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The Integration of Agriculture and Industry in Cooperative Villages: The Experience of the Kibbutz

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I A special case of agro-industrial integration

The kibbutz experience of agro-industrial integration presents several distinct features. The vertical type of integration, that is the most widespread and the most frequently mentioned in the literature, is not the main road of kibbutz agro-industrial integration. By vertical integration we refer to cooperation between producers of agricultural raw material and entrepreneurs (private, governmental and sometimes cooperatives of producers) who establish industries for the processing and transformation of raw materials. One path of kibbutz industrialization — the establishment of 'regional industries' owned cooperatively by kibbutz and moshav communities of one geographic region and processing agricultural products — seems similar to this vertical integration.

The major development in agro-industrial integration occurred in the kibbutz community itself, through major changes in its economic and occupational structure, by way of its transition from a mainly agricultural economy to an integrated agro-industrial one (Don, 1977). While the first kibbutz community was established in 1910, these developments are rather recent. In 1967 only 28% of the work force employed in production worked in industry, versus 72% in agriculture. This relationship shifted in 1981 to 53.3% in industry versus 46.7% in agriculture.

Table 1
Branch distribution of kibbutz plants 1967/68; 1980/81 (*)

Branch	Number of plants		percentage of sales	
	1967/68 ⁽¹⁾	1980/81 ⁽²⁾	1967/68	1980/81
All plants	157	315	100%	100%
Metal	47	86	23.5	24.7
Wood, carpentry	18	18	25.4	11.4
Rubber & plastics	23	70	13.1	28.3
Foodstuffs	20	18	18.7	15.4
Electrical appliances & electronics	12	31	2.2	5.2
Pharmaceuticals & chemicals	4	10	5.8	4.1
Textiles & leather	9	18	2.7	3.6
Building materials	11	10	4.4	4.5
Printing presses	4	10	0.8	1.6
Miscellaneous	9	44	3.4	1.2

Sources: (1) D Gal, "The process of industrialization at the village level: The spread of industrialization and its promoting factors". In: Y. Klatzman et al. (eds.), 1971, p. 535

(2) *K I A Annual Report*, 1980 (1981), pp. 47, 59.

(*) The overall percentage of kibbutz industrial production in 1980/81 was 5% of the total Israeli industrial production.

While this form of integration can be perceived as horizontal, it is very different from the usual forms of integration of individual producers in villages that start to cooperate for some specific purpose. It is not an integration between independent economic units, but a structural change in one cooperative economic unit.

The type of industries introduced in the kibbutz communities differs also basically from those found in the type of vertical integration and also from those in the kibbutz-related regional industries.

As shown in Table 1, there are almost no kibbutz plants dealing with the processing of agricultural products. The only exception were some of the plants in the food industry, mainly fruit canning. However, as can be seen from the comparative table, they represented in 1968 only 13% of the kibbutz industrial plants. While the number of industrial plants in the kibbutzim has more than doubled since then, we experience even an absolute decrease in the number of food processing plants. In general, the type of plants is also not related to the existence of other non-agricultural raw materials in the region, with the exception of some plants producing building materials. The number of those has also decreased both absolutely and relatively.

The criteria for the selection of plants by the kibbutzim were mainly economic, such as the prospects of profitability and cost-efficiency, the availability of capital and necessary skills. Other, mainly social and ideological criteria will be discussed below.

Another distinctive feature of the community-integrated kibbutz plants is their small and medium size. (In 1982 only 6% of the plants employed more than 100 workers, 23% between 50—100; 21% between 30—50 and 50% less than 30). The percentage of the smallest plants is steadily decreasing and a high correlation was found between age and size of plant. The success of kibbutz industrialization seems to contradict conventional assumptions such as the statement by Hoselitz (Klatzman et al., 1971, pp. 61—63), that villages are the worst possible medium for industries that are highly dependent on 'external economies' which are available primarily in a large city. The kibbutz communities have compensated this lack of external economies by special forms of intra- and inter-community organization.

The plants established in the industrial regional centres were more of the conventional raw material processing type as shown in Table 2. The expansion of these industries in recent years has continued in the direction of processing of agricultural products with two further developments:

- (1) Integration of further stages of processing, e.g. while in the first stage slaughterhouses for poultry and turkeys were established, in the second stage plants for meat processing

Table 2
Regional enterprises of cooperative settlements

	1971 ⁽¹⁾	1981 ⁽²⁾
Livestock fodder mixing plants	6	8
Plants for clover processing	3	1
Slaughterhouses for poultry	8	13
Slaughterhouses	1	0
Plants for processing fruit & vegetables	6	5
Cotton mills	9	13
Vegetable & fruit sorting & packing houses	23	30
Flower packing houses	3	2
Fruit & potato cold storage facilities	16	12
Factories for heavy equipment & agricultural machinery	20	3
Workshops & machinery stations	8	16
Regional laundry	1	2
Regional bakery	1	2
Gasoline stations	—	3
Computer & accounting services	—	9
Research & information services	—	4
Plants for processing meat	—	6
Other enterprises	—	25
Total	105	154

Sources: (1) A. Fein, "The transition from agriculture to industry within a full cooperative village: The case of the kibbutz". In: Y. Klatzman et al. (eds.), 1971, p. 508.

(2) Y. Elbintzer (ed) *Know the Kibbutz Movement* (Hebrew), 1981, p. 25.

were set up so that more final products can be sold directly to the consumer.

- (2) Extension of the raw material sources beyond the communities that own the plants cooperatively, e.g. larger fruit canning plants were set up in some regions that needed larger quantities than those provided by the villages of the region.

These regional industrial centres are usually located near small population centres that supply a large part of the manpower, while the cooperative villages that are the co-owners provide mainly managers on different levels and more technically skilled employees. There is some similarity between the regional industries and the theoretical model of Agrindus developed by Halperin (1963) on the basis of the Israeli experience, suggesting the development of areas comprising a number of villages around an industrial centre and the patterns of regional industries. However, one very important difference is that the regional industries are not the main road of rural industrialization. They are only an addition to the major process of agro-industrial integration that took place in the communities themselves.

II The process of intra-community industrialization

The main drive for industrialization started in the '60s. Almost 75% of the 315 plants were established after 1960 and almost 50% after 1970. The main factors that contributed to this fast process were:

- (1) difficulties for further agricultural expansion such as: saturation of the market for certain products and scarcity of suitable land and water;
- (2) demographic and social changes in the kibbutz, where the young and old population have grown and thereby their needs changed — the youngsters are looking for technical work and the elderly aspire to have easier work and better working conditions; and
- (3) a policy of the government which encouraged industrialization in general and especially in border settlements (of which a high percentage are kibbutzim), by long-term loans and special funds.

(1) The first factor bears some similarity with the conventional 'push' factors for rural exodus and the transition from agriculture to other occupations. Also the second factor and especially the need to meet changing aspirations of different population groups and especially the youth, seems similar to universal processes.

However, a major difference between kibbutz industrialization and other types of industrialization should be stressed. Industrialization is generally perceived as a synonym for modernization, for a transition from a traditional to a modern society. Already before accelerated industrialization the kibbutz showed some pronounced features of modern social units: 1. a relatively high level of education and culture (in the past the majority of members finished high school while now between one third and a half of the members and especially the younger ones, have university or similar post-secondary education); 2. a high degree of manpower and resource mobility; 3. a rational orientation to economic activity; 4. wide utilization of scientific knowledge and mechanization in agriculture; 5. integration with the market economy.

These special modern aspects of the kibbutz communities explain why industrialization could occur in rural areas and was not part of a process of urbanization. In spite of the small size of the kibbutz communities, they offer much of the attraction of urban life style. The living standard is relatively high; relatively large and high standards of education and cultural facilities are available in the kibbutz community and additional facilities have been developed on a regional basis or in the framework of the nationwide kibbutz federation (Rosner, 1983). The 'pull' factors that usually attract rural population to the cities, were

therefore almost not relevant in the kibbutz process of industrialization. Other specific features of the kibbutz population and its social structure also facilitated the creation of industrial plants: 1. In addition to the above-mentioned experience in modern economic activity and to the relatively high educational level of the members, there exists a strong desire and ability for further training and relatively large dispersion of managerial abilities between members of the kibbutzim. Every year a large percentage of members participate on a rotating basis in committees that govern the community, as well as fulfil tasks of branch coordinators of the many production, service and educational work-groups, thus acquiring management experience and ability.

(2) The value system of the kibbutz is future-orientated toward social and economic change, with a strong emphasis on productive activities.

(3) The economic status and the standard of living of a kibbutz member is not related to his workplace, since consumption is collectively organized and egalitarian distribution principles prevail. The transition from agricultural to industrial work has therefore no direct effect on the members' living standards. (An expected indirect effect might be that industrialization will enhance the collective standards of living.)

Apart from these favourable preconditions a series of limitations exist:

- (1) Many of the kibbutz founders perceived agriculture not only as an economic activity, but as a way of life opposed to the alienation from nature which is a part of city life. Many members were therefore reluctant to change agricultural for industrial work.
- (2) The conventional industrial technology leads to fragmented, routinized work-roles and to unequal professional knowledge creating large gaps between a majority of non-skilled workers and a small professional elite, in opposition to the kibbutz principle of equal value of all types of work.
- (3) The conventional organization of industry is hierarchical, based on inequality in the distribution of authority and is therefore opposed to the kibbutz system of self-management and direct democracy.
- (4) The limited number of members of a kibbutz community (from 50 to 1000, with an average of 350), as well as the principle of non-employment of hired workers might hurt the ability of kibbutz plants to compete on the market, since they will not be able to respond to changes in demand and will not achieve economies of scale. (The principle of non-employment of hired

workers — called also 'self-labour' — is rooted both in the socialist tradition of opposition to exploitation and in the national goal of creating a large class of agricultural and industrial production workers.)

Some of those limitations had an important impact on the selection of industrial plants. In the first and limited stage of industrialization before 1960 several relatively larger plants were established — mainly in the areas of food-processing, wood furniture and metal works — that eventually had to employ rather large numbers of workers from outside. As a reaction to this development, but also due to the more favourable conditions of investment financing after 1960, a different type of industrial plant evolved. This new type was capital-intensive, needed only a limited number of workers and used a more sophisticated semi-automated or automated technology. Many of these new plants are in the plastic branch, but also new metal work and electronic plants have these features. As a result of this change, a permanent decrease in the percentage of hired workers occurred since 1972 (Peleg, 1980). In two of the three main kibbutz federations the percentage of paid labour is now less than 20, while in the federation that employed almost 70% of paid workers it decreased to less than 50%. Most of those workers are concentrated in a limited number of old plants. A further decrease is foreseen since several kibbutzim have already decided to sell such plants. The new plants created recently and those planned already will not employ hired labour.

The new technologies were also more responsive to the aspirations of the educated kibbutz workers. Assembly lines and other more alienating technologies were intentionally avoided. A recent further step in introducing innovative technologies to avoid alienation and uncomfortable work and not to expand industrial employment beyond the limits, is the introduction of robots and advanced technologies. The kibbutz industries are among the first to introduce them in Israel. Advanced technology, that is the most appropriate for kibbutz conditions, might create the need to employ a different type of paid employees, scientists and engineers, since not all the kibbutzim that are interested in choosing high-tech-industries have among their members the 'critical mass' of scientists needed. The large number of members studying at universities and other institutions of higher learning (yearly 5% of the members) will partially help to solve this problem and special efforts are made to advance technological education. Another solution is cooperation between neighbouring kibbutzim in starting a new plant that is initially located in one of them, but might split at a later stage in different locations.

Since the creation of new plants and the introduction of new technologies cannot solve problems of alienation in industrial work created

by the existing conventional technologies, special efforts have been made to cope with them. A special socio-technical department has been created by the kibbutz industry association with the aim to improve the quality of working life for their factory workers. Efforts are made to change organizational patterns and machine outlay to enrich the work activities of the individual worker and to correlate them with other aspects such as quality control, maintenance and so on.

As a response to the economic crisis of recent years in Israel, the kibbutz industries have made many efforts to expand exports. In 1983 more than 25% out of the one billion dollar production of kibbutz industries has been exported abroad.

III Developments in agriculture

The fast pace of industrialization did not lead to a decrease in agricultural production. The absolute number of working days invested in agriculture remained almost unchanged while the population growth was directed mainly to industry, in addition to a parallel growth in services and education. The figures in Table 3 show clearly that in many agricultural branches the share of kibbutz production increased both absolutely and relatively. Especially dramatic was the increase in

Table 3
Kibbutzim in Jewish farming (*)

Kind of farming	Unit	Kibbutzim		Kibbutzim as percentage of total Jewish farming	
		1967 ⁽¹⁾	1979 ⁽²⁾	1967/78	1979
Milk cows	thous.of heads	25	47	32%	46%
Milk	thous.of liters	144	339	37%	52%
Poultry	thous.of tons	27	56	30%	45%
Bananas	thous.of tons	47	45	92%	73%
Olives	thous.of tons	24	n.d.	30%	n.d.
Pome & stone fruits	thous.of tons	60	62	46%	43%
Citrus fruits	thous.of tons	129	224	12%	14%
Wheat	thous.of tons	109	67	58%	50%
Cotton	thous.of tons	54	59	87%	78%
Potatoes	thous.of tons	35	141	41%	67%
Vegetables	thous.of tons	16	25	6%	18%

(*) The overall percentage of the production of kibbutzim in Israeli agricultural production of 1979 was around 40%.

n.d.=no data available.

Sources: (1) Gal, 1971, p. 503.

(2) *Know the Kibbutz Movement*, 1981, p. 11.

capital-intensive dairy farming, where the number of milk cows almost doubled and milk production increased even more.

Among the branches where production relatively decreased were cotton and bananas in which the kibbutzim continue to produce around 75% of total Jewish farming. Gross agricultural kibbutz production and even the share of its agriculture increased in spite of the stagnation in manpower, as a result of a large increase in productivity per worker. This increase was due both to large investments in technology (modern equipment such as tractors and combines, cotton pickers, computerized irrigation etc.) and to advancements in agricultural knowledge. Contrary to the above-mentioned assumptions that youth will prefer industry because of technical inclinations, it was found that many young members preferred agriculture, that is also highly mechanized but lacks some of the more problematic aspects of industrial work. In a comparative study of agricultural branches and industrial plants it was found that in agriculture, workers have better opportunities for self-realization and for exercising influence and, due to the smaller size of these branches — with a range between 5—15 members — there is better communication and more work group-cohesion (Eden and Leviatan, 1974). Since such social-psychological rewards are very important in the kibbutz situation, these findings might explain the preference of many young adults for agriculture in the kibbutz.

An expanded network of different levels of professional training in agricultural branches as well as a developed system of counselling by experts contributed to the progress of kibbutz agriculture. This progress was achieved in spite of the need to 'compete' with industrial plants for the allocation of scarce resources, such as manpower and investment financing. In recent years kibbutz agriculture had also to fight adverse economic conditions that have hurt hardily other parts of Israeli agriculture.

IV Mechanisms of integration

The fast pace of industrialization and the continuing development of agricultural production have been facilitated by the inbuilt flexibility of the kibbutz economic and social structure. An additional important factor was its comprehensive organizational and decision-making structure. All major economic decisions, such as the establishment of new branches, the overall production and investment plan, etc. are taken or at least are ratified by the general assembly convening almost weekly.

These decisions in the assembly are prepared by many preliminary discussions at the work group or branch level that are then integrated by the community economic coordinator and discussed by the economic

committee. In the first stages of the industrialization process some bigger plants showed trends of independence, expressed, e.g. by the establishment of an accounting and financial system relatively independent from that of the overall community and by making important decisions, (e.g. about production and investment plans), in plant institutions only. Such arrangements were conceived as deviations from the normative structure of kibbutz industrial organization. In a survey of 54 plants it was found that the degree of community integration of the plants was positively correlated to the degree of internal democracy, and negatively to plant size and percentage of hired workers (Rosner and Paldi, 1980). These data illustrate that the smaller and more capital-intensive plants of the second wave of industrialization are also better integrated in the kibbutz communities.

An additional stage of integration is now reached in a growing number of kibbutzim, that have more than one industrial plant. In many kibbutzim there is, in addition to the main plant, a smaller one employing mainly older members and adapted to their special needs and abilities. In other kibbutzim, mainly bigger ones, there are already 3,4 or even 5 plants that have an autonomous organizational structure in the framework of the kibbutz economy. This trend is an outcome of the advantages of smaller plants, at least under kibbutz conditions. Such plants can be more adapted to members' aspirations and abilities, offer better conditions for democratic management and can also use advanced technologies since they are mostly capital-intensive.

This new situation seems to be also less problematic for the overall integration in the kibbutz economy. Instead of the disproportion between one big industrial plant and many small agricultural branches that created the above-mentioned problems in the past, there is now a general problem of integrating a growing number of autonomous units. The use of advanced management know-how together with new accounting, costing and planning methods based on computerized equipment might help to solve these problems together with a permanent effort to improve democratic decision-making.

Another level of integration is that of the nation-wide kibbutz federations and their roof organizations: the general federation of kibbutzim and the association of kibbutz industries. These organizations played an important role in the industrialization process while at the same time assisting kibbutzim in the development of agricultural production.

The role of these roof organizations is important both in the economic and socio-organizational spheres. The association of kibbutz industries and the relevant departments of the federations assist kibbutzim that are interested to start plants in their search for types of products and technologies. Kibbutz plants are assisted in the import of machines and raw materials and the export of their products, as well as

in the marketing of the products in Israel and abroad. These agencies are especially important, since in contradiction to the nationwide cooperatives' marketing of agricultural products, no similar network exists for kibbutz industrial products.

V The lessons of the kibbutz experience

It seems that a necessary precondition for an agro-industrial integration similar to that of the kibbutz is a cooperative organization of the rural economy. This can be seen clearly by comparing the industrialization attempts of the two types of moshavim in Israel. The large movements of 'individual' moshavim that are based mainly on individual farms — with cooperative organization of marketing, credit supply etc. — have generally not succeeded to establish industries in their villages in spite of many attempts in the last years. The main reason seems to be the difficulty to combine work in the individual farms with that in industry, where permanent commitment of workers is needed. On the other hand, the integration of industry was less problematic in the collective moshav, 'moshav shitufi', communities where both the economy and the allocation of work is collectively organized and similar to the kibbutz. The transition to work in the industrial plant was basically similar to the quite usual transition from one agricultural branch to another.

One condition that might facilitate the application of lessons from the kibbutz is the establishment of a supporting roof organization which could fulfil a role similar to that of the kibbutz federations.

Some more general development trends might push toward forms of agro-industrial integration that could be inspired by the kibbutz experience:

- (1) the development of new computerized technologies that could lead toward decentralization of industrial production;
- (2) the development of mass media and communication technologies that might decentralize cultural and educational facilities and therefore lessen the attraction of the cities; and
- (3) the deterioration of living conditions and especially of the quality of life in large urban agglomerations that might increase the attraction of an urban-rural integration as one of the outcomes of an agro-industrial integration similar to that achieved by the Israeli kibbutz.