economic Active Population as planned)

mf_1 : The multiplying factor (as a subregional level as planned).

The multiplying factor can be calculated with the help of the following formula:

(2) $mf_1 = 1 - \frac{(I + S) \cdot K}{1000}$

Where I: The ratio (per 1000 inhabitants on the average, in the subregion) of those employed in the service of the secondary sector (building, transportation, crafts, operation of heavy equipment, electricity and gas supply).[8]

S: The ratio of those employed (per 1000 inhabitants, on the average, in the subregion) in public and personal services.

From here on, the stage is set for the calculation of the population size in the rural town proper. Since that town is supposed to provide only part of the services needed by the rural hinterland, the rest by the villages and the rural centres, the assessment of the population size in the rural town can be accomplished only through a combined operation which involves all the echelons of the spatial hierarchy.

Let us start with the base of the hierarchical pyramid, i.e., with villages and/or dispersed rural population:

(3) $P_{RV} = \frac{A \cdot K}{r}$

Where P_{RV} : The total village and dispersed population (on farms and in services)

r : The ratio of the farming population within the total village and dispersed population.

At a higher level of the hierarchy, i.e., at the rural centres, the use of the "multiplying factor" formula for calculating the population size is as follows:

(4) $P_{RC} = \frac{P_{RV}}{fm_2} - P_{RV}$

Where P_{RC} : The total population in rural centres linked to the rural town.

fm_2 : The "multiplying factor" at the hierarchical level of rural centres.

To figure out that multiplying factor, the following formula should be used:

(5)

$$fm_2 = 1 - \frac{(I_{RC} + S_{RC}) \cdot K}{1000}$$

Where I_{RC} : The ratio (per 1000 inhabitants) of those employed in the services of the secondary sector in the rural centres.[9]

S_{RC} : The ratio, as previously mentioned, for the public and personal services.[9]

With the help of formula (1), the size of the total population in the subregion at the target date of the planning can be assessed.

Except for the population envisaged to reside within the hierarchical layers of villages and rural centres, all of the remaining population will be concentrated in the rural town. Hence, its size (P_{RT}) can be assessed using the following formula:

(6) $P_{RT} = P_{SR} - (P_{RV} + P_{RC})$

THE PLANNING OF PUBLIC SERVICES IN RURAL TOWNS - NORMATIVE OR ON A FEASIBILITY BASIS?

It is still an accepted practise to regard the investment capital in the services as a "bottleneck" through the successful passage of which the practicability of a given project is determined. However, this is not the case. A public service establishment may remain closed, even if "contributed" in its entirety by one of the assistance agencies, as long as the community is unable to secure the necessary funds for financing its share in the costs of the year-round operation expenses (i.e., the cost exceeding the amount of contributions from official sources). At times, the cost of operating a public service establishment (an elementary or high school, a clinic, a hospital, etc.) for two consecutive years may almost be commensurate with the capital needed for establishing it. This is ostensibly the case when considering that the yearly operating costs constitute an immediate and current expenditure whereas the payments on the account of the invested capital are distributed over a relatively large number of years. Consequently, it is the criterion for the ability of the recipient population to shoulder the onus of the yearly costs as the starting point for the planning of the public services system. In other words, the planning of public services was not derived from a "textbook norm," but rather from a programming of those services as a function of adapting to the income level of the users in anticipation of the planning target date.

That assertion means abandoning the widespread practise of planning the public services according to standard norms which too often rest upon theoretical and unrealistic considerations. Thus, for instance, the generally recommended norm of hospital beds in developing countries is of four beds

per 1000 inhabitants. However, it is the author's experience based on various projects in Latin America and Africa, that such a norm will not be implemented in most developing regions for the next 10 to 15 years. Usually, the indication of feasibility studies is that a reasonable norm should be reduced to half of the former estimate (i.e., two beds per 1000 inhabitants).

In light of the aforestated, the planner of services in a rural town should produce, in advance, his own normative criteria (relating to the extent and standard of public services) which fit, on the one hand, the size of the contributions by the official agencies and, on the other hand, the expected income level of the population receiving the services. These norms are bound to be different for different reasons.

The approach to the planning of public services and its methodology constitute a subject on their own merits, the detailed discussion of which cannot be included here. It can be mentioned briefly that the study of feasibilities is composed of various steps. First of all, an interdisciplinary planning team outlines an early programme for the public services as, for instance, the composing elements of the school system in the rural town (or in the region), the distribution of the pupil population among the schools (a percentage of all the children of relevant ages), study lines, etc. All these factors are determined on the basis of desirability and apparent feasibility. Secondly, guided by these outlined directives, the economic planners calculate the average cost of operating the educational services for one family in the rural town (or in the region), starting with elementary school, all the way through the intermediate level, high school and vocational school. Last of all, testing the possibilities for covering

the overall expenses of operating the educational system at the target date of planning is the final step of the feasibility study.

As previously mentioned, part of the expenditures for operating the educational system will be assumed by official agencies. Data from the "National Accounts" may serve as an estimate for assessing the magnitude of that potential contribution. This is reflected in the government's expenses for education as a percentage of the GNP. The serviced population will have to bear the remaining expenses. If the estimate of the yearly average educational expenses per family does not exceed a reasonable proportion (percentage) of private consumption expenditures, the plan may be considered implementable. But if these expenses turn out to be considerably larger than a reasonable estimate (comparable to that used in the "consumption basket" of populations with a similar income level), this tends to indicate that the plan is too ambitious and should be returned to the drawing table for reconsideration and cuts (e.g., the reduction of the number of pupils in high and/or vocational schools). Feasibility studies for other public services (health services, etc.) will be performed in a similar manner.

The method for planning services in a rural town constitutes a subject in itself. Therefore, in lieu of an explanation, we shall present a concrete case of planning services in a rural town in accordance with the outlines drawn heretofore.

CASE STUDY: RURAL TOWN MACHARETI

In the latter part of 1983, a comprehensive regional development plan for the Calvo-Siles area in Bolivia[10] was prepared by an interdisciplinary team from the Settlement Study Centre, Rehovot. A distinct chapter of

this project was devoted to the planning of spatial organization and to the location and functioning of rural towns in the regional context. It was suggested that the region be divided into six subregions with a rural town situated at the top of the subregional hierarchy of each of them. At the lower hierarchical order would be rural centres and villages (including dispersed rural population), and at the top of the entire regional hierarchical pyramid - a central town fulfilling the function of regional centre.[11]

In order to illustrate the application of the concepts delineated in the previous subchapters, the development programme of the Machareti settlement and its formation into a subregional centre will be presented below. According to the comprehensive development plan of the Calvo-Siles area, Machareti will head the subregion bearing the same name, mainly because it is located in the proximity of a railway and at a road junction, leading into all parts of the subregion. Presently, the settlement is small and poor, made up of approximately 50 houses occupied by about 300 inhabitants. Their main occupation is agriculture. However, it was proposed to advance the development of the town at an accelerated pace over the next 15 years. At the end of this period, the population could reach the number of 3,800 individuals, while that of the Machareti subregion, 15,600 individuals.[12]

As a rural town, Machareti is destined to fulfill a double function: (a) the centre of more complex services for the whole of the subregion's population (services which cannot be developed to an appropriate level in the villages or in the rural centres due to the limited number of inhabitants); (b) the location of industrial plants (industrial park), in particular those rocessing local raw materials (from agricultural production, mining, etc.).

Against this background, the interdependence and interrelations likely to evolve between the town of Machareti and its rural hinterland are expected to be very close. The promoting or freezing of development in the one will lead to a similar process in the other. Therefore, the programmed population size of Machareti, the employment forecast, the scheme of the envisaged services, the industrial park plan - should all be an outcome of a large scale planning activity, for the subregion as a whole, and its rural hinterland. In other words, it is essential to coordinate the development programme for services in Machareti with demand originating from the town population, on the one hand, and with demand originating from the rural hinterland (for more complex services), on the other hand. The extent and the standard of the services should suit the income level of both urban and rural populations. The planning of the industrial park should take into account the agricultural raw materials assigned to the subregion and concurrently, the anticipated demand of agricultural inputs in the surrounding developmental area. In view of this, the manpower in Machareti cannot exceed the numbers likely to find employment in industry and services. The final forecast of the expected population in the town of Machareti at the target date of planning can then be derived.

According to the development planning, it was estimated that in the target date year, the working population of Machareti will consist of approximately 80 employees employed in farming and 310 in manufacturing. With the help of the previously exposed formulae of the "multiplying factor," the overall size of the estimated manpower at the target date of planning was calculated as follows:

Table 1: The Estimated Manpower at Machareti by 1998

Sector	Subsector	No. of Employed	Manpower
Primary	Farming	80	--
Secondary	Manufacture	310	
	Construction, Transport, Crafts, Water and Electricity Supplies, etc.	425	--
	Subtotal	735	
Tertiary	Public and Personal Services	390	--
Total		1,205	1,240

Accordingly, the population size in the rural town will reach approximately 3,800 inhabitants.[13]

Presently, the range of services available in Machareti is very restricted. There is a school with eight classes including three educational levels: kindergarten, elementary and secondary grades. In addition, there is a village clinic and under final stages of construction, a hospital health centre[14] (combining the functions of a general clinic with limited hospitalization facilities - 14 beds). Among the public services, there is an agricultural extension limited to advising on waterpool construction (for cattle), the local administration office (alcaldia), a civil registrar and a church.

According to the public services programme for the rural town of Machareti, the school system will include, at the target date of the planning in 1998, 43 classes as follows: kindergartens, 2; elementary schools, 15 (whereof eight classes already exist); schools for intermediate education, 6; high schools, 8; vocational schools, 12. Health services will include: village clinic (existing), a hospital health clinic (expanded to comprise 16 beds) and an ambulance. In addition, there will be various governmental and municipal services, namely local administration, post office, police and regional development authority. Public services will include a youth club, library, church (existing) and among personal services, the planning foresees a bank, an hotel, filling station, cinema, restaurants and bars (24 employees) as well as individual [15] and professional [16] services (30 and 2 employees respectively). The details are summed up in Table 2.

As previously mentioned, Machareti is intended to host an industrial park in which there will be located plants processing raw materials drawn from the Machareti subregion (mainly agricultural). Such an industrial nucleus could promote industrialization in the subregion by creating such advantages as agglomeration, the application of economies of scale (especially with respect to infrastructure and services), and affording social amenities to those employed in it.

The industrial park will be set up at a distance of about 5 km from the town, next to a highway and to regional road junctions.

The industrial park is intended to house industries for local consumption as well as for other parts of the region and beyond. This would encourage the diversification of farm activities by creating markets for

Table 2: Subregional Centre Machareti: Summary of Service System Programme (1998)

Service	No./Persons Employed	Additional Area Constructed (m2) 1984-1990	Investment ($'000) Total	Investment ($'000) On Construction	Value Added ($'000)
Summary					
Public Services	134	4,257	184,482	141,179	100,317
Private Services	388	4,260	157,371	116,677	188,432
Total	522	8,517	341,853	257,856	288,749
A. Public Services					
Education					
Kindergartens	3	140	6,118	5,320	2,146
Elementary School	21	560	24,472	21,280	17,430
Intermediate Education	13	480	21,888	18,240	10,010
Secondary School	17	880	41,800	33,440	13,838
Vocational School	25	1,440	56,376	41,760	20,775
Sub-total	79	3,500	150,654	120,040	64,199
Health Services					
Medical Post (Rural Clinic)	2	-	-	-	1,172
Hospital Health Centre	12	80	2,350	1,880	8,220
Ambulance	2	24	5,888	288	2,051
Sub-total	16	104	8,238	2,168	11,443
Communal & Governmental Services					
Local Administration	6	48	1,297	1,128	3,565
Reg. Devel. Authority	20	240	6,768	5,640	13,860
Police	6	75	3,525	1,763	3,565
Post Office	2	40	1,175	840	1,189
Sub-total	34	403	12,765	9,471	22,179
Other Public Services					
Library	2	250	12,825	9,500	1,125
Youth Club	2	-	-	-	1,125
Church	1	-	-	-	246
Sub-total	5	250	12,825	9,500	2,496
Total	134	4,257	184,482	141,179	100,317

Table 2: Continued

Service	No./Persons Employed	Additional Area Constructed (m2) 1984-1990	Investment ($'000) Total	Investment ($'000) On Construction	Value Added ($'000)
B. Private Services					
Commercial Services					
Wholesale Services	15	600	15,600	12,000	9,075
Retail Trade	133	1,995	58,604	48,882	80,465
Banking	15	375	18,525	14,250	9,075
Hotel	5	600	29,640	22,800	3,025
Filling Stations	5	150	12,337	3,525	3,025
Cinema	4	300	15,390	11,400	2,420
Restaurants and Bars	24	200	5,875	4,700	1,452
Sub-total	201	4,220	155,971	115,557	12,160
Professional & Personal Services					
Professional Services	2	40	1,400	1,120	2,583
Personal Services	30	-	-	-	11,373
Sub-total	32	40	1,400	1,120	13,956
Household Help and Non-Specified Services	155	-	-	-	52,871
Total	388	4,260	157,371	116,677	18,843

farm products, for the raw material undergoing processing, and for perishable foodstuffs. The detailed plan is set out in Table 3.

It should be noted that the population of Machareti is likely to reach, at the target date of plann.ng, a population size of approximately 3,800 inhabitants. Accordingly, the number of housing units in the town will be about 760. At this stage, we have not yet drawn up a detailed physical plan of the town or calculated the investment capital required for expanding the existing infrastructure of the town.

Table 3: Proposed Enterprises for the Industrial Park in Macharet

Factories	Local Raw Material	No. of Plants	No. of Persons Employed	Value Added ($b 000) Per Employed Person	Value Added ($b 000) Total	K/VA	Total Investment ($b 000)
Maize Shell Mill	6,000	1	4	600	2,400	1.2	2,880
Feed Mill (Concentrates)	6,000	1	12	1,800	21,600	2.2	47,520
Wheat Mill	4,000	1	13	1,800	23,400	1.8	42,120
Vegetable Packing	6,000	1	20	600	12,000	1.5	18,000
Peanut Shelling & Roasting	850	1	17	1,200	20,400	1.8	36,720
Slaughter House	10,000*	1	20	1,600	32,000	2.0	64,000
Wood - Saw Mill	50,000	2	60	1,400	84,000	2.5	210,000
Wood Complex:							
Wood Processing	-	1	29	1,400	40,600	1.5	60,800
Parquet	31,000	1	35	1,300	45,500	1.5	68,250
Doors & Rubble Work		1	32	1,300	41,600	1.5	62,400
Sub-total	-	11	242	1,337	323,500	1.89	612,790
Other Industries							
Bakery	-	1	10	1,400	14,000	1.6	22,400
Clothing & Footwear	-	1	15	1,100	16,500	1.3	21,450
Furniture	-	1	15	900	13,500	1.2	16,200
Construction Material	-	1	15	1,000	15,000	1.4	21,000
Metal Workshop	-	1	10	900	9,000	1.5	13,500
Sub-total	-	5	65	1,046	68,000	1.39	94,550
Total	-	16	307	1,275	301,500	1.30	707,340

NOTES

1 R. Weitz, Integrated Rural Development - The Rehovot Approach. Rehovot, Settlement Study Centre, 1979.

2 R. Weitz, ibid., pp. 20-22.

3 R. Weitz, The Planning of Development - Toward a Comprehensive Model of the Third System. (Not yet published).

4 I. Prion, The Systemic Approach to Integrated Regional Planning, Rehovot, Settlement Study Centre, 1983 (Hebrew).

5 Banco do Nordeste do Brasil S.A. Proyecto de Desenvolvimiento Rural Integrado do Valle do Acaraú, CE (Supervisao - I. Prion, et al.) Fortaleza, 1980.

6 It cannot be excluded that in extensive farming areas, such a population magnitude is unattainable within a reasonable accessibility range to the town. In a situation like that, the extent of the services based on the rural town should be reduced accordingly (for instance: the town Machareti described further on).

7 The method of estimating the planned population size by means of the "Multiplying Factor" formula was used in: "A Model for the Planning of New Settlement Projects," by R. Weitz, D. Peley, L. Applebaum (World Development, Vol. 8, 1980), as well as in regional development plans elaborated by teams of the Settlement Study Centre in: Region VII - Digesa (Guatemala, 1978); Guanara-Masparro (Venezuela, 1980); Region Sur (Rep. Dominicana, 1980); Pacosan (Peru, 1981); Nakuru-Nyandarua (Kenya, 1981); Zomba-Machinga (malawi, 1982); Bolivar (Ecuador, 1982); Calvo-Siles (Bolivia, 1983). A more specific explanation of the methodology, of this subject is given in: The Spatial Organization of Rural Services: An Operational Model for Regional Development; by J.O. Maos and I. Prion (in preparation).

8 The I and 5 indexes are calculated on the basis of the planned secondary and tertiary sectors, at a macro-regional level, in the frame of the comprehensive regional planning.

9 The indexes I_{RC} and S_{RC} are calculated on the basis of the planned secondary and tertiary sectors, as already mentioned.

10 The Calvo-Siles area includes two provinces: Luis Calvo and Hernando Siles, both in the Chuquisaca Department.

11 See I. Prion, L. Gur, E. Khavous, D. Pelley. Proyecto de Planificacion del Desarrollo Rural Integrado de la Region Calvo-Siles (Bolivia), SSC, Rehovot (in press).

[12] In most parts of the subregion the farming is extensive and the population density

[13] Dependency ratio: K = 3.

[14] Centro de Salud Hospital.

[15] Barber shops, launderies, shops for repairing clothing, etc.

[16] Lawyer, accountant, etc.

ALIENTATION AND COLLABORATION IN RURAL-URBAN RELATIONSHIPS IN ISRAEL

Rachel Wilkansky

In well developed countries with a stable settlement pattern, the regional town has usually grown out of its rural hinterland and serves as the natural focus for its development. Even more, it can be said that through the slow and simultaneous development of all types of settlement in the region, there evolves a symbiosis betweeen the town and its rural hinterland, i.e., a permanent association between these two entities, each one being dependent on the other for its subsistence. The gradual evolution of this interdependence and the derivation of mutual advantage for both entities give rise to a durable relationship. An ideal pattern is created: a regional community with common as well as complementary interests (Geddes, 1949; Glikson, 1955; Christaller, 1966).

While the rural hinterland provides the town with food and raw materials and serves as a market for its products, the regional town functions as a centre of services (public, social, commercial, etc.), a centre of agro-processing and supply, a centre of attraction for rural migrants. Most important perhaps for the development of the rural sector, the town also serves as a centre of social transformation; this additional function is due to the second facet of the regional role of the town: while growing out of its region, the town also serves as a mediator between nation and region; it is the link between the national centre and the rural hinterland. As locus

of administrative services it becomes a centre of control. Being a centre of communication and exchange of goods and ideas, it also becomes a centre of development; as such it plays a central role in the absorption, the creation and the diffusion of innovations, the importance of which has been widely recognized in the development process of a region. The social and cultural heterogeneity of the urban environment encourages the fertilization of new ideas; by its size and its open socioeconomic structure the town constitutes a milieu favorable to entrepreneurs of all kinds: it provides easy access to sources of information and supply, to a specialized labour force, to services of various kinds (Friedmann, 1973).

Two main processes of innovation diffusion have been identified (Brown, 1968; Berry, 1961), processes which are based on different networks of social communication and are used differentially by different kinds of innovations, e.g., household vs. entrepreneurial or institutional innovations (Pedersen, 1975). One process works on a hierarchical basis from large city to intermediate-size city to small town, while the second is a process of diffusion by proximity, working on the basis of physical distance. Thus diffusion takes place both through the hierarchy of the settlement system and into areas of urban influence surrounding each centre in the system. Combined, the two diffusion processes are major carriers of development.

It has been shown that the diffusion of innovation and the trickling down of development impulses occur in an optimal fashion when the settlement system is well articulated, i.e., when all ranks of the settlement hierarchy are filled in to form a rank-size distribution (Johnson, 1970). The level of development can then be gradually and evenly distributed among all settlements, and the pattern of development is well balanced throughout all regions in the national space. However, when some ranks are missing in the

settlement hierarchy and the settlement system remains incomplete, the regional towns fail to play their positive role in the spread of development; an imbalanced and polarized pattern is created, in which a less developed periphery remains strongly dependent and even subservient to a well-developed core.

Thus, due to the interrelated effects of size distribution and communication pattern, an integrated rank-size hierarchy of settlements has usually been considered essential for both a balanced interregional pattern of national development and a balanced intraregional pattern of rural and urban development. Indeed, this has been the basic guideline for the national plan of population distribution in Israel.

THE DEVELOPMENT OF THE ISRAELI SETTLEMENT SYSTEM

Before Israel's independence in 1948, the settlement system was polarized around the three major cities, Jerusalem, Tel Aviv and Haifa, with few intermediate-size towns and some 220 rural settlements, mostly of a cooperative or communal type (moshav or kibbutz) dispersed in the few areas of available agricultural land. The mass immigration which followed independence was channeled, in great part, to new outlying settlements in order to achieve a more balanced distribution of population throughout the country. Within the first three years of the State, about 300 rural settlements were established in all parts of the country, most of them cooperative settlements (moshavim). At the same time, much consideration was given to the regional structure of development, and new towns were established in outlying areas in order to provide the services needed by the rural population, thus filling in the missing intermediate ranks of the settlement hierarchy.

Their potential for population absorption being naturally much larger than that of the smaller rural settlements, these new towns became the main instrument of population dispersion throughout the national space.

A more balanced structure was achieved for the country's settlement system in terms of both size distribution and spatial distribution (see Fig. 1). The settlement system which had, until then, been strongly dominated by the three major cities and showed a near-primacy distribution evolved into a near rank size distribution (Shachar, 1971). Whether this structural change carried with it a significant improvement in the spread of development is, however, questionable.

Two main paths of development can be recognized in the settlement system of Israel, the first relating to changes in the rural sector, the second to the development of new towns in the peripheral regions.

1. The Rural Sector.

The rural sector itself does not form a homogeneous whole. Because the two types of settlement which developed before independence (moshav and kibbutz) have remained predominant, major differences are apparent. The kibbutzim have always been major contributors to the modernization of agriculture, the settlement of outlying areas and the solution to security problems. Today, with the development of new industries inside the individual kibbutzim, they also stand at the forefront of technological progress in the industrial sector. The kibbutzim, as well as the veteran moshavim based on internal economic cooperation, developed very early into a self-reliant network of villages. The lack of urban settlements in outlying areas compelled the rural sector to become largely self-sufficient; thus, it probably was a major contributing factor to the independent development of the rural areas.

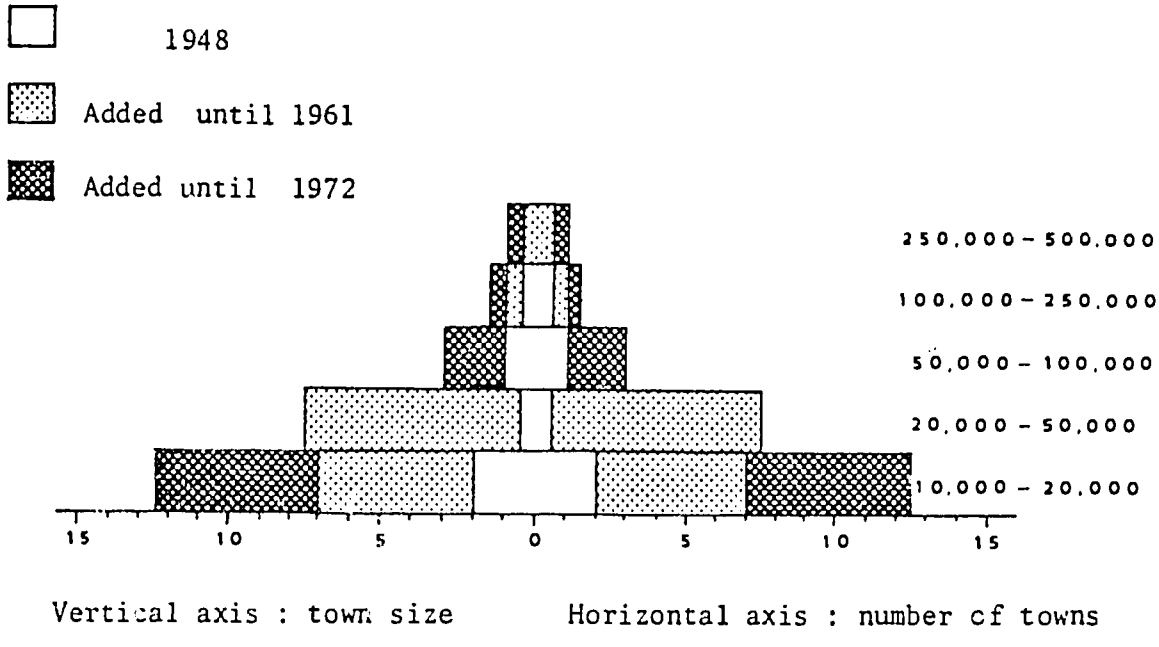

Figure 1: Israel's urbanization pyramid

In addition, the internal development of a modern agriculture as well as the establishment of local industries were supported by the national settlement organizations on which the individual settlement was dependent; the settlements were first and foremost linked to the major cities which were the centres of the settlement organizations as well as the centres of decision-making in government and in business.

With independence, a new dimension was added to this development: it was now possible to develop whole regions on a comprehensive basis. Within this new regional framework the settlers could now achieve more adequate solutions to some of their problems (Weitz, 1968). A new scale was given to their activities: regional cooperation between settlements brought about the establishment of social, cultural and economic services and of industrial plants which the individual settlement alone could not maintain. As a result, a dynamic and independent regional set-up was developed. It evolved into a conglomeration of rural regional centres which perform the functions normally expected from the regional town centre; these functions have thus been internalized in the rural sector.

The evolution of the numerous new moshavim established in the first years of independence was quite different. Settled by new immigrants with mostly non-agricultural occupations, the new moshavim remained for a long time totally dependent on the national settlement authorities for financial support, agricultural extension services, etc. The pattern of regional cooperation of the veteran rural sector, viewed favourably by the national settlement institutions, was copied and imposed upon the newly settled areas--an interesting example of development from below turned upside down into a

pattern of development from above. Some of the basic elements of an independent rural development were thus created in these new areas as well.

2. **The new towns.**

As mentioned previously, the new towns were intended to be a major instrument in the creation of a well-articulated settlement hierarchy, and at the same time to contribute to the dispersion of population through the absorption of the main bulk of mass immigration. As a result, the new towns were inhabited mostly by new immigrants. Between the immigrant groups and the veteran population of the country, differences in background and in outlook were extensive. Contacts were uncommon and were made mainly through the organizational and bureaucratic framework of the national administration. This created a social gap between the two types of groups.

The economic development of the new towns was slow. A great part of the labour force was initially employed in the surrounding rural settlements, or later in the rural regional centres. This became a source of friction between the new towns' population and their employers, i.e., the rural settlers, in spite of the importance of the former's contribution to the employment base of the town. Industrial development of the new towns has generally been slow, though some towns succeeded in developing at a more rapid pace.

Even at the outset, questions arose as to the ability of the new towns to fulfill their function in the spread of development. Have they themselves become sufficiently developed? Is their population adequately heterogeneous and innovative? Does their size reach the minimum threshold needed for the supply of various services? The answer must, understandably, be a relative one, given the special character of their rural hinterland. A

distinction must be made between empty regions which were settled after independence mainly with new moshavim, and settled regions composed of veteran moshavim and kibbutzim. In the former type of regions, the less rigid cooperative structure of the new moshavim limited to the economic aspects of development and the similar characteristics of the new immigrant population to those of the new towns, have engendered, from the outset, some kind of collaborative relationship between the towns and the rural sector. In the context of veteran regions, however, some basic elements needed for a natural symbolic relationship between town and rural hinterland have been lacking:

a. Most services needed by the settlements are already provided by their own regional or national organizations. Thus, the retail services of the new towns are not used by the rural population. From the beginning the new towns have been deprived of their function as service centres, and in this sense, no contribution is being made to their economic development.

b. The rural regional centres are linked directly to supply and marketing networks within a national framework. As a result, there is no inducement to develop secondary industries in the town which might be linked to the rural industries.

c. The rural regional centres are located outside the municipal boundaries of the new towns. While deriving some advantages from the proximity of an easily available labour force, they do not, however, pay taxes to the town's municipality, and, therefore, do not help to alleviate the town's financial problems.

THE SPREAD OF DEVELOPMENT

The two separate paths of development which have shaped the rural and the urban sectors in the outlying areas have also brought with them different levels of achievement. The following analysis of the pattern of development level among the various Israeli settlements shows that great disparities exist between types of settlement; these disparities have been responsible for the character of the relationship between the urban and the rural sectors.

Indeed the special characteristics of the Israeli context, namely the ideological, social and economic structure of the rural communal settlements, upset the conventional assumptions about the relative development level of different settlement types, mainly that it is positively related to its size.

Taking a broad view of the concept of development as a multi-dimensional process, the level of development has been measured in terms of political, social and economic dimensions involving changes in structure as well as in the capacity for change. The choice of indicators of development reflects not only the level of improvement achieved in a settlement, but also the capacity to achieve multi-dimensional change through the innovative characteristics of its population: cultural, political and technological indicators have been added to the more traditional socioeconomic and demographic indicators. Due to the lack of detailed data available, the characteristics measured are few (11 only); nevertheless they reflect the wide-ranging variety of factors enhancing the development process in each settlement.

1. **Demographic development indicators** include the future growth potential of the settlement measured by the proportion of the 0-14 age group in the population, and the potential labour force available measured by the proportion of the 15-65 age group. It must be stressed that the former indicator also expresses a measure of the burden put on the path of a settlement's development by its demographic composition; the two indicators may then sometimes work in contradicting directions.

2. **Three social and cultural indicators** have been used:
   - an index of heterogeneity based on the relative weight of groups of different origin in the settlement's population measures the possible contribution of the population composition to the mutual enrichment of the various social groups.
   - Special importance has been given to the weight of the group of western origin as a separate indicator, as it is particularly able to contribute to development.
   - The proportion of educated population (i.e., with 13 or more years of schooling) measures the cultural level achieved in the settlement and also gives an indication of the creativity of the population and its potential ability for further absorption of innovations.

3. **Economic indicators** include two measures of the consumption level of the population: the extent of private care ownership and the proliferation of banking facilities. The stability of the economic structure of a settlement, i.e., its ability to withstand various economic crises, is measured by an additional index of the composite structure of employment in the various economic branches (agriculture, industry, services), as it is assumed that the diversity of the economic base of a settlement contributes to its stability.

4. **Technological development** is directly connected to the potential of information exchange with other settlements. The extent of use of telephones has been used as an indicator of openness and of outward communication potential. Technological development can also be evaluated by the use of technological innovations: the use of electronic computers measures the technological level of economic enterprises (services as well as industries) and the extent of innovation absorption in the settlement.

5. **The leadership structure of a settlement** is crucial for the character of its development. The elite of a settlement plays a fundamental role as a mediator between the national level and the local scene in all the dimensions of development and as a catalyst in the process of innovation diffusion. The effectiveness of this local elite is enhanced by its participation in the national leadership of the country and its recognition on the national level. Members of this elite can be identified by their election as members of parliament, their appointment as scientists to the National Academy of Sciences, or their recognition as innovators or entrepreneurs in the technological and economic sectors. The relative size of this elite group in a settlement is then taken as an indicator of its development potential.

These eleven indicators were measured for the year 1972, the year of the last population census for which enough detailed data are available.

Derivation of simplified measures of development was attempted through the use of factor analysis which provided clusters of correlated indicators described by three major factors (see Table 1).

Table 1: Loadings on the first three factors

Indicator	F1	F2	F3
Population growth potential	-0.95	-0.14	-0.18
Potential labour force	+0.91	-0.07	0.22
Education level	0.14	0.06	0.60
Heterogeneity of origin	0.20	0.23	-.53
Western origin population	0.68	0.15	0.34
Telephones	0.25	0.83	0.16
Car ownership	0.25	0.82	0.25
Employment balance	0.11	-0.18	0.06
Banking facilities	-0.01	0.21	0.05
Electronic computers	0.05	0.02	0.01
Participation in national leadership	0.08	-0.03	0.15
Percent of cumulative variance	27.1	37.6	41.8

1) The first factor F1 accounts for 27.1 percent of the total variance. Three indicators load highly on this factor: the potential of population growth, the potential labour force available and the proportion of population of western origin. This factor can then be defined as a demographic factor.
2) The second factor F2 accounts for an additional 10.5 percent of the total variance. Here two economic indicators load highly: the use of telephones and car ownership. This factor has been defined as an economic factor.
3) On the third factor, two indicators load relatively high: the heterogeneity of population origin and the education level; this is then defined as a cultural factor. It should be noted that this factor also has a slightly higher loading, albeit very small, than the other factors in the indicator of participation in the national leadership.

It is then possible to compare the development level of various settlements on the basis of the factor scores which are assigned to each one of them. These scores measure the position of each settlement in a space whose

dimensions are determined by the three factors: a double mapping of the settlements is shown in Figures 2 and 3, with the factor score values shown as coordinates.* The distance between any pair of points representing two settlements in the factor space can be considered as a measure of their structural similarity: contiguous points represent similiar settlements while distant points represent dissimilar ones.

It is interesting to compare the location of the clusters formed on the mappings by the types of settlement involved in the regional context: new towns, kibbutzim, veteran and new moshavim (see Table 2).

The new towns are noticeable for their low scores on all three factors: 61.8 percent of the new towns show negative scores on both the demographic and the economic factor; even more, 73.5 percent of the new towns show negative scores on both the demographic and the cultural factors. These findings emphasize the low economic and cultural level of the new towns. Outstanding exceptions to these low scores are the towns of Arad and Carmiel which were the last ones to be built and were given special attention in the early stages of their development. The kibbutzim, old and new alike, form an extremely homogeneous group. For all veteran kibbutzim and for about 99 percent of the new ones, the scores on the economic factor are located within a narrow range of negative values; this is due to the definition of the economic indicators based on personal consumption (car ownership, use of telephones, banking facilities) which are largely irrelevant to the special way of life of the kibbutz. On the other hand, for about 88 percent of the

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* For the sake of clarity, only one third of the settlements are shown in the diagrams, but the following analysis relates to all settlements in Israel.

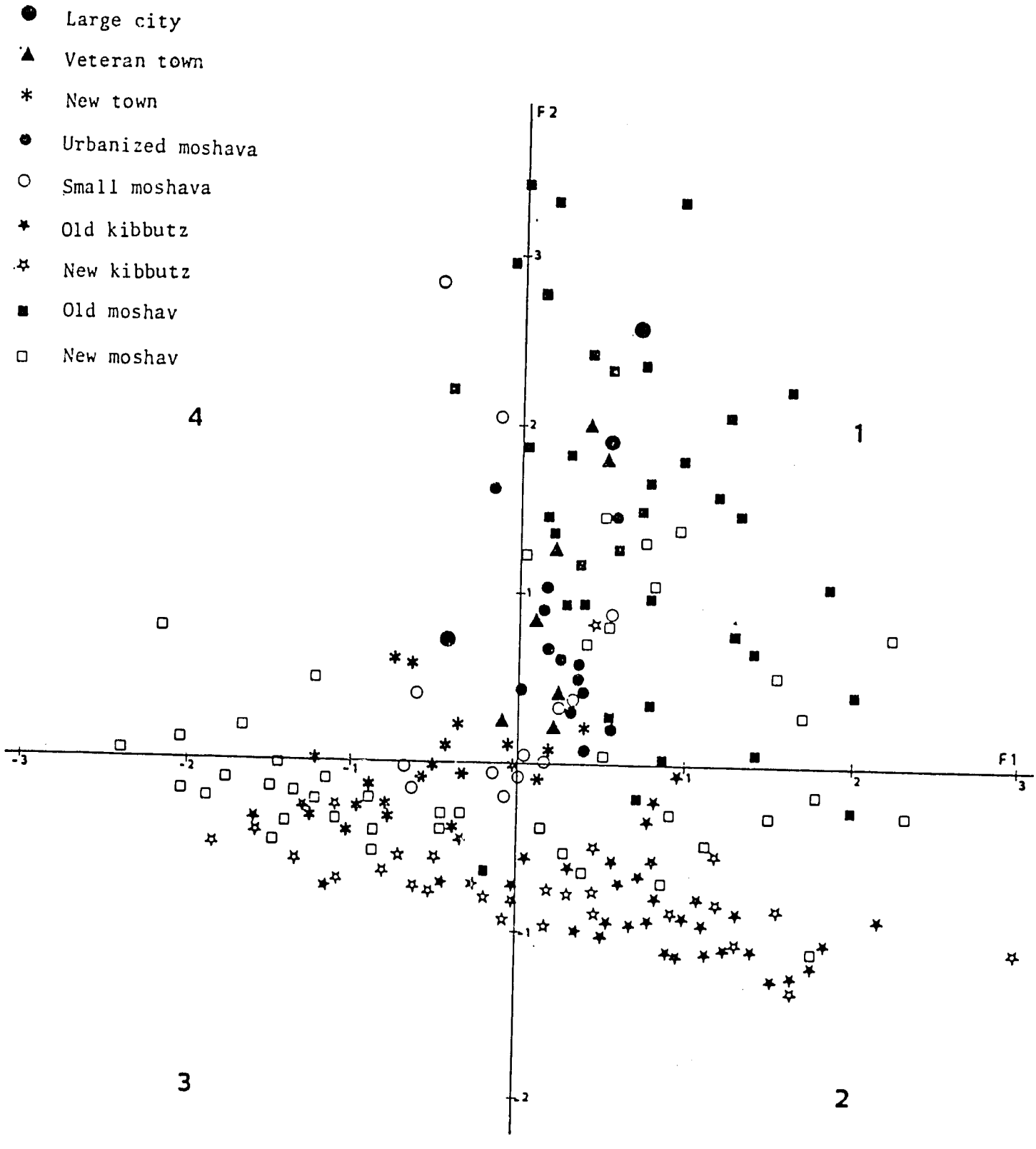

Figure 2: Mapping of Settlements in Factor Space F1, F2

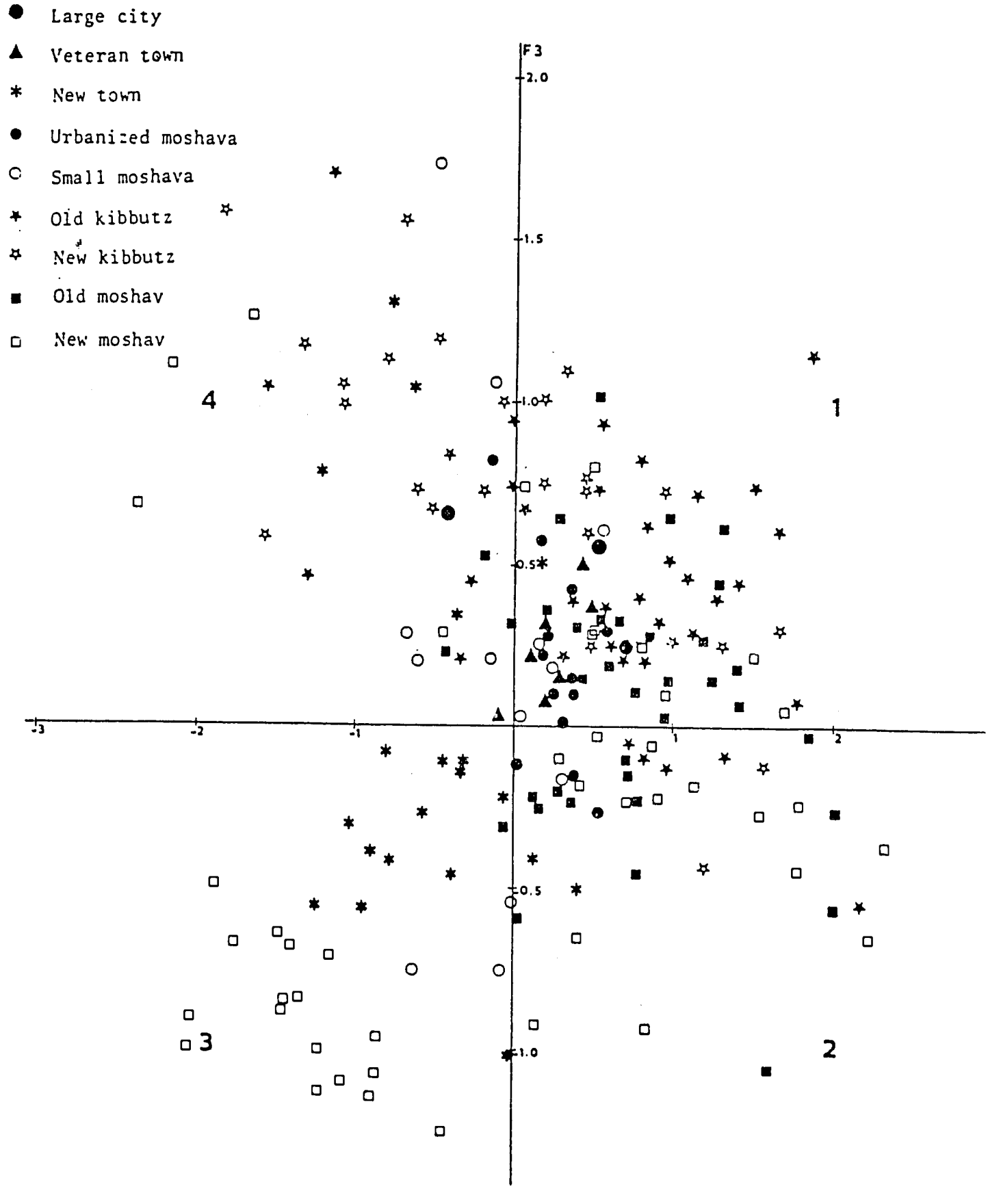

Figure 3: Mapping of Settlements in Factor Space F1-F3

Table 2: Distribution of Selected Types of Settlement in Factor Space

Type of Settlement	F1-F2 Mapping					F1-F3 Mapping				
	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4	Total	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4	Total
New towns	8.9	2.9	61.8	26.5	100.0	5.9	5.9	73.5	14.7	100.0
Old kibbutzim	0	85.2	14.8	0	100.0	72.2	13.0	0	14.8	100.0
New kibbutzim	1.4	50.0	48.6	0	100.0	44.3	7.1	2.9	45.7	100.0
Old moshavim	74.7	9.7	7.2	8.4	100.0	48.2	36.2	8.4	7.2	100.0
New moshavim	16.3	14.5	56.3	12.9	100.0	11.0	19.8	56.7	12.5	100.0

kibbutzim, the scores of the third factor are relatively high, an evidence of their high cultural potential.

The veteran moshavim, established before independence, show positive and relatively high score values on both the demographic and the economic factors; they show, however, a very wide range of score values on the cultural factor. This underlines the high level of their economic development and reveals the great differentials existing among individual moshavim as to their cultural potential.

The new moshavim form a distinct group in both mappings. More than 56 percent of these moshavim have negative scores on all three factors. Only 19.2 percent have positive scores on the economic factor. On the cultural factor only 23.5 percent show positive scores, and those with negative scores are clearly at the bottom of the scale of cultural development.

Some conclusions can be drawn as to the relationship between the level of development of a settlement and some of its characteristics such as size, age and organizational structure.

1. The development level of a settlement is not necessarily related to its size: the kibbutzim show a particularly high level of development in many respects while new towns, though considerably larger, have a much lower level, especially in the cultural sphere. Thus, the new towns are obviously unable to contribute to the spread of development within their region.
2. The internal organizational structure of a settlement has a deep influence on the character of its development. A comparison between moshavim and kibbutzim, settlements of the same size group, shows that kibbutzim have a higher socio-cultural level due in great part to the

process of self-selection of kibbutz members as well as to the advantages brought by the communal structure of kibbutz life. On the other hand, moshavim have a higher level of economic development related to the individual basis of consumption.

3. The time and length of establishment of a settlement, and the consequent population composition, are also central factors in its development level. There is a noticeable gap between most new moshavim and the older ones. Between old and young kibbutzim, however, there are no significant differences in development characteristics; in this case, the influence of the organizational structure seems to be stronger than that of the time of establishment.

The great disparities observed in the development level of various settlement types deeply affect the pattern of development within each region: the intraregional juxtaposition of different types of settlement resulting from the policy of population dispersion over the national territory, filling in empty spaces with new settlements, has created an extremely heterogeneous picture of regional development. Together with the inherent differences in development level among the various settlement types, the two separate paths of evolution they followed have led to the formation of two parallel systems identified by their internal linkages, and connected only at the highest level of the urban system, i.e., in the major cities:

- One system consists of the major cities, some veteran towns, and the kibbutzim and veteran moshavim with their own regional centres directly linked to the major cities. Due to the generally high level of development of all types of settlement in this system, it can be defined as a 'core-only' system.

- The second system constitutes in itself a rank-size hierarchy, from the major cities and some intermediate size veteran towns, through the new towns to the new moshavim. Here a clear distinction can be made between the "core" of the system consisting of the large cities and the veteran towns with a high level of development, and its "periphery" of new towns and new moshavim displaying the lowest development levels.

ALIENATION

Between these two separate hierarchical systems, particularly at their lower levels, contacts are limited. Beyond the evolution described above, a complex set of additional factors reinforces the alienations between the two systems. Some of these factors, e.g., ideological factors, are practically unalterable, while the influence of others can be alleviated.

1. **Ideological factors** intrinsic to the communal way of life of the kibbutzim have had a particularly strong influence on the relationship between the urban and the rural sectors.
   a. An ideology of self-reliance has grown out of the difficult conditions in which the rural settlements were developed initially. This ideology has strengthened, in the rural sector, a tendency to cater to its own demands and to eliminate or at least reduce its dependence on external institutions.
   b. An anti-urban ideology has long been prevalent inside the Zionist movement (Cohen, 1970). The characteristics of urban society and its way of life have been rejected emphatically and opposed by the pioneer settlers.

c. The ideology of self-reliance and the idealization of self-work have created in the kibbutzim a reluctant attitude towards the employment of a salaried labour force. Concurrently, with the development and the expertise of new technologies and its diminishing demand on the labour force, the potential for economic collaboration with the town has declined.

2. **Exogenous structural factors** of alientation have also been at work.

a. In the already settled regions, different roles were enacted by two different population groups: on the one hand, the urban population of the new towns, new immigrants unaccustomed to the Israeli way of life and to western habits, often uneducated; on the other hand, the veteran rural populations, well-settled, skilled and educated, guiding the new urban population in its absorption problems. The objective inequality in these social roles created extreme differences in social status accompanied by a strong antagonism.

b. From the start, separate administrative frameworks at the national level have dealt with the urban and rural sectors. The Ministry of Housing has been responsible for the construction and development of new towns. Rural development had always been handled by the Jewish Agency, and this separate set-up was perpetuated after independence as the settlement organization strived to maintain its control over a well-defined domain. The persistence and the extent of this administrative separation are exemplified in two recent planning cases:

(1) A regional set-up has been planned for the new rural settlements in central Galilee. In the midst of this region, the new

town of Carmiel has been developing steadfastly. Nevertheless, in the proposal for the new organizational structure of the region prepared by the Jewish Agency Settlement Department, the existence of Carmiel and its potential contribution as a regional centre have been completely ignored.

(2) Like many other rural areas in Israel, the region around the town of Netivot has been plagued with the problem of its population over-spill, namely sons of farmers for whom no farmland is available. Normally, as the urban and rural populations in this region have similar backgrounds and characteristics, this surplus population would stream into the regional town, where it can find suitable employment and housing. Indeed, many of the farmers' sons in the Netivot region can find some employment in Netivot itself or elsewhere in the region. However, there is a tendency to provide them with the needed housing not through the Ministry of Housing inside the new town, within the framework of the usual housing programmes for young couples, but rather outside the town, within a rural centre set up by the Jewish Agency. Such a special housing programme will naturally perpetuate the separation between the urban and the rural populations.

c. A major factor which could enhance the linkages between the town and its rural hinterland is the existence of a suitable transportation system. The importance of this factor cannot be exaggerated: the physical pattern of transportation lines providing for short and direct connections between town and

hinterland is essential to the promotion of an effective relationship between the two. In fact, the existing transportation system encourage direct connections from the region to the major cities, while connections between town and hinterland becomes a rather neglected side-product of these main communication lines (Pialkoff, 1983). Some intraregional transportation is provided by the regional municipal councils, but it serves only specific purposes and does not cater to the need for a generalized transportation link between the town and its hinterland.

3. **Psychological factors** have proved to be extremely important in setting the pattern of alientation in urban-rural relationships. These factors are mainly reflected in the mutual image of the two populations.

   a. A fairly large proportion of the town's labour force is employed in the rural regional centres, and this has been the major area of contact between the rural and the urban populations. Therefore, the rural population typically appears in the eyes of the town people as exploitative employers.

   b. The high development level, particularly the high welfare level, of the veteran rural settlements is often envied by town residents unable to compete with it by creating and developing their own cooperative pattern of life.

   c. Over the years, many kibbutz members have volunteered to help new town residents. However, they have brought with them a feeling of superiority about their ideology and their achievements; often they are condescending towards the underdeveloped town population of a different culture. A strong feeling of resentment has been

town population of a different culture. A strong feeling of resentment has been generated in the town against the patronizing attitude of the kibbutz volunteers.

The combined influence of all these factors has been powerful enough to transform plain alientation into active antagonism. Moreover, this antagonism has been exacerbated by political influences to such an extent that there emerged, particularly in the rural sector, a new awareness of the need for a productive rural-urban collaboration. But now, the problem is not only to create within a short time period a regional community of interests which should normally have developed gradually and naturally, but also to overcome the antagonism created by years of separate development and alienated relationships.

COLLABORATION

New attempts at collaboration have been made recently, though it seems they are too few and not always whole-hearted. Many of these attempts have been made in the sphere of cultural activities and geared to a change in the image of the rural population.

1. In many outlying regions of the country, new regional colleges have been created, forming a neutral background for common education.
2. Kibbutz volunteers keep "working" in the town, providing, for instance, education to illiterate adults or lending a hand in the community organization of a neighbourhood earmarked for renewal.
3. Joint summer camps have been organized in the Sderot region for the children of both town and kibbutzim. An important feature of these

camps for the generation of a positive relationship between children of the two sectors consists in mutual hospitality in the children's homes (Pavin, 1981).

Most of these new activities are guided, no more by a one-sided relationship between "givers" and "takers," but by a basic concept of mutuality. A joint association for cooperation between the town of Sderot and the surrounding council of kibbutzim was set up a few years ago; its aim has been to foster common interests in the region and to promote a more positive relationship between the two populations; in this association, both populations are equally represented (Ravid, 1980).

Again, most joint activities have been in the field of cultural development; nothing or very little has been done in the field of joint economic activities. However, some positive change in the mutual image of the town and the rural population has already been identified (Ben-David, 1979), but a great deal remains to be done in order to reach a true and sincere pattern of cooperation between the two.

CONCLUSIONS

Perhaps more than examples to be followed, lessons can be learned from the Israeli experience in terms of mistakes which should not be repeated.

1. Within an already settled region with a rural sector well organized to cater to its own needs, it is extremely difficult for latecomers, like some of the new towns, to overcome the inertia of the established system and to successfully become integrated.
2. If the new town is built as an integral part of a newly developed rural region, a positive relationship can be achieved from the start.

However, it must be stressed that separate administrative frameworks for the town and its hinterland form a strong deterrent of collaboration. A joint administrative framework must be established at least within the region in order to coordinate all aspects of development for both the rural and the urban sectors, and in order to achieve an integrated structure of regional cooperation.

3. Equal status of both sectors must be maintained in all joint ventures. Dominance of one sector causes alienation and considerably reduces positive changes for success.

On the whole, it seems that the new towns of Israel have fulfilled only part of the role intended for them. They have not been able to achieve the status of strong regional centres integrated in their rural hinterland. Due to alientated relationships with their hinterland, they have not been able to promote the spread of development within their region, but they have made a significant contribution to the dispersion of population over all regions of the country.

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URBAN RURAL RELATIONS IN THE LAKHISH REGION - PLANNING AND REALITY

Julia Margulies
Avshalom Rokach

The planning and development of the Lakhish region, in general, and the urban-rural relations in the region, in particular, were influenced and determined largely by the prevailing level of development and by the general trends in rural development in Israel.

Israel gained its independence in mid-1948; it was then that large-scale immigration into the country began. The first newcomers were from Europe, but soon after, as early as 1949, large waves of immigrants started to arrive from Afro-Asian countries (Iraq, Yemen, North Africa and others). New unsettled areas of the country were opened for mass settlement.

The economic and social characteristics of the country in its first years of existence, especially in the newly settled areas, had some resemblance to those of developing countries. A few examples will illustrate this:

1. The annual average per capita income (GNP) in Israel in 1954 was $440 at current prices which is equal to about $1,500 in 1982/83 prices. The average family income in newly settled rural settlements was as low as $700 at current prices, correspondingly $2,500 per family in 1982/83 prices, or roughly $600 per capita.
2. The level of education of the majority of immigrants from Afro-Asian countries was carried over from their countries of origin; the rate of illiteracy, especially among women, was high. The way of life of these immigrants who settled in Israel was traditional and typical of the way of live in Afro-Asian countries.

3. Infrastructure in Israel as a whole was not developed, especially in the newly settled areas; this was evident in the poor transportation system and, in extreme cases, in a lack of electricity.
4. The industrial enterprises were concentrated mainly in the large urban centres while small towns and rural settlements lacked industries. An exceptional case was the kibbutz settlements where the first successful attempts at industrialization were discernible.

This background determined, to a large extent, the approach of the planning institutions in Israel towards rural development and urban-rural relations. To this one should add the hitherto predominant ideology in Israel, according to which preference was given to the rural sector. This meant allocation of large amounts of public funds and direction of countless immigrants to new rural settlements and to agricultural development. Thus, during the first three years of its existence, Israel doubled the number of its agricultural settlements - from 280 to more than 500 rural settlements. The number of farming families grew at the same rate.

New areas were opened for massive rural settlement. Among these was the Lakhish region located between the centre of the country and the arid Negev. The comprehensive development of the region started in 1954, while actual settlement took place in 1955.

The settlement patterns adopted in the Lakhish region were determined, at least partially, by the economic and social characteristics described above, i.e., by the fact that Israel at that time was at a much lower level of development than at present. As we shall see, the rapid social and economic development that followed the planning and settlement of the region was beyond expectation.

KEY FEATURES OF THE LAKHISH PLAN

1. The Spatial Structure.

A pattern termed the 'composite rural structure' was chosen as the basic physical framework for the region. In its expanded form, this featured a hierarchy of three settlement levels: the farming village (comprised of about 80 farm holdings); the rural service centre; and the rural town. Four to eight villages were clustered around the rural service centre. Several such centres, in turn, were clustered around the rural town and, together, formed the development region.

2. Economic Aspects of the Plan.

The only services within the villages had to be within easy walking distance of the farmers' homes, such as a grocery store, kindergarten, and small infirmary. All other services - such as marketing and packing centres, schools, health services and cultural services - were concentrated in the rural service centre. This pattern was aimed at lowering construction and maintenance costs of the services concerned and at improving their quality.

The concentration of services for the whole region in the rural town (secondary education, central specialized clinic, processing industries etc.) likewise was aimed at improving their quality while lowering the costs.

3. Urban-Rural Relations.

The plans for the Lakhish region envisaged the regional rural town of Kiryat Gat as the urban centre to serve the area's agricultural settlements. The town was therefore planned to include only those services, facilities and industries required for the whole region.

Accordingly, it was calculated that the town should not exceed a population of 5,000 during its first five to eight years of existence, and some 8,000 inhabitants thereafter and up to its fifteenth year.

It was expected by planners that the integrated and comprehensive approach to the development of the region would contribute to closer rural-urban relations, expressed through mutual contacts and cooperation between the rural population and the town dwellers. On the basis of these key features, the area was developed, involving the establishment of 26 new settlements and the consolidation of another 30. The region thus numbers 56 settlements including four rural centres, the urban centre of Kiryat Gat and 51 agricultural settlements. The agricultural settlements and rural centres number about 4,000 families (some 20,000 people) and Kiryat Gat reached a population of 28,000, more than three times its anticipated size.

The Regional City

In 1955, a joint committee of the Ministry of Finances, of Labor and of Agriculture as well as of the Jewish Agency was established and decided on the creation of a regional centre in the Lakhish Region: Kiryat Gat. The committee recommended to establish industries for the processing of existing and future agricultural produce. Construction of the city started at the end of 1955, and in January 1956, the first twenty immigrant families - from rural areas in Morocco - arrived at the township. The first settlers were given plots of land near their houses; in addition, they were also employed in jobs which had been created specifically for them. Thus, initially the urban centre had a rural character, referred to by inhabitants of the Lakhish Region as "Meaberet Kiryat Gat," i.e., transit camp of Kiryat Gat, or "Moshav Kiryat Gat."

When planning for the Lakhish Region, the fundamental decision was made that the geographical area to be developed would be under the authority of one local body or council at the regional level. This meant that the council would embrace all settlements of the region, irrespective of their different levels.

Kiryat Gat was assigned to the same team which was already responsible for the development of the whole area, the "Lakhish Region" of the settlement department. This team even transferred its headquarters to the new centre, and for the first time in Israel, an urban centre was regarded as an integral part of an area.

Reality, however, proved that the attempt to organize all settlements of the Lakhish Region within one regional council did not succeed, but was a dismal failure. Since its establishment in 1956 Kiryat Gat had the municipal status of a "local committee" within the framework of the regional council; but in August 1958, the Ministry of the Interior made Kiryat Gat a "local council so that it no longer belonged to a regional council. Furthermore, according to the accepted structure in Israel, only agricultural rural settlements could belong to a regional council. This meant Kiryat Gat was no longer part of the region's municipal organization.

Kiryat Gat remained under the direct care of the "Lakhish Region" of the settlement department until 1958. Since then the city has developed its own interests; however, its leadership still consisted, to a large degree, of people from the former settlement department who saw to it that the ties with the rural area were maintained. The unit of the "Lakhish Region" within the settlement department was disbanded in 1960, and the main operative units of the region were transferred to the

regional councils. Although the regional councils did cooperate in a number of different issues which were of common interest to all the region's settlements, they developed their own particular interests.

Another attempt was made in Kiryat Gat, to integrate different population groups in order to change the composition of development towns, as it had been known up until then. This was to be accomplished by referring new immigrants from European countries as well as veteran settlers to the city, in addition to the new immigrants from Eastern countries. Representatives of the Zionist Federation in England became active in trying to attract young people of this extraction to Kiryat Gat, and founded to this end the English-Israel Society for the Development of Kiryat Gat. This society was responsible for the establishment of a residential quarter populated by former AngloSaxons. The shield of the "Lakhish Region" bestowed on Kiryat Gat a special status which no other urban centres had previously enjoyed. Because Kiryat Gat was an undertaking of national importance, it was possible to attract settlers from among the veteran population who considered settling here as a pioneering deed. This contrasted with their settlement solely in villages which had been regarded hitherto as a pioneering feat. In 1957, the breakdown of the population of Kiryat Gat according to origin was the following: 37 percent North African, 45 percent hailed from Eastern Europe, 13 percent veteran Israelis, and 2 percent new immigrants of Anglo-Saxon extraction.

The special character of Kiryat Gat attracted people from among the veteran population, and absorption institutions sent new immigrants. Within a few years, the city outgrew all plans. In 1956, the population of Kiryat Gat was 1,804 inhabitants; three years later this number

reached nearly 8,000. As a result of this, a new target of 14,000 inhabitants was fixed for the city. It was reached again within a short period. In 1972, the population of Kiryat Gat numbered 19,200 inhabitants, in 1982, to 24,600.

From 1961 to 1972 the average annual growth rate of the city was 8.2 percent, exceeding the average of all other development towns; however, since then, the growth rate has slowed down and today is equal to approximately 6 percent a year. In the course of time, a change in the demographic composition of the population took place and has come to resemble more closely the age composition of the other development towns in Israel.

In 1972, it was also possible to observe a change in the ethnic composition compared to the initial period: the share of the population originating from Asia and Africa had increased considerably. A total of more than three fourths of the population of Kiryat Gat was either born in Asia or Africa or to parents who were born there. Those of European and American extraction (first or second generation) represent 19 percent of the population. At Kiryat Gat, those of Asian and African origin represent 7 percent more than the average for development towns, and approximately 22 percent more than the national average.

The changes in the demographic structure of the city paralleled important changes in its economic structure. In the initial stage, it was planned as a small urban centre which would serve the rural areas. Therefore, only plans for the development of an agriculture-oriented industry were made. Numerous enterprises of this type such as the cotton mill were indeed established. Since then, however, the city has opened other industrial enterprises, and today it is considered one of the most

industrialized development towns of Israel. The main impulse to concentrate on industry dates back to the sixties. In the ten years from 1960 to 1969, the number of industrial workers in Kiryat Gat increased by 345 percent, while the increase for the development towns as a whole amounted to 234 percent, and for the whole of the nation, to 75 percent.

In 1973, the breakdown of workers in the city according to economic sector is the following:

Industry	51.4%
Building	9.3%
Agriculture	10.1%
Services and Commerce	4.0%
Others	4.0%
Total:	100.0% (6960)

The development of industry did not take place as originally planned. The main industries are not linked to agriculture. Those industries which did process agricultural produce, did not necessarily use the crops grown in the region. The textile branch was consistently the most important, and as early as 1969, approximately 60 percent of all industrial workers in the region were active in this branch.

In contrast, the industry of the city also includes enterprises in the field of foodstuffs, metal, electricity, electronics, and others. In 1974, there was a total of 130 industrial enterprises and workshops. Of these, 15 were large enterprises, 10 were medium-sized, and more than 100 were small enterprises and workshops. In time, the importance of the textile branch diminished, although it still ranks first. In 1960, approximately 70 percent of all employees in the town worked in this

branch; in 1969, this percentage had sunk to 63, and in 1974, to 57 percent.

Typical of all industries at Kiryat Gat is the low level of skills required of the workers. A considerable number of the industries rely extensively on the work of women and unskilled labor. The share of people with an academic education, as directors, clerks, sales personnel and in other services is lower at Kiryat Gat than in other development towns and less than the national average. On the other hand, the share of industrial and unskilled workers is comparatively high in the city. The educational level of the population is also inferior compared to the average in development towns and at the national level. Only 41 percent of the population attended school for more than 8 years, compared to an average 46 percent in other development towns, and to 51 percent in the rest of the country. It is possible that people with a higher educational level leave the city because it lacks suitable employment opportunities. In the present situation, the city does not represent an alternative place of employment for the population no longer active in agriculture but not ready to accept unskilled work.

Part of this work is being done by Arab labor. In 1975, over 700 Arabs were employed in industry, 250 in building, and approximately 170 in the services. The commercial services at Kiryat Gat underwent considerable development accompanied by the changes in income level, consumption habits, and population growth.

Upon the founding of the city, a commercial centre was established including a variety of shops (in the different quarters), apart from additional centres with three to five shops each. Twice a week a regional market was held. In 1968 there were 171 commercial establishments in

town, in addition to another 76 specializing in services. In 1974 the number of commercial establishments numbered 231, and that of the services 92.

Thus the volume of commercial establishments increased by 35 percent, commensurate with the 32 percent growth in population for the same period. The most significant growth was experienced by furniture shops, as well as those selling electric appliances and household goods, to satisfy an increased demand for these articles relative to an increase in the standard of living. The services sector grew more slowly than commerce, namely 21 percent. According to a 1975 poll there was general satisfaction with the quality and level of local commerce. Only 13 percent of the inhabitants would buy regularly out of town, however, those living in the surrounding rural and agricultural areas--the most important reservoir of potential clients--would not buy in the city to any significant extent; only 16 percent of those living in the neighborhood would buy at Kiryat Gat and use the local commercial services.

There exists at Kiryat Gat a number of special services for the agricultural sector, such as establishments for the provision of bookkeeping services for the moshavim of the Lakish Region, as well as a plant for sorting flowers. However, this is the extent of activities related to agriculture.

Concurrently public services developed: in 1975, 58 institutions served a population of 6,711 pupils, part of which came from outside the city. In addition, a framework for informal education was developed. Thus, in the same year there were 4 youth clubs, 4 youth movements, and a number of sports clubs.

The learning institutions at Kiryat Gat increasingly attracted pupils from the surrounding rural area. The level of the city's schools (in particular, its secondary schools) is superior to that of many schools in other rural centres; the rural population therefore prefers to send its children to school at Kiryat Gat.

In 1975 the city's health services included 3 public clinics staffed with 6 general practitioners, 6 pediatricians, and 23 nurses who also worked at the mother-and-child care clinics. During the same period an additional public-health clinic and a specialized clinic were under construction.

The city provides supplementary cultural and recreational services, such as a library, a community centre, a swimming pool. sporting grounds, a stadium, a cinema, and many more. Based on the poll which was carried out in 1975, the use of these installations was mediocre, and so was the inhabitants' satisfaction with them.

Kiryat Gat set out on its way along a path different from other development towns. Part and parcel of a general development plan, the city enjoyed relatively strong support from the institutions, at least initially. This apparently influenced its positive development during the first decade. Compared to other development towns, the city grew at a more accelerated pace, capable of offering places of employment and services. Today, however, the city is suffering visibly from economic and cultural problems. Granted, there is not a shortage of places of employment, yet, they do not match the qualifications of a population with higher skills, neither professionally nor remuneratively. The city also has to deal with troublesome social problems such as youth delinquency which is much higher here than in other development towns. Today,

Kiryat Gat is no longer a place that attracts newcomers, and the number of those leaving the city is much higher than the number of those who settle in it.

Relations Between City and Village

The municipal system of the Lakhish Region revolves around two cities: one is Kiryat Gat, the second Ashkelon. Kiryat Gat was established as part of the development project of the Lakhish Region, parallel to the establishment of rural settlements, whereas Ashkelon, which had been established a couple of years prior to this, was not an integral part of the region from the viewpoint of general planning. Because of its presence in the region, however, links were soon established between Askhelon and the rural settlements.

Ashkelon was settled anew after the War of Independence, and in 1955, when Kiryat Gat was established, it had over 16,000 inhabitants; in 1972 the number had grown to 43,000 inhabitants, and in 1982, to 54,000. This means that Ashkelon was a serious competitor to Kiryat Gat for the provision of services, in particular for the inhabitants of the Nehora Block located at an equal distance to both cities. Ashkelon did not only boast of more developed commercial services. Since it is the older city, it already had, during its first years, administrative services available to its citizens, such as the Ministry of the Interior, income tax and national insurance. Furthermore, Ashkelon provided health services on a higher level which included specialists and a hospital.

During this initial period, when private initiative was not strongly developed yet, and when the difference between these two urban focuses was conspicuous, the population of the Lakhish Region, and in particular of the Western part thereof, acquired a dependence on Ashkelon. Apart

from the one justification that the level of development of Ashkalon was different from Kiryat Gat, this dependence was fostered by the structure of the road network and the public transportation system.

The structure of the existing road network was such that the distance between the central block of settlements to both cities was equal, and, therefore, Kiryat Gat did not have the advantage of shorter distance over Ashkelon. On the other hand, Ashkelon enjoyed the advantage of better public transportation ever since the region was first developed. A comparative investigation of the roads used by public transportation to Ashkelon and to Kiryat Gat between 1956 and 1971 clearly showed that with respect to time saved through public transportation, Kiryat Gat did not have any advantages over Ashkelon. The level of services from the central block of settlements (Nehora) to Ashkelon was higher than that to Kiryat Gat as early as the first years of its existence. Over the years, this phenomenon has become still more pronounced. This factor weighed even more than the attractiveness of the city, for settlements located further away from Ashkelon and closer to Kiryat Gat simply preferred the latter. These settlements, however, represent a minority.

At the time when industry was flourishing at Kiryat Gat, links were forged between the city and the rural hinterland in the field of employment. Nevertheless, this did not have any bearing whatsoever on the general dependence of the population on its services, given that the workers were driven by special transportation to their places of work and back to their villages.

The difference in accessibility to Kiryat Gat was a criterion for the regard the inhabitants had of the city as a regional centre. Inhabitants whose dependence on the city was greater tended to view it more as

a factor influencing the development of the region than did those inhabitants whose links with the city were rather loose.

When defining the relations between Kiryat Gat and the villages, two types of development should be articulated: one in the area of social services and another in the economic sector. The rural centres which were planned as an intermediate stage between the single village and the urban system did not prove to be an overall success. Their commercial services did not function at an acceptable level from the start, and their educational services were beset particularly by problems on the secondary level. This is one of the reasons why the people who financially could afford it and who did not depend on public transportation, removed their children from these schools and sent them to better schools frequently located at Kiryat Gat. At present, the rural centres only have elementary schools. A grassroots movement representing some of the settlements' inhabitants, offered to jointly solve all the problems in the sphere of municipal services with Kiryat Gat, since the rural regional councils were not able to deal effectively with these problems. Although there does exist a potential for accomplishment in this sphere, the economic aspect of the problem is much more complex.

The agricultural development in the area with its specialization in export crops led to an increasingly greater dependence of the farmers on national service centres. This fact makes the regional centres practically superfluous. As already stated, the agriculture-related services provided by the city are few; moreover the city does not provide alternative employment to the region inhabitants with a higher educational level.

Nevertheless it is possible that future development in agriculture will require reinforcement of the regional level (for example, a large part of the local associations presently in a crisis will not be able to function), and then Kiryat Gat may then be considered a centre for regional agricultural activities.

SOME FINAL REMARKS

The evaluation of the Lakhish settlement project leads to some conclusions on the approach to the planning principles and the path that should be taken in the future, especially with regard to urban-rural relations.

1. The development of the rural sector.

The development of the rural sector as it applies to the agricultural-economic development and the social-educational advancement of the settlers, was swift and far quicker than anticipated by the planners. The farm became capital intensive while specialization in agriculture, marked by transformation to high quality export crops such as flowers, specific kinds of vegetables, etc., grew very fast. This type of agriculture demanded a strong and efficient supporting system of services. The majority of the services was comprised of the already existing strong nation-wide organizations of marketing, supply, credit and others. Consequently, the need for services did not foster or justify relations between the agricultural villages and the town of Kiryat Gat despite the anticipation of planners that the town would in fact be able to render these services. Furthermore, as the standard of living and the level of education of the rural population rose, their

expectations for civic and other services became high; thus, they sought better services in other more developed urban centres like the town of Ashkelon. Larger, more distant urban centres became more accessible to them as they depended less on public transportation and more on their own cars. Many settlers went as far as Tel Aviv for services.

2. The Rural Centre.

The major changes in the rural centre are well illustrated by the fact that the school which used to provide nine years of education now provides only six years; the remaining years are completed at Kiryat Gat. The same attitude has been applied to other services located in the rural centre such as health, culture, entertainment and commercial services.

In conclusion, with the regional development of the rural sector, the rural centre gradually lost its original functions as dependence shifted to the more distant, more developed urban centres such as Kiryat Gat.

3. The Urban Centre.

As previously explained, Kiryat Gat was planned as a small urban centre, given its provision of services for processing agricultural produce in the region. Hence, its size was intended to be small. Yet, as we have seen, the town grew far beyond the original plan. Footloose industries were added and the economic basis of the town was broadened. The planners in 1954/55 viewed the whole region on the basis of the agricultural settlements and Kiryat Gat was the provider of services to the villages. However, as the nature of the development of the rural sector changed, so did the role of the urban centres. The contribution of agriculture to the economy, notwithstanding its spectacular development, was

reduced. Industry has always played a major role in the growth of the economy both nationally and regionally, and the Lakhish region is a typical one for Israel.

Moreover, if there is any hope that the rural settlements in the region will prefer Kiryat Gat over other larger, more distant urban centres, then growth of the town should be stimulated, so it may 'compete' with other towns. In this case, the town's development of more sophisticated industries that will attract a skilled labour force from the surrounding villages is essential.

In conclusion, it is recommended that planners be aware of the need for flexibility in the planning of regions. Planning concepts that were found to be appropriate for a certain level of development may prove inappropriate within a relatively short period of time due to an accelerated economic and social development. If the principle of flexibility in planning exists, then the required adjustments may be introduced and the plans may be adapted to the changing conditions.

And last but not least, planners should be aware of the fact that the planned region is not isolated from the rest of the country and the mechanism of 'push and pull' may play an important part in the future development of the region; there might be external factors (as in the case of Ashkalon versus Kiryat Gat) that should be taken into consideration when planning the specific region and identifying the role of its urban centre.

BEER SHEBA: A TOWN WITH NON-AGRICULTURAL AND SPARSELY POPULATED "HINTERLAND"

Ariel Nesher

The focus of this discussion will be the interrelationship between a town and the sparsely populated region around it, composed of mostly non-agricultural settlements. Beer Sheba and the northern section of the Negev region will serve as our case in point. At issue are the planning concepts of urban settlements in the Negev region, the activities that took place over a period of more than thirty years, and the evolving processes that led to reevaluation of some of the original planning concepts.

The interpretation of the theoretical concepts of a city-hinterland relationship was purported to reflect physical planning on the national level, but reality proved otherwise. This led to a revision in the terminology, as well as a change in the town's relationships with the surrounding settlements and amongst themselves, and a reformulation of the concept of hinterland.

URBAN SETTLEMENTS IN THE NORTHERN NEGEV

The first population census taken soon after the establishment of the State of Israel in 1948[1] revealed that 77.5 percent of the Jewish population was concentrated in the densely populated Haifa, Tel Aviv and the central districts - predominantly in the large cities and other urban settlements. The northern and southern districts were the least populated. The

southern district which covered 70 percent of the land area, accounted for only one percent of the Jewish population. Since the establishment of statehood coincided with an enormous influx of new immigrants from many countries (mainly from Moslem countries in Asia and Africa), a comprehensive national plan for population dispersion was put into effect[2]. The main goals of the plan were to 'absorb' the new immigrants while reversing the previous trends of preference for the central zone of the country and the large cities. Thus, the plan guided the new immigrants to the hitherto sparsely populated northern and southern regions while enlarging the agricultural sector, small and medium-size towns, and establishing new towns.[3] Later plans, dated 1957 and 1963 allowing for 3,250,000 and 4,000,000 inhabitants, respectively, recognized the difficulty in obtaining the drastic changes in population distribution patterns. They allowed a heavier weight to the central coastal zone but maintained the stress on extensive population increase in the southern region. Table 1 shows the increase in the share of the population in the southern district of the total population in Israel. The subdistrict of Beer Sheba shows the largest increase. The distinction between the two subdistricts is essential. The coastal subdistrict of Ashkelon is not in the sphere of influence of Beer Sheba and has a different character. Hence, our discussion will not relate to this subdistrict. The difference between the two subdistricts is exemplified by the population density, appearing in the lower part of the table.

According to the plan, several new towns were established in the Negev all of which, but one, were literally new physical entities where there was no settlement before.[4] The exception was Beer Sheba. Here, an urban settlement, even though small, existed before, and served as an administrative post to previous regions.

Table 1: 1) Share of the Southern District of the Total Population in Israel by Population Groups and Subdistricts (percentage)
2) Population Density: Inhabitants per Square Kilometer

	1948	1961	1972	1982
All: District	2.5	8.0	11.3	12.2
Ashkelon	0.8	3.5	4.9	5.1
Beer Sheba	1.7	4.5	6.4	7.1
Jews: District	0.9	8.0	12.1	13.1
Ashkelon	0.7	3.9	5.7	6.1
Beer Sheba	0.2	4.1	6.4	7.0
Non-Jews: District	9.9	7.5	6.6	7.9
Ashkelon	1.6	0.1	0.1	0.1
Beer Sheba	8.3	7.4	6.5	7.8
Density: District	1.5	12.3	25.1	35.3
Ashkelon	5.8	60.3	120.3	163.6
Beer Sheba	1.1	7.6	15.7	22.6

Source: Statistical Abstracts of Israel.

Beer Sheba is located in an historically strategic point in the Negev: It is close to water sources and serves as a major road junction connecting the Negev with other parts of the country. The Turks established 'modern' Beer Sheba as an administrative centre in the late nineteenth century and during World War I it served as a major headquarters town for their allied armies with the Germans. For that purpose, the town was also connected to the Hijazi railroad line. The British mandatory regime perpetuated the role

of Beer Sheba as an administrative centre to the southern subdistrict and during World War II Beer Sheba served as an important station for the British troops moving between the western desert, Egypt and Palestine.

Consistent with the central place theory that guides the national development planners, Beer Sheba was designated to be a regional city. It was proclaimed the capital of the Negev and was to house several government functions. But it was conceived mainly as the primary industrial centre of the Negev with commercial functions. Parallel to that, several smaller new towns were to serve as urban-rural service centres to their mostly agricultural hinterland.[5] In addition, they were to house small locally based industries and serve as a home for the industrial, mining and construction workers employed around them. As will be shown later, this was an erroneous perception of the role of these towns.

Yeroham was established in 1951 to house the workers in mineral mines in the Great Crater and the construction workers in the area. It had no agricultural surrounding whatsoever.[6] Dimona was founded in 1955 in order to provide housing to the potash workers in the Dead Sea.[7] Mitzpe Ramon was established in 1956 as a temporary camp for the construction workers of the main roads to Eilat and the petrol line, and later as a permanent home for mining workers in the Ramon crater.[8] It was supposed to be an urban service centre for the settlements between Beer Sheba and Eilat.[8]

In the semi-arid zone north and west of Beer Sheba, Kiryat Gat was established in 1954 as the centre of the Lakhish District. Sederot, Ofakim and Netivot[9] were established in 1951, 1955 and 1956, respectively, as urban-rural service centres to the surrounding rural communities. And, last but not least, Arad was established in 1962. Its design represents an

innovative approach which had been developed after learning from some of the past mistakes. It was intended to be a service centre for future agricultural settlements[10] and to provide housing to workers in the chemistry based industries.

THE NEXT PHASE

A few years after the establishment of the development towns, it became quite clear that most of them were not functioning as service centres to their agricultural surroundings and that the foreseen employment structure of the population would not materialize.[11]

A significant indication of the ability of a town to provide services to its own residents and the surrounding area is its size. The larger the town, the better and the more services can be provided. Table 2 indicates that the towns of Yeroham, Sderot, Ofakim and Netivot did not reach the size that would make them appropriate service centres. Mitzpe Ramon remained an isolated small town which could hardly provide adequate services to its own population. By a circular process this was also the main cause for its viability to grow. The relocation of several army bases into the area adjacent to the town did not bring the expected change in the situation.

As it turns out, most of the towns did not show any significant interaction with the agricultural settlements in their assumed hinterland. The main reason was built into the organizational (marketing and shopping) structure of the kibbutzim and moshavim in Israel. Since the beginning these functions were organized into a very centralized system whereby the reliance was on the large urban centres, particularly on Tel Aviv. Yet, the personal services required particularly by the moshavim population could not

Table 2: Population in Towns ('000) and % Change

Town	Year Established	1950	1955	Census 1961	1965	Census 1972	1975	1980	1982
Beer Sheba	1948	8.3	20.5	43.5	65.2	85.3	96.5	109.6	112.6
% Change			147.0	112.2	49.9	30.8	13.1	13.6	2.8
Yeroham	1951	-	0.5	1.6	4.6	5.9	6.4	6.3	6.6
% Change				220.0	187.5	28.3	8.5	-1.6	4.8
Dimona	1955	-	0.3	5.0	18.4	23.7	27.4	28.0	27.6
% Change				1566.7	268.0	28.8	15.6	2.2	-1.4
Mitzpe Ramon	1954	-	NA	0.3	1.4	1.4	1.74	2.5	2.91
% Change					366.7	0.0	24.3	43.7	16.0
Sderot	1951	-	1.0	3.5	6.6	7.6	8.5	8.9	9.0
% Change				250.0	88.6	15.2	11.8	4.7	1.1
Ofakim	1955	-	0.6	4.6	8.4	9.3	10.7	12.1	12.7
% Change				66.7	82.6	10.7	15.1	13.1	5.0
Netivot	1956	-	-	2.9	4.3	5.8	6.8	8.1	8.5
% Change					48.3	34.9	17.2	19.1	4.9
Kiryat Gat	1954		NA	10.1	15.6	19.1	21.5	24.3	24.9
% Change					54.5	22.4	12.6	13.0	2.5
Arab	1961	-	-	-	1.3	5.6	8.8	11.6	12.9
% Change						330.8	57.1	31.8	11.2

NA - Not Available
[1] End of 1981

Source: Statistical Abstracts of Israel

be provided by the development towns because of their small size and dull variety. Thus, it happened that Beer Sheba's role as the main provider of personal and other services was continuously growing.

The socioeconomic characteristics of the population in the development town constitute a very important factor in the situation that developed. Generally, most inhabitants of these towns were new immigrants from Asia and Africa, with large families and low educational and technical skills, accompanied by low income levels. It became apparent that in order to provide employment to the population, the original characteristics intended for these towns had to be readjusted and more industries had to be encouraged to locate there. New master plans that were prepared for most of the towns during the sixties and seventies reflect this change in attitude quite clearly. The target size of the towns was increased to 30,000 - 50,000[12] and they show a heavy reliance on manufacturing as the economic base. Table 3 shows the share of industrial employment in the various towns and is a clear indication of the shift in thinking patterns of the planners and policy makers.

Notice that while the share of industrial employment at the national level is decreasing, that share in the towns of the Negev is drastically increasing (except Beer Sheba) and reaching much beyond and above the national average. Yeroham, Dimona and Kiryat Gat have definitely become 'industrial towns' <u>par excellence</u>.

Table 3: Industrial Employment in Towns (% of total labour force)

	1965	1972	1978
Beer Sheba	20.8	18.6	18.3
Yeroham	5.1	45.4	72.0
Dimona	40.6	48.6	52.7
Mitzpe Ramon	NA	43.0	45.0
Sderot	18.5	42.7	47.7
Ofakim	30.5	31.3	41.0
Netivot	15.9	21.1	37.9
Kiryat Gat	43.6	45.6	72.7
Arad	12.9	32.4	37.1
National	28.6	24.8	NA

Source: Gradus (1978).

Coincidentally, Beer Sheba is increasingly becoming a typical commerce and service town to the whole region. Table 4 which shows the proportion of labour force that was employed in the service sectors in several towns in 1972 attests to this fact.

The average employment in the service sector in the whole southern district was 49.6. In 1979 service employment in the Beer Sheba subdistrict rose to 60.3 percent.[13] So, Beer Sheba is already showing the distinct signs of specialization in services. The relatively high proportion of service employment in Mitzpe Ramon can be explained by its remoteness from any other urban centre so that some services have to be provided locally even when it is not justified by the size of the population.[14] Netivot is

Table 4: Employment in Service Sectors*, 1972 (% of labour force)

	% in Service Sectors
Beer Sheba	64.9
Yeroham	42.1
Dimona	46.4
Mitzpe Ramon	56.1
Ofakim	48.6
Netivot	57.3
Arad	49.6

Source: Gradus (1978)

* Including: commerce, finance, insurance, government public and community services, personal services and transportation and communication.

the only town with religious orthodox orientation which may explain its reliance on special services and thus, again, some unique need that falls outside any threshold consideration.

As has been pointed out by Gradus and Stern (1972), the evolving structure of the sphere of influence of Beer Sheba, due to the change in functioning and roles of the various towns, resembles the structure of a metropolitan area. The main difference from regular metropolitan areas is that there is no built-up continuity among the various physical entities--i.e., the central-service-city (Beer Sheba) and the surrounding industrial and residential fringe (the various development towns, Bedouin settlements and free-standing industrial complexes) are dispersed over a large area of desert land and connected by a network of roads. Furthermore, consistent with this structure, there is the recent trend of establishing rural

non-agricultural 'community settlements' that function as the suburban fringe of Beer Sheba.

THE BEDOUIN POPULATION

When discussing the role of Beer Sheba as a service-providing centre to the other smaller towns in the region, one needs to discuss the growing importance of the Bedouin population which is concentrated in the 'triangle' Beer Sheba subdistrict. Most of the Bedouins are in the final process of sedentarization. About 27,000 of them reside in a settlement that was planned and assisted by the Government.[15] Most of the others are settled in semi-established settlements and very few are still nomads. The shift in life style of the Bedouins is accompanied by a change in employment patterns among the Bedouin modes. Most of them are employed in the construction and manufacturing sectors and in services, mainly in Beer Sheba and the industrial complexes around it. At present very few services are provided in the Bedouin settlements themselves and most of the population rely on Beer Sheba as the main service provider.[16] Even if some basic services are provided in the settlements themselves, this rural population will continue to rely on Beer Sheba as their main service centre.

Table 5 shows the distribution of urban and rural population in the southern district, its subdistricts and other districts for comparison. When the Jewish population in the district alone is studied, it becomes clear that the Bedouin population in the Beer Sheba district is a significant part of the rural sector for which Beer Sheba is the prime service town. It seems that in view of the recent history of the shift in roles from the small development towns to the large cities in the region, the primacy of Beer Sheba will be maintained, more so for the Bedouins.

Table 5: Urban-Rural Structure of Selected Districts and Subdistricts (% of Population)

District and Subdistrict	1961/62		1972		1982	
	Urban	Rural	Urban	Rural	Urban	Rural
All Country	78.6	21.4	82.6	17.4	86.8	13.2
North	45.9	55.1	48.3	51.7	64.5	35.5
Jews Only	57.2	42.8	67.1	32.9	67.2	32.8
Central	69.4	30.6	79.3	20.7	88.9	11.1
South	58.8	41.2	75.7	24.3	75.7	24.3
Ashkelon	55.9	44.1	78.4	21.6	81.0	19.0
Beer Sheba	61.0	39.0	73.6	26.4	71.9	28.1*
Jews Only	59.6	40.4	82.1	17.9	87.1	12.9

Source: Statistical Abstracts of Israel.

* All Bedouin settlements are defined as rural.

CONCLUSION

We have shown that a concept of a hierarchical urban system conceived for a vast semi-desert region in which there was a rather small rural sector, proved to be unsuitable, mainly because the industrial base was missing the economic structure of the small towns and there was no economic integration of the rural and the urban sector. In addition, tnere were too many small towns which could not sustain a reasonably rich service structure as required for the expectation of the residents.

The evolving new structure which still suffers from several deficiencies inherited from the older structure seems more promising and would have been even healthier had it not had to cope with the left-overs of the previous mistakes. However, several lessons and conclusions can be derived:

1. If a hierarchy of towns is developed in this region it has to be with a reasonable proportion to the size of the population, i.e., each town has to be large enough to sustain an adequate level of services. It is better to have few larger towns than many small 'academic' towns.
2. The town and the rural sector around them should develop together and the reliance of the rural sector on the towns should be ensured via the organizational structure of finance, marketing, purchasing, etc.
3. Industries in the towns should cater to the work force qualifications. However, this is a two-way process since quality of work force can be improved via appropriate educational strategy and industries that use better skilled employees contribute toward better incomes.
4. The road network and transportation systems should be carefully designed so that services and places of employment will be easily accessible. Since the population is spread over vast expanses of a large region (despite several urban concentrated areas and rural settlements) adequate accessibility among centres (since none of them are self-sufficient) is a must in order to exploit the benefits of such a structure.
5. Industry may not necessarily be located in the towns themselves. Free standing industrial complexes may be beneficial to improving the quality of life in the residential sectors while not raising an employment problem.

6. Because of the proximity of rural settlements to the industrial locations (in the town or outside them) the problem of unemployment or underemployment in the agricultural sector[17] may be partially solved by the supply of industrial and service employment in the nearby towns.

NOTES

1 The initial population in 1948 included 650,000 Jews and 156,000 non-Jews, mostly Arabs.

2 Providing for 2,650,000 inhabitants. See Shavan (1951).

3 Spiegel, A. (1966) is a secondary source in which the government policy is cited: "The concentration of industry and the majority of the population in the central coastal strip is fraught with serious danger, from the point of view of security and economy of the country and the government sees the dispersal of population and industry throughout the country as essential to her existence (1055).

4 Referring only to the modern period, of course, since the Negev was populated in ancient times, e.g., Israelite and Nobatian kingdoms.

5 The terminology of the five level hierarchical structure of settlements was as follows:

A:	Village, kibbutz or Moshav	500 inhabitants
B:	Rural centre	2,000 inhabitants
C:	Rural-urban centre	6,000 - 12,000 inhabitants
D:	Medium sized towns	40,000 - 60,000 inhabitants
E:	Large cities	+100,000 inhabitants

"C" type centres were to serve approximately 30 villages with total of about 15,000 inhabitants within a radius of 4.5 to 10 kilometers (3-6 miles). In addition to some administrative functions, they were to have secondary and vocational schools, crafts and service industry, some industries based on regional (agricultural or mineral) resources, and to house the agriculture workers who would be employed by the surrounding kibbutzim and moshavim and other industrial mining and construction workers.
"D" type centres meant to function as main centres and focal points for regional integration, and were to contain higher government offices, banks, hospitals and all other economic and social and cultural institutions of a higher order, and those 'foot-loose' national industries which could overburden the existing large cities.

6 There is some evidence in early government documents that initially it was not intended to become a permanent settlement. But when immigrants were brought there, it was decided ex post facto to make it a permanent town. Some even suggested to move the whole population to Dimona but this was not an acceptable strategy at the time.

7 Later on the Nuclear Research Centre was located nearby.

8 To this date there are very few settlements in the whole southern section of the Negev.

9 Sderot and Kiryat Gat.

[10] The agricultural development of the Arad district never materialized so that the town, though attractive and successful, remained isolated in the vast deserted district.

[11] See Cohen (1967), Krakover (1979), Berler and Shaked (1967). Also several papers presented in this workshop.

[12] Ofakim - 50,000; Netivot and Sderot - 30,000; Dimona...etc.

[13] Yet, as far as Beer Sheba is concerned there was already a low level of industrial employment in the mid-sixties, as can be seen from the Master Plan team (1966) and Spiegel (1966). The same complaints are being heard to this day (several conversations held in Beer Sheba in 1984).

[14] When applying the threshold measurement.

[15] See Vitkon's paper in this workshop.

[16] Gal-Peer (1979). Including, for commerce, market day, etc.

[17] In Israel specifically in the moshavim.

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THE ORGANIZATION PROCESS OF A RURAL POPULATION: THE CASE OF THE BEDOUINS IN THE NEGEV REGION

Gideon Vitkon

The size of the Bedouin population of the Negev is roughly 54,000. Their settlement boundaries stretch from the slopes of the Hebron Mountains to the Negev Plateau. In the north, the settling limit is Beit Kama, and in the south the line is between Demona and Yeruham. These limits were set by a decree of the Negev Military Governor in 1954. Most of the Bedouins remained within the limits after the abolishment of the military administration in 1966.

The majority of the Bedouin population lives in makeshift houses and the others, in tents. About 3 percent inhabit small towns. Of them, 70 percent live in the town of Rahat, 6 percent in Tel Sheba, 15 percent in Aroar and about 8 percent in Kseifa.

The demographic growth of the Bedouin population is among the highest in the country. In the census taken in 1953, approximately 11,000 individuals were counted in the Negev; in 1972, approximately 30,000; in 1977, 43,000; and in 1982, approximately 50,000. The rate of growth of the Bedouin population made it necessary to draw up plans for the accommodation of 100,000 Bedouins in the next 15 years within the Beer Sheba subdistrict. In a country with particularly high medical care standards and with practically no birth control practices (due to religious and national considerations), this rate is anticipated to attain a number far beyond that prevailing in other communities in the country or even abroad. The confinement

of the Bedouin population to the Beer Sheba subdistrict means that no inter-regional migration to other places in the country occurs. Thus, the comparison of the rate of growth of the Bedouin population to that of the Jewish population shows a considerably higher figure for the former despite the influx of new residents to the latter.

In the absence of an occupational census, the estimates regarding the distribution of employment types among the Bedouin population are varied. However, the trend during the last ten years has been one of a rapid transition from an agricultural to an urbanized employment type. Most of the Bedouins collect wages in various branches of the building and industrial sectors or in the services.

The agricultural branches belonging to the Bedouins have the capacity for 1,500-2,000 workers, about half of which are employed to tend flock and the other half of which grow field crops. Presumably a comparable number of workers are employed as labourers hired by the Jewish agricultural sector or as operators of farming equipment and machinery owned by the farms or rented out by entrepreneurs. The section of those employed in agricultural jobs constitutes about 12 to 18 percent of the total manpower supplied by the Bedouin sector of the population.

The master plan for the south of the country foresees the settling of the Bedouins in seven small towns, namely: Tel-Sheba, Chora, Lagia, Segev-Shalom, Kseifa and Aroar. These towns were originally planned with the following objectives in mind:

1. the settlement of the Bedouin population in communities of a permanent nature to be accomplished through presenting a variety of plans implementable in a short time;

2. the prevention of excessive and autonomous territorial agglomerations of specific ethnic groups;
3. the integration of the Bedouins into Israeli society in order to raise their welfare standard (with particular regard to public services) to that of the Israeli society as a whole.
4. safeguarding the laws of the State of Israel by preventing unlawful erection of buildings and preventing political agitation;
5 implementing the principles upon which the regional master plan is based and, in particular, keeping the main roads and junctions free from urban construction;
6. promoting the socioeconomic integration of the various segments of the population in the Negev;
7. offering versatile settlement opportunities in order to maximize the potential attractiveness of the new settlements planned;
8. creating a wider variety of employment opportunities available to the Bedouin population and integrating them into the general employment framework.

RENEWAL AND CHANGE IN THE BEDOUIN SECTOR

The rapid transition from the life pattern of a nomad society based on farming, livestock-raising and crop-growing to an urban society characterized by living in small towns and permanent housing was paralleled by a change in the employment structure. Several aspects inherent in this change may be pointed out:

1. a transition to urban types of employment, primarily at the lower levels of the manpower force, e.g., unskilled labourers in the

industry, watchmen, construction workers, farm hands hired on a daily basis and employees in a variety of services;

2. a changeover in the context of social status, from self-sufficient producers who produce for home consumption to "hired" labourers working for a salary;
3. less dependence on the agrarian system because the tribal chief's control over land distribution carries less socioeconomic weight when measured against income derived from non-agricultural occupations;
4. urban occupations, exercised conjointly by other sections of the population, tend to generate aspirations for job permanency, professional advancement and greater expression of personal capabilities.

Furthermore, the changing life patterns affect the structure of the Bedouin community as exemplified in a more demanding attitude toward Israeli society and its governmental or political institutions. The changes are likely to alter the "quiet," "patient" and "cooperative" image attributed to the Bedouin population of the Negev. This process is mostly the outcome of the internal changes taking place in the traditional community. However, its pace has been hastened by the pressing claims for land redistribution and resettling of the Bedouins, in order to clear areas in the Arad Valley for the construction of an airfield.

Another product of the transition from the agrarian-tribal structures to an urban structure, that contrarily was based on the independence of the salaried worker from his larger family, was the impaired effectiveness of the Sheiks' rule. The powers of the Sheiks were granted under the Turkish, British and Israeli administrations in the form of "intermediate rule," i.e., ruling the Bedouins through designated internal agents recruited from

the population. The population's independence from the Sheiks grew out of a marked increase in the level of literacy, education, the knowledge of the Hebrew language, as well as the ambition of a dutiful administration system to serve the population directly and not through mediating agents. The dependence of the agrarian population on the land distributed by the Sheiks as well as the Sheiks' representation and registration rights were once the tools upholding their position and power. Today, that social and political leadership has been lost.

THE URBAN DEVELOPMENT PLAN

A forecast of the urbanization stages was prepared in accordance with the anticipated size of the Bedouin population and its internal tribal and ethnic divisions.

Ethnically speaking, the Bedouin population is divided into two main groups: (a) the pure-blood Bedouins, and (b) the Falahs who live under the patronage of the Bedouins and are considered to be a lower status.

The Bedouins constitute that segment of the population more attached to tradition and less open to change, to progress and integration (like settling on permanent settlements). Conversely, the Falahs regard the urbanization as a liberation from Bedouin domination (as land tenants) and welcome change and progress. They were the first to populate the small town of Rahat (where they constitute 70 percent of the inhabitants) and the first to seek employment outside their areas of residence.

An interinstitutional committee, which updated the urban settlement plan of the Bedouins in 1977, proposed an urban settlement size of 10,000 to 25,000 inhabitants in order to assure the minimal threshold required for the

operation of the community services. The corresponding master plan in the Negev recommends the establishment of the following localities:

Rahat	25,000 inhabitants
Tel Sheba	15,000 inhabitants
Kseifa	15,000 inhabitants
Lagia	10,000 inhabitants
Segev	19,000 inhabitants
Chora	10,000 inhabitants

In 1981 another town, Aroar, with 15,000 inhabitants, was added to the list.

Four of these towns, Rahat, Tel Sheba, Kseifa and Aroar were established in the course of the plan's implementation. The establishment of the remaining towns was postponed due to the following reasons:

1. objections as to the location of the towns adjacent to junctions or main highways (Chora and Lagia);
2. competition over land use and, in particular, the controversy of possibly creating an urban territorial continuity between Hebron and the southern tip of Mount Hebron;
3. divergence of opinions as to the detailed planning of Lagia and, in particular, the location of the built-up area: on the rocky terrain in the hills or on farming land in the plain;
4. contradictory evaluations as to the interest of the designated inhabitants of Segev-Shalom in immediate settling;
5. assignation of priorities to the urbanization schemes directly linked to the construction of the airfield in Nevatim. After the construction of this airfield was completed, some of the restrictions imposed on the

development of the town Segev-Shalom were removed. At the same time the government was requested to reconsider the following questions in connection with the scope of the Bedouin settlement:

a. the desired urban deployment of the Bedouins in view of programs approved in the past and alternative use of lands within the regional planning framework;

b. determination of the desired size of each single small town, based on comprehensive regional planning;

c. elaborating of solutions related to rural settlements for the benefit of that part of the population interested in this type of settlement;

d. setting of priorities related to the actual construction of the planned towns and formulation of recommendations concerning the initiation of new plans or re-activation of frozen plans.

In regard to the territorial or functional deployment of settlements, a "trade-off" effect would exist between the size and number of settlements, i.e., a larger number of small settlements or alternatively, a small number of larger settlements. The towns would be assigned specific functions in providing the required public services, according to their territorial lay-out. However, the standard of the service within a settlement would be relative to its size.

In the 1983 update of the recommended urbanization plan of the Bedouin settlements, the folowing principles were defined:

1. Beer Sheba will be the regional centre;

2. Rahat will be the major Bedouin town (30,000 - 35,000 inhabitants) accommodating high-standard specialized services like a medical clinic,

a Bedouin religious-cultural centre, a secondary educational institution for specialized studies, etc. It will also serve as an urban centre for two satellite-villages situated north and south of it;

3. Tel Sheba will be the second largest town (20,000 inhabitants) with less specialized services, constituting a secondary centre to its surroundings;
4. Segev-Shalom will be a town of approximately 10,000 inhabitants, supporting an additional satellite village;
5. Kseifa and Aroar will be towns of approximately 15,000 to 20,000 inhabitants;
6. since the shifting of the location of Chora and Lagia, as postulated by the regional master plan, may delay the realization of the entire plan, it was decided to leave the locations unchanged but to limit their size to about 3,000 to 5,000 inhabitants.

THE PEACE TREATY WITH EGYPT AND THE URBAN SETTLING OF THE BEDOUINS

The urban settling of the Bedouins started actually in 1964 with the establishment of the first living quarters in Tel Sheba, next to Beer Sheba. Since then, the program progressed slowly until the mid-seventies when the criterion of land allocation for urban construction was modified and the small town of Rahat was populated.

The "Law of land acquisitions in the Negev, 1980" promoted a marked acceleration of all the settlement processes. As a result of that law, an interdepartmental executive administration was set up under the direction of the former Water Resources Superintendent and the present Director General of the Ministry of Agriculture, who proposed involving the Bedouins in the

process of their settlement. This involvement made it possible to clear large areas in the Arad Valley for the construction of the airfield and set a pattern of interdepartmental cooperation based on a constant dialogue with the settlers. The elucidation of their desires and the application of flexible solutions alleviated, to a large extent, the problems posed by the transition from nomad life in tents to permanent settlements in towns.

The main points of the program are based on the following principles:

1. The right to indemnification is granted to everyone who holds land and uses it for farming on 1.1.1979. This directive marks the desire to end the prolonged conflict between the Bedouins and the state regarding the land ownership.
2. The compensation granted will be in the form of irrigable and non-irrigable land, building plots of varying size and cash money. The land so acquired will be registered in the Land Registry Office. Since the price to be paid for a comprehensive settlement of the problem is bound to increase with time, there is need to be prepared to offer higher compensation than prescribed by the law. This conclusion has particular significance in view of the fact that most of the Beer Sheba Valley area has been seized by the state and therefore the achievement of voluntary agreements with the Bedouins is imperative.
3. The program foresees only minimal land seizure for providing the state-owned land to be used for the compensations defined by the law.
4. The number of permanent Bedouin settlements will be as small as possible and their location will be determined mainly by geographical considerations and the will of the Bedouins themselves.

5. Jewish settlement and intensive use of land for Jewish and Bedouin needs should be parallel to the proposed solution for the Beer Sheba Valley lands. This could otherwise create a vacuum that will then be filled by unsettled Bedouins, thereby causing the process to return to its starting point.

The proper application of the above principles is demonstrated by the establishment of the new small town Aroar. Its construction began in 1981 and, after two years, it is still in full swing with the number of permanent residents already exceeding 4,000 inhabitants.

THE ROLE OF RURAL TOWNS IN THE INDUSTRIALIZATION OF RURAL AREAS: EMPIRICAL EVIDENCE FROM NORTHEAST BRAZIL

Ralphael Bar-El

The objective of this paper is to present some empirical evidence of the influence of local small towns on the process of rural industrialization and its characteristics. For this purpose, we shall use the case of Northeast Brazil, in which an extensive study of rural industrialization was carried out.[1] No theoretical considerations will be elaborated here; this is beyond the scope of this paper.

Three main general hypotheses will be empirically tested:

1. Rural industrialization is facilitated by the existence of a local rural town. "Rural town" will generally be used to denote small cities within the range of 1,000 - 2,000 to 15,000 - 20,000 inhabitants.[2] For our purposes, "rural industries" will refer to the plants which are located in the rural area itself as well as plants located in the "rural towns."
2. The process of rural industrialization which is supported by a local town may be partly located in the town itself, but the more it evolves, the more it is diffused to the rural sites. The weight of the relative extent of industrialization of the rural area in comparison with the local town is influenced by the characteristics of the rural area and by the characteristics of the industrial plants. This actually means that the "filtering-down" process, which is observed from metropolitan

centres to smaller cities,[3] happens as well at the level of the local town.

3. The role of local towns in the process of rural industrialization may be reinforced by an 'isolation effect': the geographical isolation of local towns from bigger urban centres may have the effect of protecting them against the competition from the stronger cities.

DATA BASE AND GENERAL APPROACH

These hypotheses will be tested with data from Northeast Brazil. This region is comprised of nine states and extends over an area of about one million square miles, with a population of about 30 million inhabitants. About a third of the area of this region was included in the POLONORDESTE development programme: a total of 446 municipalities have been defined as priority areas for development.[4] Each of these 446 municipalities is generally comprised of local towns and a few thousand rural inhabitants. These municipalities represent different levels of development. No industrial plants were found in 196 of these municipalities, and 250 had at least one plant.[5]

The general methodological approach used was based on an estimation of the system of relations operating among variables as factors in the process of rural industrialization. These relations were expressed by a set of equations, and the coefficients were estimated on the basis of cross- sectional data of the municipalities.[6]

The whole set of equations covers many aspects of rural industrialization and its contribution to the achievement of different development objectives.[7] Here, we shall restrict our analysis mainly to those equations

that test the dependence of rural industrialization and its characteristics upon the level of urbanization and specific major properties of the municipality.

The estimation of the equations was done once for all the municipalities, and a second time for the municipalities with a local town of less than 5,000 inhabitants, and for municipalities with a local town of more than 5,000 inhabitants. This enabled comparison between the coefficients subject to different variables corresponding to alternative conditions of urban population.

THE IMPORTANCE OF A RURAL TOWN

Some industrial plants can easily be located in isolated places without significant requirements for the services of an urban centre. But when we consider rural industrialization as an integral part of the process of rural development, the need for an urban centre becomes critical.[8] The importance of an urban centre is expressed by the different aspects generally connected with concentration of population. The main aspects relevant for our purpose are:

1. The supply capability of infrastructure and services as is normally created by population growth;
2. The supply of manpower, not only in terms of quantity but in terms of diversity of skills which may be required by specific industries;[9]
3. The consumer market, which may economically justify the investment in certain industrial plants, thereby substituting the import of goods from other regions.[10]

The Influence of Urban Population: Some Empirical Findings

Within the set of equations described above, rural industrialization was estimated as a function of the size of urban population in the municipality (after a logarithmic transformation), and of other variables related to characteristics of the local population, to the agricultural structure and to other physical data in the region. Rural industrialization was defined once as a dichotomous variable, indicating the existence or non-existence of an industrial plant in the municipality, and a second time as a continuous variable, measuring the quantity of industrialization in relation to the population size. Three measures were used to indicate that quantity: the number of industrial plants, the number of employees, and the industrial value added (each one in relation to population).

The estimation of the equation of rural industrialization as a dicnotomous variable yielded the following results:

$$I = \sum_{i=1}^{n} a_i A_i + .40 \lg U \qquad R = .39 \quad N = 446 \quad p < .01$$

where:

I = the existence of any rural industries (0:no, 1:yes)

A_i: all the independent variables (i=1...n), excluding urban population

a_i: estimated standardized coefficients

U: urban population in municipality

The standardized coefficient which was obtained for urban population (0.40) is higher than any other a_i coefficient, and is highly significant ($p < 0.01$) because it indicates that the size of local urban population is

the most important determinant in a municipality embarking on the process of rural industrialization.

This result is reinforced by the analysis of the influence of urban population on the intensity of industrialization, as was estimated in the municipalities of at least one industrial plant (of the 250 municipalities, only 226 were used because of technical difficulties in the remaining 24). The results for each one of the indicators are as follows:

$$P = \sum_{i=1}^{n} b_i B_i + .38 \lg U \qquad R = .55 \quad N=226 \quad p < .01$$

$$E = \sum_{i=1}^{n} c_i B_i + .48 \lg U \qquad R = .59 \quad N=226 \quad p < .01$$

$$V = \sum_{i=1}^{n} d_i B_i + .41 \lg U \qquad R = .57 \quad N=226 \quad p < .01$$

where:

P : the number of industrial plants in the municipality in relation to to the local population11

E : same for number of employees in these plants

V : same for value added

b_i, c_i, d_i : standardized coefficients for all independent variables, excluding urban population

B_i : all independent variables, excluding urban population

U : urban population

Here again the standardized coefficients of urban population are highly significant, and greater than any other coefficient, in each one of the regressions: the larger the urban population, the higher the relative intensity of industrialization of the municipality in terms of plants, employees or production (value added).12 Thus, we may conclude that an increase in urban population, which is generally accompanied by an expansion of

infrastructure, services, consumer market and labour force, stimulates a relatively higher increase in industrial activity in the municipality, and increases its weight in relation to other economic sectors.[13]

Industrial 'Take-off' of Local Towns

Beyond the influence of size of urban population on industrialization, a more important question may be whether such an influence is continuous at any size, or whether it exists only from a certain minimal size. It is suggested that not every small urban concentration is able to successfully absorb efforts of industrial development. In order for such efforts to be fruitful and to start a process of self-sustained development, they should be invested in a local town of the minimal size capable of providing the necessary conditions of infrastructure, services, market, etc.[14]

In order to test empirically the existence of such a phenomenon in our region, the influence of urban population on industrialization was estimated separately in two groups of municipalities: those with an urban population of less than 5,000 inhabitants (148 municipalities) and those (102) having an urban population of more than 5,000 inhabitants.[15]

The estimated standardized coefficients are as follows:

	P	E	V
Less than 5,000 inhabitants	-.16	.00	.50
More than 5,000 inhabitants	.38	.56	.37

The coefficients for the three indicators of intensity of industrialization are highly significant in the group of municipalities with urban population of more than 5,000 inhabitants. For the municipalities of less than 5,000 inhabitants, only the coefficient for value added was found significant,[16] and the two others were insignificant or even negative. These

findings provide some support to the opinion that it may be more efficient to concentrate the efforts of rural industrial development in chosen industrial centres, rather than dispersing them over every single municipality.17

INDUSTRIAL DIFFUSION FROM URBAN TO RURAL AREAS

The location of industrial plants in a town or in the rural area itself is dictated in many cases by the type of existing industrial activity and does not depend upon any exogenous factor (such as a plant which processes agricultural perishable products). In other cases, some industrial plants may have a certain degree of elasticity in regard to their location. This may be contingent upon the characteristics of the industrial activity itself, or exogenous factors (such as the availability of specific services or skills). Our hypothesis proposes that the division of rural industries between the local town and the rural area itself is determined by two main factors: the first is the size of the local town, and the second is the characteristics of the industrial plants and of the region. Let us empirically test each type separately.

The "Filtering-down" Effect.

In this section we shall test the effect of industrial development of the rural town on industrial development in the rural hinterland. In principle, the hypothesis states that there is a phenomenon of 'diffusion' or 'radiation' of industrial development from the urban to the rural area. This means that when a rural town grows, its industrialization level is intensified, and there is a parallel tendency of some plants to 'filter-down' to rural areas.

The relative weight of location of industrial plants in the local towns vs. the rural area itself will be named Pu/r and measured as the ratio between the number of plants per inhabitant in the rural area.[18] It was estimated as a function of the size of the rural town and of other variables which will be presented in the next section. Here again, the estimation was made separately for two groups of municipalities. The results for the 102 municipalities with an urban population of more than 5,000 inhabitants showed a highly ($p<0.01$) significant coefficient:

$$P_{u/r} = \sum_{i=1}^{n} e_i E_i - 0.46 \lg U \qquad R=.62 \quad N=102 \quad p<.01$$

Adding that to our previous results we may conclude that the larger the urban population, the higher the level of industrialization and the greater the weight of the rural area in the industrialization process. When the region has a small rural town, the few industrial plants tend to be concentrated in the town itself in order to achieve a maximum of agglomeration advantages. When the town grows bigger, its development is not isolated from its region, and is radiated to the rural area, creating an even faster industrial growth. Such a phenomenon may be explained by the following arguments:

a) The erection of industrial plants in the rural area is facilitated by the existence of a network of services in the city.

b) A higher intensity of industrialization in the town leads to the transfer of some industrial activities to the rural area with a comparative advantage.

c) The urban population provides rural industrial plants with a market for processed agricultural products and a supply of diversified manpower.

Factors Which Influence the Location of Plants.

A set of variables expected to influence the location of industrial plants has been established and empirically tested. The variables and their specific effects are as follows:

1. Good agricultural conditions, in terms of quantity of rain (Rain) and technological level of agriculture (Tec) are expected to attract industry to the rural area.
2. The educational level of rural population (REdu) and of urban population (UEdu) influences the relative share of industrialization.
3. Certain industrial characteristics:
   a. a smaller size plant (Size),
   b. a lower level of required know-how (Skill),
   c. a lower level of mechanization (Mec),
   d. a lower level of inter-industrial links (Link), and
   e. a higher link with local raw-materials (Mat) are expected to stimulate the location of plants in rural areas as opposed to the local town.

The estimated standarized coefficients are:

$$P_{u/r} = -.21^{**}\ \text{Rain} - .19^{**}\ \text{Tec} - .30^{**}\text{REdu} + .28^{**}\text{UEdu} + .19\ \text{Size} + .11\ \text{Skill} + .15^{*}\text{Mec} + .26^{**}\text{Link} + .14\text{Mat} - .31^{**}\text{lgU}$$

R=.435 N=226 p<.01

* significant at p<.10

** significant at p<.05

It can be seen that the influence of agricultural conditions has been statistically supported in terms of quantities of rain (Rain) and in terms of agricultural technology (Tec - this is a composite variable which includes measures such as the use of fertilizers and pesticides, the use of machinery, etc.). This probably reflects opportunities for processing surplus of agricultural products, given the better agricultural conditions.

It was also found that the general educational level of the population has a statistically significant influence on the location of industrial plants: a lower level of education in the rural area and a higher level of education in the urban area (as indicated by the portion of adult population that was literate - REdu, UEdu) generate a higher concentration of industrial plants in the rural town, and lower in the urban area, respectively.

The tests on the influence of the characteristics of the industrial plants yielded the following results:

1. There is some indication of a tendency for bigger plants to locate in the local town rather than in the rural site itself (a positive sign for the coefficient of Size, although not statistically significant). This tendency is especially high when the local town is relatively big: a significant coefficient was found in a separate estimation based on the 102 municipalities with an urban population of more then 5,000 inhabitants but not in the group of municipalities with small urban population.[19]
2. The type of manpower needed in the industrial plant, as was measured by the percentage of professional workers in the total number of employees (Skill) may exert some influence, but was not found statistically significant (a non-significant positive coefficient, indicating a tendency

of plants which need more professional manpower to locate in the town rather than in the rural area).

3. A similar tendency was found for the degree of mechanization of the industrial plant, as it was estimated through measuring the amount of electricity used per worker (Mec): the coefficient is positive but significant only at a level of 10 percent.

4. The type of market was measured by what fraction of production the population sells to industrial plants (Link), against the proportion sold to consumers. The significant coefficient shows that industrial plants which have forward links with other plants tend to locate in the town, and those which produce for the market of consumption have a relatively higher tendency to locate in the rural area.

5. The hypothesis that plants which draw principally from local raw materials (Mat: the proportion of raw materials in total expenses) tend to locate in the rural area, could not be statistically supported. We suppose that it could be proven true if bigger and more central cities were considered in the statistical analysis. Such a result would speak for the role of rural towns in the absorption of industrial plants of this type.

THE ISOLATION EFFECT

In this section, we shall consider the implication of the spatial location of rural towns within the context of the industrial development process. For this purpose we shall employ a composite index of geographical isolation, formulated by a linear combination of two variables:[20]

1. The distance of the rural town to the city of the next highest hierarchical rank, which includes the rural town in its area of influence. A hierarchical classification of cities and a geographical definition of the area of influence of each city at each hierarchical level, as established by the Brazilian Central Statistics Institution (FIBGE), was the source used for determining the corresponding city for each rural town.
2. The distance from the rural town to the closest big urban centre, generally the capital of the state in which the rural town is located. In some cases, this big urban centre is equally the city of the next higher hierarchical rank, as described above.

The generally accepted hypothesis maintains that industrial activities have a tendency to become concentrated[21] (usually in urban centres), hence a negative correlation between the distance from these centres and the intensity of industrialization. On the other hand, the last few years have revealed some new trends. The tendency for industrial concentration has weakened and can be attributed to different factors, such as the improvements in infrastructure, services and manpower skills in peripheral areas, or the standardization of the industrial processes and lesser requirements resulting from improved conditions.[22] The results of our empirical analysis generally support the hypothesis of industrial concentration: the higher the degree of geographical isolation of the rural towns from bigger urban centres, the lower the intensity of industrialization of the municipality. But it seems that such a general tendency does not reflect the true situation of all groups of municipalities. This can be seen as follows from

the standardized coefficients for the isolation variable which were separately estimated for the two groups of municipalities:

	P	E	V
Less than 5,000 inhabitants	-.14	-.04	-.26
More than 5,000 inhabitants	-.20	-.31	-.15

Excluding the value added, the coefficient of influence of isolation is higher for municipalities with a relatively large urban population than for those with a relatively small urban population. We still find negative coefficients for these municipalities but they are not high enough to be statistically significant.

It seems that geographical isolation plays a role of 'protector' of the economy of small rural towns against competition with bigger urban centres, and thus provides the conditions for the development of small industrial activities within the framework of an almost closed and autonomous economy.[23] Thus, small rural towns which are located close to big urban centres are exposed to external influences and experience difficulties in their competition with the more economically based centres. This may explain the very low level of industrialization common to small cities in the periphery of many state capitals in Northeast Brazil.

Such results imply some reservation about the idea of 'filtering-down' of industrial activities from the big urban centres to their periphery, and of the development of 'satellite-cities':[24] not every rural town can play such a role. Too small towns do not have the necessary conditions to assimilate such industrial activities, and this role is left to somewhat bigger towns.

CONCLUSIONS

This paper was an attempt to test certain hypotheses dealing with the relations between rural industrialization and rural towns, their size and their geographical distance from bigger urban centres. The main conclusions drawn from the empirical analysis are summarized as follows:

1. The existence of a rural town does play a role in initiating the rural industrialization process through the support it provides in terms of infrastructure, services, markets, manpower supply, etc.
2. There is a "critical mass" needed to promote the process of industrial development: too small rural towns (defined as having a population of less than 5,000 inhabitants) generally cannot provide the necessary support. Bigger rural towns can more easily stimulate a "take-off" of industrial development.
3. Furthermore, the "elasticity" of rural industrialization in relation to the size of the rural town is higher than 1: an increase in the size of the rural town is accompanied by a more than proportional increase in rural industrialization.
4. The definition of rural industrialization includes the rural town as well as the rural site itself. The role of the rural town is no less important for industrialization in the rural area than for the urban area itself.
5. Any growth of industrial activities does not concentrate in the local town but a part of it is "diffused" to the rural area. This indicates that the well-known "filtering-down" process of industries from metropolitan centres to small cities takes place at the level of rural areas as well.

6. The higher the intensity of industrialization, the higher the relative weight of the rural sites. In other words, the process of diffusion from the local urban to the rural area occurs at a higher rate than the growth of industrialization itself. Thus, the more advanced the process of industrialization, the more beneficial it is for the rural area in relation to the local town.

7. The process of industrialization in the rural sites is facilitated by advantageous agricultural conditions, and by a higher educational level of the rural population.

8. There are some indications that the type of industrial activities which are "diffused" to the rural sites are mainly the processing of consumer goods (leaving the plants with forward links in the urban area) and plants with a relatively lower level of mechanization. No statistical proof could be found for the influence of size of plant, need of professional skills, and processing of local resources.

9. The role of rural towns in industrialization is weakened by an isolation effect: the greater the distance from the rural town to bigger urban centres, the lower the degree of industrialization. The process of rural industrialization should thus be considered in a broad regional context: the role of a rural town does not offset the importance of the whole urban system in rural industrialization.

10. Small local towns (with less than 5,000 inhabitants) show a different reaction to geographical isolation. If they are located too close to bigger urban centres, they cannot survive the competition with the larger industrial plants in the city, neither can they offer minimal conditions for the absorption of industrial plants which are "diffused"

out of the big city. Geographical isolation may play a protective role for such small rural towns, allowing the development of small scale industrial activities directed to the local market.

NOTES

[1] The study was performed by a joint Brazilian Israeli team and published in Portuguese, see Bar-El et al. (1978).

[2] The size of what should be considered a rural town in the context of rural industrialization has not yet been established. For example, Sigurdson when speaking of the spread of industries in rural communities in China, indicates a number of less than 15,000 inhabitants (pp. 527-530). Rao (1978) in his analysis of rural industrialization in India, also indicates that the rural industrialization programme excludes centres of more than 15,000 inhabitants. The expert group of the UN (1974) which analysed the issue of rural industrialization indicated a range of 2,000 to 15,000 inhabitants (p.5).

[3] Trends of industrial decentralization have been observed since the sixties in many countries all over the world. A few random examples are described by Haren and Holling (1979) for the US, Miller (1981) for Pennsylvania, Lever (1981) for Great Gritain, Ho (1979) for Taiwan. Storper (1981) attributes these trends to changes in the structure of industry (p. 18). An alternative xplanation is that industrial decentralization is a response to changing regional attributes, as was empirically found by Kale and Lonsdale (1979, pp. 54-55). This is consistent with the 'filtering-down' theory which has been suggested by Erickson (1976): standardized production processes of mature industries, which require less information linkages and more labour and land cost advantages, have a tendency to 'filter-down' to peripheral areas.

[4] See Bar-El et al. (1977) for a general description of the Northeast region (pp. 101-113) and of the POLONORDESTE area (pp. 113-126).

[5] As defined by the Brazilian Bureau of Statistics (IBGE): plants with more than 5 employees or an annual value of production higher than 640 times the local minimum salary.

[6] The source of these data for each municipality was mainly the last demographical and industrial census available, that of 1970. TSLS was used for estimation.

[7] An analysis of the contribution of rural industrialization to the achievement of development objectives is beyond the scope of this paper. For such an analysis for the case of Northeast Brazil, see Bar-El (1984).

[8] Weitz (1979) emphasizes the importance of what he calls 'rural towns' in the process of regional development. Beyond their role in the absorption of industrial plants, such towns are needed for the operation of the supporting system for development, the supply of different services, the absorption of agricultural and industrial products, etc. (pp. 21-22).

[9] About the importance of this factor, see for example G.E. McLaughlin and S. Robock (1949), R.M. Lichtenberg (1960) and V.T. Fuchs (1962).

[10] For more detail, see for example W.R. Thompson and J.M. Mattila (1959), and B. Chinitz and R. Vernon (1960).

[11] Local labour-force could be used as well for the weighting of rural industrialization. This would not have made any significant difference, since there is a very high correlation (close to 1) between population and labour force.

[12] We are aware of the fact that such a relationship may as well indicate the influence of industrialization on urbanization. See for example G. Breeze (1966), pp. 51-52.

[13] Such a conclusion is true for towns in the rural areas, as in our research area. In bigger cities, a relatively higher increase in the service sector should be expected.

[14] In this spirit, Yehuda Don suggests that industry should not be developed at every single village, and that efforts of rural industrialization should be concentrated in urban centres of rural areas which are large enough to provide the necesary services. See discussion on problems of location of rural industries in Klatzman. Ilan and Levi (1971), p. 105.

[15] The parameter of 5,000 is quite arbitrary and is mainly justified by a technical argument: the creation of two large enough groups of municipalities to facilitate statistical estimation. However, it should be noted that Hoselitz (1971) indicates a minimum size of 20,000 inhabitants for the attraction of private initiatives of industrial development (p. 62-63).

[16] No explanation can be offered for such a significant result.

[17] This is true from a purely industrial point of view. However, the achievement of some development objectives may require a dispersion of industrial activities in many small rural towns and rural areas. Sigurdson (1975), for example, supports the spreading of industries into the majority of the population, who still live in villages (see pp. 527-530). He indicates that rural industrialization has 'positive implications for the social development of the country. This is one of the major reasons why the leadership has to make rural industries reach almost every corner of the country...' (p. 537).

[18] This is simply the location quotient of industrial plants in relation to population. Its value would be 1 when the urban and the rural areas have an equal level of industrialization (in relation to their population), higher than 1 when the urban area is relatively more industrialized, and lower than 1 (but > 0) when the rural area is relatively more industrialized.

[19] We should, however, remember that such a finding is true for rural towns. It may be expected that in bigger cities large industrial plants will tend to be transferred to the periphery or to smaller rural towns, which are the object of our study.

[20] This and other composite indexes were conceived as a result of a factor analysis. For a detailed explanation of the methods used and of the estimation of coefficients for the linear combinations, see Bar-El (1978), pp. 395-399.

21 See for example the 'big-push' theory, first conceived by Rosenstein-Rodan (1943, pp. 204-207, and 1961, pp. 57-59, 60-62, 65-66) which is based mainly on the idea of indivisibility in production, especially in the supply of social overhead capital. For a more detailed discussion of this and other sets of indivisibilities, see Datta-Chaudhuri (1982), pp. 237-248.

22 See the above cited articles by Haren and Holling (1979), Miller (1981), Lever (1981), Ho (1979), Storper (1981), Kale and Lonsdale (1979), Erickson (1976). In an empirical analysis of the geographical distribution of industrialization in Israel it was found that many of the peripheral areas are not less intensely industrialized than the main urban centres (see Bar-El 1982, pp. 90-95).

23 It seems also that most of such industrial plants have a low level of capital-intensity which would explain the relatively high negative coefficient obtained for the value added.

24 See for example Kaynor and Schultz (1973), Chapter 2.

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DEVELOPMENT OF THE UGANDAN DAIRY INDUSTRY: SUBORDINATION OF RURAL DEVELOPMENT POLICY TO URBAN INTERESTS

Neal P. Sherman

Many students of development, and particularly those concerned with regional development, have stressed the important role which small urban centres should play in a process of social and economic advance aimed at promoting the welfare of the mass of the population of the Third World nations. The role projected for such centres has three major aspects.

Small towns and villages are expected to serve, first of all, as transmission points linking the local economy to outside markets. Here agricultural produce is bulked, and perhaps processed as well, prior to export to larger national and international trade centres. Some industrial production, aimed at local or outside markets, may also develop in small centres. At the same time, production inputs and consumer goods produced outside the region are made available to the local population through commercial activities based in small urban centres. Thus, small centres' economic functions make available new income earning opportunities, by giving access to wider markets and improved production inputs; and, at the same time, small centres provide access to a wider variety of consumption goods for the enhancement of consumer welfare.

Small urban centres' second principal function in the development process is to serve as a focus for governmental activities. Small towns are the headquarters for responsible government officials who themselves provide services directly to the public, and at the same time oversee the activities of subordinate staff posted at even smaller centres scattered throughout the

countryside. Small centres thus function as points from which information about governmental programmes is diffused and at which access to those programmes may be achieved.

Together with activities aimed at increasing public awareness of central government policies, the governmental offices operating in small centres are also engaged in gathering information concerning the wants and needs of the local population for use in their own work and for transmission to the higher levels of the governmental hierarchy. Day-to-day contact with local realities should make possible a process of continuous adaptation of national policy to local conditions by responsible officials posted to the regions, while the accumulation of information transmitted from centres around the country should serve as the basis for periodic amendment and improvement of policy by senior national political and administrative leadership.

Finally, in addition to their role as linkage points tying local communities to national economic and political structures, small urban centres should serve as foci for the horizontal integration of the rural region in which they are located. Small centres should provide a meeting point for communication and exchange among the elements composing local society. On the basis of such communication and exchange, development initiatives, informed by local needs and priorities, would originate in the small towns, and their implementation would be coordinated from the towns as well.

Unfortunately, the experience of many developing nations shows that small urban centres do not actually fill the sort of role projected for them. Power concentrated in the hands of national and local elites allows them to pervert or block the functioning of small centres for their own

benefit. National elites impose centralized systems of control which prevent the free implementation of regional development initiatives, formulated in outlying small urban centres. Centralization also prevents the creative adjustment of national policies to local conditions by government staff posted in outlying towns. National leaders make policy in keeping with capital city priorities, paying scant attention to data and evaluations concerning conditions in the countryside, as presented by government officials based in the small urban centres. Diffusion of information about government programmes and access to their benefits are limited to a small, privileged stratum within the population. The concentration of the benefits of production programmes upon a privileged few means that only they can effectively exploit the income-earning and consumption opportunities made available by small towns' role as commercial centres.

Analysis of Ugandan government policy for the promotion of the growth of a modern dairy industry may serve to illustrate the manner in which elite political and economic interests direct governmental efforts into channels which interfere with, rather than promote, the realization of small urban centres' potential contribution to national development. It will be shown that in the determination of overall policy goals, and in the fixing of specific priorities in the fields of consumption, marketing and production, nationally - and capital city - oriented considerations were given priority. There was a clear desire to centralize control over the milk collection network, based on milk coolers located in small towns and trading centres, and to utilize this control to extract milk from the countryside to meet urban, elite consumption needs. On the production side, the desire to cultivate an elite and largely urban based clientele and the lack of an ideological

commitment to egalitarian values, meant that the benefits of production programmes were made available to a very small and, for the most part, highly privileged group. Control over the distribution of the benefits of farm-level milk production programmes tended to be retained by national headquarters with field offices located in small centres. The field offices served as a channel for transmitting farmer requests to headquarters, rather than deciding themselves on the allocation of funds budgeted for distribution within their areas of operations.[1]

TECHNOLOGICALLY IMITATIVE SELF-SUFFICIENCY AS THE CENTRAL GOAL OF UGANDAN DAIRY POLICY[2]

The central goal guiding Ugandan governmental and parastatal activity in the field of dairy development may be defined as the achievement of technologically imitative self-sufficiency. That is, in the context of Ugandan dairy policy, 'self-sufficiency' has been understood as a rapid one-for-one replacement of Kenyan tetrapaks[3] of processed, fresh milk by Ugandan tetrapaks containing a similar product. To phrase the point in more general terms, self-sufficiency was understood as the rapid replacement of imports of a modern, technologically sophisticated product by the precisely equivalent product of a modern, technically sophisticated domestic dairy industry.

The choice of technologically imitative self-sufficiency as the goal of dairy policy reflected, on the ideological plane, the predominance of nationalist values, and the weakness, or lack, of commitment to socialist, egalitarian values, among top-level political and administrative decision-makers. Public statements on dairy policy indicated that self-sufficiency was expected to serve Ugandan nationalism in a number of ways. First, by

establishing its own advanced dairy industry, Uganda would vindicate African claims of equal ability to participate in the world of modern technology. At the same time, self-sufficiency would wipe out the particular insult to national pride inherent in dependence upon Kenyan suppliers, a dependence which Ugandan nationalists felt had been forced on their homeland by the British in order to suit the economic interests of the settler community in Kenya. Finally, and more tangibly, it was expected that for a number of reasons the growth of a modern dairy industry would help to strengthen and stabilize the national economy, and this would strengthen Ugandan political independence. Dairying would contribute to the national economy by introducing modern technology; by promoting production for the monetary sector of the economy; by helping to diversify Ugandan agriculture; and by helping to save foreign exchange.

By contrast to the pronounced explicit stress placed on nationalist themes in the discussion of dairy policy, only limited attempts were made to assert a degree of egalitarian legitimacy for the pursuit of self-sufficiency, principally through claims that increased dairy production would 'bridge the protein gap,' improving the nutrition of those in need. However, as will soon be noted, a basic characteristic of policy aimed at self-sufficiency was to focus attention upon an elite of consumers and producers, rather than upon needy, or even average, Ugandan citizens. The economic benefits claimed for self-sufficiency were depicted for the most part as aggregate benefits to the national economy. The distributive implications of various aspects of policy received little explicit consideration in the preparation of dairy programmes and their public discussion.

Beyond the 'psychic satisfaction'[4] which achievement of self-sufficiency might provide and beyond the concrete contribution which it might make to strengthening the national economy, self-sufficiency was chosen as the goal of dairy policy because of the immediate political benefits which would be derived from the public sector dairy programme which the pursuit of self-sufficiency was seen as justifying. First of all, since self-sufficiency, as policy makers understood it, entailed the creation of a modern, technologically sophisticated dairy industry, it suggested the need for a wide-ranging, activist governmental role. Only government, it could be argued, had the means to mobilize capital and trained manpower at the desired pace in order to set up and operate large, modern, capital intensive dairy processing facilities and other support facilities required, such as stock propagation farms. In addition, given the complexity of the modern dairy industry, and the desire to promote its rapid growth, it was also claimed that government was obliged to regulate the activities of private elements involved in dairying.

In addition to justifying extensive governmental involvement in dairy development, the self-sufficiency goal also helped to legitimize the assignment of priority to elite needs in aspects of policy affecting both the production and consumption of milk. Thus, self-sufficiency made dairy activities a means by which the senior political and administrative leadership responsible for dairy policy could seek to win the backing of wealthier and more influential members of the public. On the production side, stress on technologically sophisticated, market-oriented farm-level milk production meant that the model dairy unit as seen from the perspective of self-sufficiency was quite large and capital intensive, and obviously intended to

provide a considerable income to its owner. It was a type of undertaking which, it was hoped, would appeal to wealthier and more capable Ugandans as a suitable outlet for their energies and their capital. On the consumption side, the direct implication of stress upon technologically imitative self-sufficiency was to focus attention upon the 'higher-class people (who) were consuming milk from Kenya' as John Babiiha, Minister of Animal Husbandry, Game and Fisheries under the Obote regime, put it. The supposed preference of these 'higher-class people' for the imported milk was accepted as a basic guideline for policy, indicating what sort of milk the domestic dairy industry ought to provide to the consumer. In addition, in the context of this discussion of the impact of a national, sectoral policy upon the development role of small urban centres, it should also be noted that the bulk of the 'higher class people' consuming Kenya milk were residents of the capital city, Kampala and Uganda's other major urban centres. This preference accorded on a class basis had geographic-territorial implications as well.

It seems reasonable to suggest that the political attractions of the governmental role justified by the pursuit of self-sufficiency were the primary factor leading to the choice of self-sufficiency as the central goal of dairy policy. While progress towards the elimination of imports probably did afford a degree of symbolic, pschyic gratification, it was doubtful whether such satisfaction could in itself be the major determining factor in such a narrowly defined and professionally oriented field as milk production, processing and marketing. As for the supposed economic gains to be achieved through the promotion of dairy self-sufficiency, it may be pointed out that while such gains were cited by policy-makers, they were in fact never actually investigated and quantified. Thus, for example, the Ugandan authorities never calculated for themselves the net foreign exchange

savings realized through the production of a liter of Ugandan tetrapak milk and its substitution for a liter of Kenya tetrapak, nor did they request that experts from foreign aid agencies involved in support for dairy programmes undertake such a calculation. Given the high import component involved in producing Ugandan processed milk, such a calculation would certainly have been required for a realistic, truly economic evaluation of the foreign exchange gains to be realized through the elimination of imports. In short, instead of undertaking to confirm the existence and gauge the extent of the economic gains inherent in emphasis on self-sufficiency, policy makers were satisfied to make reference to 'the theoretical possibilities...(in order to)...provide a plausible and apparently scientific defense of politicies'[5] which were shaped primarily by practical, political interests and, to a lesser extent, by ideological preferences.

In the following sections, the implications of the pursuit of technologically imitative self-sufficiency for the functioning of small urban centres will be elaborated.

MILK COLLECTION AND MARKETING[6]

Even before programmes aimed at diffusing modern farm-level milk production methods began to contribute in a significant manner to the availability of milk for processing into a product which could replace imports from Kenya, the dairy agencies (the Ministry of Animal Husbandry, Game and Fisheries and its main department, the Department of Veterinary Services; and later, the parastatal Dairy Corporation, subject to ministerial direction) sought to establish a collection network which would enable them to tap supplies of milk available from Uganda's herd of indigenous,

traditionally husbanded cattle. Steps were taken to establish collection centres, equipped with milk coolers, and to provide transport from the centres to the processing plant locatd in Kampala. As plans for the creation of a network of milk collection centres were first being elaborated, it was announced as the intention of the dairy agencies that cooperatives should be responsible for the operation of milk collection points which were to be established in small towns and trading centres. Indeed, registered or unregistered cooperatives were associated with most of the early collection centres. The cooperatives were given a variety of forms of assistance: a cooler (and in some cases, the collection centre building itself), provided at no cost; the services of a milk assistant, a trained collection centre operator, also provided free of charge; and subsidized transport for milk shipped to Kampala for processing.

As early as 1966, however, Babiiha had publicly expressed his reservations concerning the efficiency of cooperative management of milk collection and marketing; and by 1968, the second year of the DC's existence, an open rift had developed between the Corporation on the one hand, and the cooperative societies and the cooperative department on the other.

Thenceforth, the thrust of policy was to limit the involvement of relatively autonomous local cooperatives in the marketing of milk, through extension of central control exercised by the Ministry of Animal Husbandry and the Dairy Corporation from Kampala. At a number of locations where registered and unregistered societies had been placed in charge of centres, the DC acted to take direct control of milk collection, while at many locations DC administration was the rule from the start. The findings of a Canadian study team for early 1972 may be taken as indicative in this

regard; while the DC was operating some 43 centres, only 16 were in cooperative hands. Furthermore, where cooperatives continued to operate, the dairy agencies sought to curtail the support which they had been providing to the societies.

Involving cooperatives in milk collection during the period preceding establishment of the DC and during the early days of that organization's existence was to the dairy agencies' advantage primarily as a means of reducing the administrative burdens involved in undertaking a new, unfamiliar set of activities. Cooperatives and their committees assisted the DC's efforts by organizing farmers and encouraging them to make use of the new marketing facilities which were being provided. Where funds were not available for the construction of centre buildings, the societies themselves might undertake, the task, or would locate and rent a suitable structure. Societies looked after the hiring of workers, with the exception of the milk assistants provided to many societies by the DC. The cooperatives also arranged the purchase of items required in the day-to-day operation of their centres, such as detergents, stationary, polyethylene sacks used to package milk for local sales, etc. In addition, societies bore the burden of arranging the payment of individual farmers, who at some centres might number over 100, the Dairy Corporation being required to provide only one check to the society itself for milk accepted at the Kampala processing plant. Society officers provided a degree of on-the-spot supervison for all the activities being carried out at their collection centres.

By 1968, however, the DC had built up a degree of experience in milk transport and collection; and plans were in hand for the expansion of the Corporation's trained manpower. Thus, the value of dairy societies'

participation in centre operations would seem to have dropped considerably in the estimation of the heads of the dairy agencies, and to have been more than offset by their awareness of a number of drawbacks which, from their point of view, attended the operation of milk collection centres through cooperatives.

The dairy agencies understood, first of all, that their own contributions to the existing societies - free use of a cooler, the services of a milk assistant, subsidized transport, and the base rate of Shs. 4.00 per gallon paid for society milk at Kampala - underwrote the ability of the cooperatives to pay for milk at the usual rate of Shs. 3.20 per gallon, the same price paid by the DC to farmers selling their milk to DC administered collection centres. Had the dairy agencies felt they had a particular interest in promoting and strengthening cooperative societies per se, they might have been willing to bear such financial burdens on their behalf. However, cooperatives had a considerable incentive to expand local sales of raw milk, in contradiction to the political and economic priority which the dairy agencies assigned to the movement of milk to capital-city processing facilities. In addition, dealing with cooperatives meant involving in agency programmes relatively autonomous local organizations, whose legal status was defined by an act administered by a department of government lying beyond the authority of the Ministry of Animal Industry. The participants of cooperatives thus threatened to interfere with the dairy agencies' ability to control milk collection and marketing activities based on the utilization of capital equipment they themselves had. Moreover, involvement of cooperatives threatened to limit the dairy agencies ability to derive

full political benefit from the success of collection efforts in providing services to farmers and contributing to increases in processed milk output.

Given these three points, then: financial costs, orientation to local sales, and organizational autonomy - even a reasonably well-run society, paying the desired Shs. 3.20 per gallon rate, would have seemed less attractive to the dairy agencies than a directly administered centre. This being the case, there was certainly little incentive for the dairy agencies to involve themselves in any special efforts, either independently or in coordination with the Cooperative Department, in order to help resolve the problems of weak societies. Rather than seeking to pool expertise, legal prerogatives, and informal influence with the Cooperative Department in programmes aimed at developing and implementing standard operating procedures and performance norms for dairy societies, the dairy agencies in the pre-coup period were more concerned to establish collection and marketing as an area in which they would exercise exclusive jurisdiction, doing without cooperatives and the Cooperative Department to the extent possible.

Thus, as noted above, the dairy agencies acted to take over a number of cooperative societies, and came to prefer direct DC administration of newly opened centres from the outset. In addition, the DC cancelled transport routes serving some cooperatives which continued to function. In June 1970 the DC eliminated the price differential between milk purchased from the cooperatives at its Kampala plant, and the price paid to individual farmers at its own outlying collection centres. In other words, by the end of the Obote period, the cost to the DC per unit of milk received at the processing plant from cooperatives was probably lower than the cost of milk being received from directly administered centres. Thus, a situation was created

in which rather than offering special incentives to groups of farmers willing to take responsibility for the organization and part of the costs of local milk collection operations, the dairy agencies were in fact imposing on cooperatives burdens not imposed on farmers at directly administered centres.

This continued to be the case during the Amin period. The senior administrative staff who came to determine policy in this field were concerned to take steps to limit the growth of the DC's financial losses. Thus, they did not attempt to take over collection centres from cooperative societies. Indeed, in one instance the DC flatly refused a cooperative's request that its collection centre pass into the DC's administration. On the other hand, they continued the process of cutting back support for cooperative operations. Cooperatives were asked to begin meeting the wages of the trained milk assistants assigned to their centres, and regular transport services were withdrawn from those societies still receiving such aid. Only in very special situations might the additional income realized through milk sales offset the local operating and transport costs which cooperative farmers were now required to payout of their societies' revenues. Thus they were placed at a distinct disadvantage relative to farmers served by DC operated centres, who were guaranteed a fixed price payout, regardless of actual operating costs.

Of course, the operation of local collection centres affects consumers in the milk shed surrounding a small urban centre, as well as the farmers supplying the product. Before concluding this discussion of the collection network, it is therefore necessary to devote some attention to the question

of the impact of national policy on the availability and price of milk offered to local consumers.

As noted above, most cooperative societies found the returns on raw milk sales considerably more attractive than the net return on milk shipped to the factory for processing. Thus, society officers had a strong incentive to seek local market outlets for their society's produce. While such sales are of benefit to the cooperative's financial position, they slowed the movement of milk to urban processing plants. At DC administered collection centres, by contrast, there was no legitimate incentive for the promotion of local sales, such as a commission scheme. Employees were tempted to undertake illicit sales for their own benefit, but given their need to operate secretly, it is fair to assume that the impact of such activities upon local marketing could not match that cooperative society officers' marketing.

According to the public pronouncements of the dairy agencies, the local marketing effort of cooperative societies was perfectly legitimate; it was repeatedly stated that local demand in the area of collection centre was to be met first, before 'export' of milk for processing was undertaken. Examining the actions of the dairy agencies in matters affecting local sales, however, suggests that policy-makers did in fact place greater priority upon the movement of milk to urban processing plants than upon the satisfaction of local consumption needs. As noted, no legitimate incentive for the promotion of local sales was offered to centre employees. Furthermore, at some centres taken from cooperative societies by the DC, local sales were simply discontinued. The towns in question were forced to rely on more expensive tetrapak milk brought out from DC processing plants. The higher price of

processed milk presumably led to reduced milk consumption, compared to the situation which would have prevailed if cheaper raw milk had continued to be available.

In general the DC's pricing policies were fixed without concern for their impact on local consumer interests. Thus, for example, the DC, despite considerable losses incurred in its operations, raised the payout price for raw milk at its centres to Shs. 4.00 per gallon (Shs. 3.75 net) in October 1970 in a desperate politically-motivated attempt to raise milk input prior to the opening of a new, large capacity processing plant in Kampala. Little heed would appear to have been paid to the fact that in many rural areas and smaller trading centres, this price was likely to have been above the prevailing retail price for milk. Where this was the case, the DC's readiness to buy all milk offered at the new rate would obviously push up the local price for milk and thus restrict local consumption. Indeed, commenting on the price rise, a DC spokesman said:

> ...All milk vendors who had been selling milk privately must now realize that the practice does not pay as the money paid for such milk is lower than the corporation price.
> The corporation has acquired 10 road tankers with a total capacity of 20,000 gallons for lifting farmers' milk from up-country to milk processing factories in Mbale and Kampala.

In other words, the higher price offered by the DC was deliberately intended to bid milk away from local buyers in order to make available greater supplies for shipment to the DC's urban processing plants.

On the basis of available data it is difficult to suggest whether in the operation of its own centres the DC would have benefitted more from greater local sales revenue or from the shipment of greater amounts of milk for processing, as was so clearly intended, in keeping with dairy policy's

central goal of import substitution. However, with regard to cooperative centres, it is clear that the greater profits realized by societies on local sales come at the expense of the dairy agencies' financial interest in greater processing throughput. Finally, dairy cooperatives' higher local sales revenues also came at the expense of the dairy agencies' political interest in increased production of Ugandan processed milk as a means of justifying their programmes and winning further backing and resources for their expansion. For all these reasons, then, the orientation of dairy cooperative societies toward local sales of raw milk worked to weaken the dairy agencies' interest in associating cooperatives with the operation of milk collection centres.

FARM-LEVEL MILK PRODUCTION PROGRAMMES[7]

From the point of view of this paper's concern with the role of small urban centres, it must be asked whether dairy policy helped to convert Veterinary Department field offices located in small towns, and the sub-offices responsible to them, into diffusion points from which material assistance, professional services, and technical know-how were made available to as broadly-based a sector of the farm population as possible. A detailed examination of production programmes shows that this was not, in fact, the case. Production programmes were, in fact, knowingly directed at a privileged minority of farm owners.

By the time Uganda became independent, it had been demonstrated that quick increases in marketable milk output could be achieved only through the introduction of animals with exotic (i.e., European) blood. The sine qua non for successful introduction of such stock was the institution of

effective tick control measures. The death rate among cattle with exotic blood affected by tick-borne East Coast Fever 'approaches 100 percent,' and thus such cattle must be protected from tick infestations. Two possible methods of dealing with this obstacle were considered the construction of communal tick control facilities to serve communally-grazed cattle, and the fencing of land by individual farmers, who would then institute their own private regime of tick control.

It was originally expected that large numbers of farmers would be able to enjoy the higher productivity of animals with exotic blood through the use of artificial insemination to upgrade indigenous stock in areas in which highly effective communal tick control programmes had been instituted. With USAID backing, an experimental attempt to implement such an approach was undertaken beginning in 1963 in a sub-country in the near hinterland of Kampala. After several years of effort devoted to intensifying the coverage of tick control measures, free AI service was offered to all farmers during the period 1967-69.

It must be suggested that no serious attempt was actually made to ensure the success of mass upgrading. Decreasing, rather than increasing, resources were made available to the programme just as growing numbers of cross-bred calves began to be dropped: spare parts for spray-races were lacking; vehicles became unserviceable; and experienced mechanics were called away to other duties. In the end, the project simply petered out, not leaving behind even a summary report in Department files.

With the abandonment of serious efforts to make possible mass upgrading of free ranging herds, individual fenced farms remained as the preferred alternative. The question here was whether the Department would stress

smaller or larger units in its production programmes. To make intensive dairy farming with exotic or crossbred stock more accessible to typical Ugandan farmers would have required that policy emphasize techniques which are sparing of land and cash investments; that loan and subsidy assistance be provided in the small amounts necessary to facilitate the adoption of a small-scale dairying innovation package embodying such techniques, and that agency operating procedures be adapted to the provision of such aid to relatively large numbers of farmers. In examining farm production aspects of dairy policy one finds that none of these conditions were, in fact, met. The basic procedures of Veterinary Department field work were not altered so as to lay greater stress on group extension methods, as would have been required in order to transmit required agro-technical instruction to a large population of small-scale dairymen. Milk production techniques requiring relatively greater amounts of cash investment received the bulk of agency interest. Thus, the Veterinary Department stressed paddock, rather than zero-, grazing. It also devoted far more resources to Departmental stock farms, producing expensive exotic or cross-bred stock for sale to farmers, than it devoted to artificial insemination, which makes possible cross breeding of local stock with minimum cash outlay. Finally, in keeping with this orientation to techniques requiring more land and greater cash investment, the bulk of assistance made available to farmers through dairy credit programmes was quite intentionally dispensed in amounts considerably in excess of the sum required to establish a small dairy unit. Similarly, subsidy programmes made special provision for the needs of larger scale farmers, with considerable sums allocated to items of equipment suitable to large farms only, without any corresponding guarantee that the interests of

small farmers would be taken into account. It should be noted that in loan and subsidy programmes aimed specifically at promoting milk production (the USAID supported Dairy Development Incentive Programme providing both subsidy and credit assistance, and the PL 480 dairy loans programme), final authority to approve applications for assistance was retained in the hands of Veterinary Department Headquarters. The field offices of the Department served only as a communications channel, without decision making authority regarding the allocation of aid to farmers. What is more, it was possible in some cases to bypass the field offices of the Department and approach headquarters directly.

These practises reflected patterns already established in veteran, general livestock development programmes. Within the framework of the livestock equipment subsidy programme, sums were budgeted to the district offices for allocation according to locally determined criteria. However, veterinary headquarters tended to retain a 'substantial sum...to cover any contingency or overspending at the regional level.' Correspondence reviewed by the author suggests that these funds controlled by Kampala were available for distribution in larger sums than would usually be allowed to a single farm by the district offices. Veterinary officers in charge of districts or multi-county sub-districts were reluctant to allow a single farmer too large a subsidy, which might take up a significant proportion of their areas' grants for a given year. Such cases were referred to national headquarters where apparently there was less hesitation with regard to favouring suitable applicants with approval of requests for large-scale assistance.

An examination of background information available concerning the beneficiaries of the centrally controlled dairy assistance programmes can help

in understanding the sort of clientele which the Veterinary Department's leadership was able to cultivate through its emphasis on large-scale farm units. (See detailed lists presented in the Appendix). Those receiving assistance were in the main relatively experienced, well educated and quite wealthy individuals, owning large farms and capable of investing considerable funds of their own in addition to those received through departmental programmes. Many of these individuals were actively engaged in non-farm occupation, in senior and responsible positions. It is very likely that they were not actively involved in the management of their dairy farms, even if residing on them.

CONCLUSIONS

The choice of technologically imitative self-sufficiency as the main goal of Ugandan dairy policy meant the allocation of priority to the preferences and interests of urban elite consumers in the determination of consumption-side policy measures. With regard to production-side aspects, this choice entailed allocation of priority to the owners of large-scale, highly capitalized farm units. Such farms proved particularly attractive to members of the urban elite seeking a profitable investment outlet in absentee farming. The cultivation of an elite clientele through measure affecting both consumption and production suited the immediate political interests of the national-level political and administrative decision-makers responsible for dairy policy. At the same time, the concepts justifying the choice of technologically imitative self-sufficiency suited the nationalistic ideological inclinations of the senior political and administrative leadership.

Dairy policy, as formulated and implemented during the period reviewed, ignored the interests of rural consumers and small-scale, less highly capitalized producers. Policy measures designed specifically to guarantee that programme benefits would reach members of these two groups were lacking. To the extent that rural consumers or small-scale producers did in fact benefit from the operations of governmental policy, this should be seen as a side effect, rather than an explicitly and knowingly intended outcome.

The nature of dairy policy, as just summarized, had two principal negative implications with regard to the ability of small urban centres to fill their projected developmental role. First of all, in the context of Ugandan dairy policy, small centres could not serve as a point of access to new income-earning opportunities for a representative cross-section of the farming populace, guided and assisted by government field officers, who creatively adapt national policy to local conditions. The urban-oriented, political concerns of national policy-makers demanded instead a narrow, elitist focus in the distribution of public assistance to farmers seeking to expand milk production. Furthermore, in order to guarantee that resources allocated to farm level milk production programmes would serve the goal of cementing ties with an elite clientele, the national authorities retained final control over much of the loan and subsidy assistance offered to dairy farmers. A privileged minority of farmers were able to bypass completely the network of field officers, located in the small urban centres. Such farmers turned directly to national level officials to present their requests for assistance, rather than forwarding them to headquarters through the field stations.

Ugandan dairy policy also prevented the full realization of small urban centres' ability to serve as focal points for the horizontal integration of elements of local society: in this case, milk producers and milk consumers. The local marketing efforts of dairy cooperatives constituted a locally-oriented development initiative of the sort which regional planners would wish to encourage. However, as noted above, those responsible for Ugandan dairy policy thought otherwise. Through direct administrative intervention (i.e., the take-over of cooperatively operated milk collection centres), and through the discriminatory imposition of financial burdens upon farmers marketing at cooperatively operated centres, Ugandan policy-makers acted to suppress local initiatives based in small urban and rural trading centres.

In sum, the nature of Ugandan dairy policy was such as to prevent both the dairy industry and small urban centres from contributing all they might have to a broadly-based process of social and economic advance in the Ugandan countryside. Some benefits were provided to typical, small-scale farmers, and a number of successful cooperatives were established and managed to survive. However, far more might have been achieved if policy makers' priorities had laid greater stress upon the satisfaction of rural, rather than urban, and mass, rather than elite, needs. The general lesson to be learned from an examination of the case of Ugandan dairy policy would, thus, seem to be that the realization of the developmental potential of small urban centres is dependent upon the prior political empowerment of a significant proportion of the rural population, or, alternatively, the existence of a situation in which a major city-based political force determines to mobilize mass rural backing for its political and ideological ends. Without the satisfaction of one or both of these conditions, national

policies will continue to be shaped by the play of urban interests, without consideration for the needs of the mass of the rural population. From the point of view of this seminar's concern for the functioning of small towns, this implies continued centralization of control over programme resources, so as to insulate their use from local influences and guarantee their contribution to the realization of nationally-oriented policy objectives. Similarly, where the rural population lacks political weight, those resources distributed through field offices in keeping with the dictates of centralized control, will be concentrated upon elements of the urban elite with rural economic interests and upon members of the elite strata of rural regional society, whose interests and political and social opinions most closely match those of the national political leadership.

NOTES

1. The period covered by this review of Ugandan dairy policy extends from the achievement of independence in 1962 to 1974.

2. The material presented in this and the following sections is drawn primarily from Neal P. Sherman, A Political-Economic Analysis of Ugandan Dairy Policy (Ph.D. thesis, Madison: Univ. of Madison-Wisconsin, 1975). The topics dealt with in this paper are discussed there in greater detail, and full documentation is provided. For discussion of policy goals, see Chapter 4.

3. Tetrapak is a Swedish packaging system in which milk is packed in disposable containers of specially treated paper.

4. Harry-G. Johhnson, "A Theoretical Model of Economic Nationalism in New and Developing States," Political Science Quarterly, Vol. LXXX, No. 2 (June 1965), p. 177.

5. Johnson, op. cit., p. 181.

6. Sherman, op. cit., Chapter 6; Crawford Young, Neal P. Sherman and Tim Rose, Cooperatives and Development - Agricultural Politics in Ghana and Uganda. (Madison: University of Wisconsin Press, 1981), Chapter 7.

7. Sherman, op. cit., Chapter 7.

APPENDIX

CHARACTERISTICS OF FARMERS RECEIVING ASSISTANCE WITHIN THE FRAMEWORK OF DAIRY FARM LOAN PROGRAMMES

Up until 1980 the dairy agencies were unable to obtain funding for loan programmes earmarked especially for the encouragement of farm-level milk production. Dairy farmers seeking governmental assistance were then referred to general, agricultural development loan schemes.

In 1970 the USAID sponsored Dairy Development Incentive Programme was initiated. The DDIP made supplies and equipment available to farmers at highly subsidized prices. Provision was also made to grant credit to subsidy recipients for up to 90 percent of the value of goods purchased.

A second dairy loans programme was initiated in 1971, when USAID agreed that PL 480 wheat sale funds, originally allocated to beef ranching loans, should be made available for use by dairymen. Programme provisions permitted authorization of quite large loans, which were to be granted to farmers who had already invested considerable sums in their dairy units.

The information below is intended to provide the reader with reference points for evaluation of the data appearing in the tables:

Farm acreage: In the coffee-banana agroecological zone, in which most modern dairy units were established, two-thirds of farm holdings are under 5 acres in size.

Size of loan: On the basis of university experiment farm findings, it may be suggested that a small-scale diary unit could be established with an initial capital of 2,500-10,000 Uganda shillings.

Occupations: According to the 1963/64 Census of Agriculture only 16 percent of farm holders had significant non-farm occupations. Occupational data may also be taken as providing a rough indication of the educational level of loan recipients. According to survey findings, only 23 percent of farmers in the coffee-banana zone had obtained over six years of education.

Non-farm Income: According to the 1970 Enumeration of Employees, 92 percent of Africans employed by private enterprises and 89 percent of those employed in public service received cash wages of less than Shs. 6,000 per year.

DDIP Credit Recipients Approved by Veterinary Department Headquarters[a]

Farm Acreage	Amount of Credit Approved	Non-Farm Occupations (current, unless otherwise indicated)	Other Non-Farm Income Sources	Annual Non-Farm Incomes[b]
	Shs.			Shs.
15	7,500	High-ranking church official	- -	- -
23	8,000	Managing Director-coffee association, transporter	- -	22,800 All sources
46	17,000	Wholesaler	House rents	4,800
47	2,790	- -	House rents	- -
50	3,085	- -	- -	- -
52	60,000	General Manager, parastatal corporation	- -	58,800
58	27,000	- -	Rents	10,800
60	7,000	Government official	- -	Over 24,000
70	7,000	Sub-county clerk	- -	3,864
70	11,773	Former Member of Parliament	Property rents	24,000
80	14,000	Veterinary Department, para-professional staff	- -	(28,800)
90	8,200	Professional employee of cooperative union	- -	24,000

a Based on DDIP files--Veterinary Department headquarters.

b Income figures placed in parentheses are estimates formulated by taking the individual's reported civil service job title and then finding the salary scale entry point for that rank in Uganda Government, Detailed Estimates of Recurrent Expenditure 1972-1973 (Entebbe: Government Printer).

DDIP Credit Recipients Approved by Veterinary Department Headquarters[a]

Farm Acreage	Amount of Credit Approved	Non-Farm Occupations (current, unless otherwise indicated)	Other Non-Farm Income Sources	Annual Non-Farm Incomes[b]
	Shs.			Shs.
90	13,000	Veterinary Department, professional staff	House rents	64,980: All sources
95	14,000	- -	- -	- -
100	1,362	- -	- -	- -
100	4,550	Assistant Works Supervisor	- -	16,440
100	14,000	Veterinary Department, paraprofessional staff	- -	(21,120)
100	17,000	High-ranking church official	- -	- -
130	19,600	Civil servant	Rents	- -
156	27,000	Police	- -	- -
180	35,100	Former high-ranking church official	- -	- -
240	9,000	- -	Pension	6,000
274	8,179	- -	House rents	1,200
300	8,500	- -	- -	- -
300? 600?	11,000	- -	- -	- -

a Based on DDIP files--Veterinary Department headquarters.

b Income figures placed in parentheses are estimates formulated by taking the individual's reported civil service job title and then finding the salary scale entry point for that rank in Uganda Government, Detailed Estimates of Recurrent Expenditure 1972-1973 (Entebbe: Government Printer).

? Different acreages were given in different documents concerning the loan.

DDIP Credit Recipients Approved by Veterinary Department Headquarters[a]

Farm Acreage	Amount of Credit Approved	Non-Farm Occupations (current, unless otherwise indicated)	Other Non-Farm Income Sources	Annual Non-Farm Incomes[b]
	Shs.			Shs.
337	20,000	Civil servant	- -	50,000
400	7,200	- -	- -	- -
400	9,280	Senior Cooperative Officer	- -	(29,880)
410	5,950	- -	- -	- -
500	4,714	Clerk	House rents	- -
500	5,000	Cattle trader, shopkeeper	- -	2,600
500	13,000	Police } partners Police }	- - - -	25,980 25,980
500	13,500	Executive Officer, Ministry of Animal Industry	- -	(9,468)
640	10,000	Banking	- -	- -
650	14,400	Army officer	- -	38,700
722	1,840	Administrative officer (District Commissioner)	- -	- -
1000	1,600	c	- -	- -
1300	750	Chief Barman, parastatal corporation	- -	- -

a Based on DDIP files--Veterinary Department headquarters.

b Income figures placed in parentheses are estimates formulated by taking the individual's reported civil service job title and then finding the salary scale entry point for that rank in Uganda Government, Detailed Estimates of Recurrent Expenditure 1972-1973 (Entebbe: Government Printer).

c Farm owned jointly by ten individuals.

DDIP Credit Recipients Approved by Veterinary Department Headquarters[a]

Farm Acreage	Amount of Credit Approved	Non-Farm Occupations (current, unless otherwise indicated)	Other Non-Farm Income Sources	Annual Non-Farm Incomes[b]
	Shs.			Shs.
Not available[d]	15,286	Commissioner, government department	- -	(52,000)
Not available[e]	3,200	Civil servant	- -	43,500
- -				
Farms of over 1300 acres (considered beef ranches, and not included in summary discussion in text)				
2000	29,600	Official of parastatal corporation	- -	20,000
3000	24,000	Secretary-Manager, cooperative union	Shop-owner	25,200: Wages only
4480	23,100	- -	- -	- -
6000	43,731	Government Minister	- -	(60,000)

a Based on DDIP files--Veterinary Department headquarters.

b Income figures placed in parentheses are estimates formulated by taking the individual's reported civil service job title and then finding the salary scale entry point for that rank in Uganda Government, Detailed Estimates of Recurrent Expenditure 1972-1973 (Entebbe: Government Printer).

d Twelve acres of land were offered as security for the loan requested.

e Ownership of 100 head of cattle is indicated.

PL 480 Loan Recipients[f]

Farm Acreage	Size of Loan	Previous Non-Farm Occupations	Present Non-Farm Occupations	Other Non-Farm Income Sources	Annual Non-Farm Incomes[g]
	Shs.				Shs.
9	15,000	--	High-ranking church official	--	--
12	11,000	Government Minister	Shop-keeper	--	--
14	8,250	--	Ministry of Health-papa-professional staff	Owns fishing boat	19,560: Salary only
38	60,000	--	Commissioner, government department	--	(52,000)
50	50,000	--	Veterinary Department - para-professional staff	--	(13,740)
56	20,000	--	Advocate	--	--
68	50,000	--	Senior Cooperative Officer	--	(29,880)
70	20,000	Member of Parliament	Owner of coffee factory	--	--
70	35,000	--	--	--	--
84	38,000	Local government officer	--	Pension	--

f Based on PL 480 files--Uganda Commercial Bank, Kampala.

g Income figures placed in parentheses are estimates formulated by taking the individual's reported civil service job title and then finding the salary scale entry point for that rank in Uganda Government, Detailed Estimates of Recurrent Expenditures 1972-73 (Entebbe: Government Printer).

PL 480 Loan Recipients[f]

Farm Acreage	Size of Loan	Previous Non-Farm Occupations	Present Non-Farm Occupations	Other Non-Farm Income Sources	Annual Non-Farm Income[g]
	Shs.				Shs.
95.2	40,000	--	Medical doctor[h]	--	--
100	75,000	--	Medical school professor	--	--
100	20,000	Permanent Secretary, government ministry; Managing Director, parastatal corporation	--	--	--
100	60,000	Government hospital administrator	Medical doctor[i]	House rents	32,400: All sources
120	40,000	--	Veterinary Dept. professional staff	--	(36,780)
156	60,000	"Businesses" (now run by sons)	--	Rents	18,000
200	55,000	--	Oil company distribution mgr.	--	--

f Based on PL 480 files--Uganda Commercial Bank, Kampala.

g Income figures placed in parentheses are estimates formulated by taking the individual's reported civil service job title and then finding the salary scale entry point for that rank in Uganda Government, Detailed Estimates of Recurrent Expenditures 1972-73 (Entebbe: Government Printer).

h Farm is owned by a family corporation. Occupational information refers to the Managing Director.

i Farm is operated by a family partnership. Occupational and income information refers to the chief partner.

PL 480 Loan Recipients[f]

Farm Acreage	Size of Loan	Previous Non-Farm Occupations	Present Non-Farm Occupations	Other Non-Farm Income Sources	Annual Non-Farm Income[g]
	Shs.				Shs.
300	66,000	—	Army officer; Under secretary, government ministry[j]	— —	(24,000) (43,500)
300	70,000	—	Biologist, director of East African Community research institute	—	—
350[k]	66,000	—	—	—	—
640	85,000	—	Diretor-construction company; Director-X Estates Ltd.	—	—
641	65,000	Permanent Secretary, kingdom government ministry	—	Pension	—

f Based on PL 480 files—Uganda Commercial Bank, Kampala.

g Income figures placed in parentheses are estimates formulated by taking the individual's reported civil service job title and then finding the salary scale entry point for that rank in Uganda Government, Detailed Estimates of Recurrent Expenditures 1972-73 (Entebbe: Government Printer).

j Farm is operated by family corporation. Occupational information refers to two of five directors.

k The farmer is described as one of the first Ugandan African farmers to acquire exotics, having begun to keep such animals in 1961. He is also reported to be "responsible" for the successful operation of a cooperative ranch.