As well as hiring workers who are members of the kibbutz and who, therefore, are owners of the means of production, some kibbutz factories have hired workers who are not kibbutz members. Our hypotheses, drawn from the writings of Marx and others, suggest both "individual" and "contextual effects" of ownership on alienation. At the individual level, hired workers will feel more alienated than kibbutz workers. Similarly, at the contextual level, persons in factories where some workers are hired will feel more alienated than will persons in factories that do not include hired workers whether or not the persons are themselves hired workers. These hypotheses imply intervening variables such as influence by workers that are examined through a path analysis. The analysis indicates only individual effects of ownership on feeling of alienation although ownership does have a contextual effect on aspects of the participativeness of the factor.

Ownership and Alienation in Kibbutz Factories

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The kibbutz is a communal society established by its founders on the basis of democratic and egalitarian principles. The members collectively own the means of production of their society. They govern themselves, elect officers on a rotating basis, and contribute to and share

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Authors' Note: *Data used in this article are from the international study, "Members' Participation in Industrial Organizations" (MPIO). Scientists from five countries cooperated in this project: M. Rosner, U. Leviatan, M. Palgi, E. Navon (Israel), P. Clark (England), H. Thierry, A. Koopman-Iwema (Holland), K. Bartölke, D. Flechsenberger (Germany), and S. Rubenowitz, F. Norrgren (Sweden). A. S. Tannenbaum (Michigan) and D. Nightingale (Queens College, Canada) shared in an earlier phase of the study. We are responsible for the*

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the wealth of their society according to the tenet "from each according to his ability to each according to his need." The kibbutz was conceived by its founders as a society free of alienation. The founders assumed that a source of alienation for workers lies in the contract between the worker and the owner of the means of production to whom the worker sells his or her labor. The founders therefore spoke of a society of "liberated labor" where workers do not sell their labor and where they control their own work lives.

Alienation in the Marxian view is a situation (not simply a state of mind) in which the objects or products created by the worker are "alien" and come to dominate him or her.

> The object produced by labour, its product, now stands opposed to it as an alien being, as a power independent of the producer. . . . The performance of work is at the same time its objectification. This performance of work appears in the sphere of political economy as a vitiation of the worker. Objectification appears as a loss and as servitude to the object, and appropriation as alienation [Marx, 1964: 178-179].

Marx's definition may appear metaphysical but it does have some operational implications. First, the worker in a capitalist enterprise creates objects that do not belong to him or her and that therefore are "alien." Thus the worker is separated (that is, alienated) from these objects and is separated also from himself or herself since the individual's effort is addressed to others' objectives, not his or her own. Furthermore, the objects the worker produces and the process through which they are produced are reified, having a force of their own that subjugates the worker. The worker therefore is powerless. Finally, the worker should *feel* separated from the objects he or she produces and from herself or himself and should feel powerless. The worker should, in other words, feel alienated, although Marx recognized the possibility of a discrepancy between objective and subjective alienation.

These direct, almost definitional implications of ownership for the alienation of workers in a capitalist society are accompanied by further,

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content of this contribution and wish to thank Mihal Palgi, Uri Leviatan, and Reuben Shapira of the Institute for Research on the Kibbutz, University of Haifa, for their help in the analysis and interpretation of the data of this study, and Duane Alwin and Stanley Seashore for their helpful reactions to an earlier draft. The second author would like to thank the German Marshall Fund of the United States for providing support through a fellowship that enabled him to participate in this project.

indirect implications that grow out of the inevitable conflict between owners and workers. Because of this zero-sum conflict, owners employ all practical means to keep workers powerless (and consequently alienated) lest the owners themselves lose power. The governance of the factory is therefore autocratic, with workers located at the bottom of the authority hierarchy. And because workers naturally oppose the owners, supervisors, who represent the owners, must treat subordinates autocratically. Indeed, they must apply coercion to control the workers.

> The greater the antagonism the more important the role played by [coercive] superintendence . . . which is indispensible . . . under the capitalist mode of production since the process of production is at the same time the process by which the capitalist consumes the labour power of the worker [Marx, 1956: 154].

In addition, the intense and implacable drive for profit in the factory that serves the interest of the owners (but not that of the workers) leads to the use of technologies that further alienate the workers. Machines, designed to achieve the highest possible efficiency, regulate the worker's pace and determine the character of his or her work. Machines control workers rather than vice versa.

Many theorists see alienating hierarchies and technologies as inevitable components of industrial organization, whether capitalist or socialist. According to Blauner (1964: 17), "most social scientists would say that alienation is not a consequence of capitalism per se but of employment in the large-scale organizations and bureaucracies that pervade all industrial societies." Indeed, Weber (1947) suggested that the bureaucratic form of organization may be more essential to the socialist than to the capitalist society. Many Marxists nonetheless insist that autocratic hierarchies and alienating technologies are consequences only of the capitalist mode of production where striving for profit is the major driving force (Archibald et al., 1978; Braverman, 1974; Brecher, 1979; Marglin, 1974). Marx did, however, note that the cooperative factory might represent an exception to some of the alienating conditions that workers otherwise experience in a capitalist society. In such a factory, "the antagonistic nature of the labour of supervision disappears, because the manager is paid by the labourers instead of representing capital counterposed to them" (1967: 387). But Marx did not consider explicitly how alienating conditions might occur in a socialist society—whether as exceptions, where such societies introduce

elements of capitalist organization, or more generally, as part of a "technological imperative" that is inherent in all modern societies, whether capitalist or socialist.

We are concerned here with earlier arguments as they apply to a communal, socialist society such as the kibbutz. A number of philosophers, social analysts, and students of organization have seen in the kibbutz a practical approach to eliminating the alienation that is typical of conventional societies (Buber, 1958; Blasi, 1980; Gill, 1979; Katz and Golomb, 1975a, 1975b). The kibbutz founders conceived the kibbutz as a simple agricultural community in which the wage system along with private ownership of the means of production were to be abolished. Kibbutz organization was to be nonhierarchical and decision making was to be based on participatory self-management. The contemporary kibbutz, however, compromises the founders' original plan in at least two ways. First, kibbutzim have added industrial factories to their community (Peleg, 1980). The first Kibbutz was created in 1910, and as early as the 1920s one of several kibbutz movements, Hakibbutz Hameuchad, began to introduce factories into some of their kibbutzim. But it was not until the 1940s that significant numbers of industrial plants were introduced into kibbutzim. Kibbutzim now own 300 factories ranging in size from 30 to 400 persons, although the large majority has fewer than 50 persons. Of all kibbutzim, 85% own at least one factory and some kibbutzim jointly own a number of factories. The introduction of industrial plants has been justified on the grounds that industry diversifies and strengthens the kibbutz economy as well as the economy of the nation and that it also provides employment opportunities for some older persons. These factories, however, have some features of an authority hierarchy along with the specialization, routinization, and fractionation of jobs that Marx (1964) and others (Blauner, 1964; Mills, 1956; Weber, 1947) have argued are among the bases of alienation. Second, the factory has been accompanied in some cases by the employment of salaried workers who are not kibbutz members (Leviatan, 1980). Unlike kibbutz members, hired workers do not enter into the supervisory and managerial hierarchy and they do not participate in the formal decision-making bodies of the factory. Approximately 35% of the persons now working in kibbutz factories are hired workers.

Hired labor is alienated labor in the Marxian view. It follows from this view, furthermore, that the alienation will go beyond the hired workers themselves since the decision-making and control structures

will necessarily be less participative and more coercive in factories where even some of the workers are hired than where all of the workers own the means of production. In Marxian terms, the plants with hired workers differ from those without hired workers in their "relations of production"; factories with hired workers more than those without hired workers will be characterized by close supervision, formal devices of control, and bureaucratic features. Hence, theoretically, even kibbutz members who work in kibbutz factories in which outside workers are employed and that are characterized by relatively nonparticipative supervision and low worker influence will themselves experience some alienation, since they experience at least in some degree the same management system and supervision that hired workers experience, despite the prerogatives that members have to participate in decision-making assemblies of the factory and of the community, and regardless of their own perception of participation and worker influence. We thus have reason to expect both "individual" and "contextual" effects (Alwin, 1976; Blau, 1957, 1960; Firebaugh, 1979; Davis et al., 1961; Lincoln and Zeitz, 1980; Tannenbaum and Bachman, 1964) of ownership on alienation. At the individual level, a person's status as an owner or nonowner, along with his or her position in the hierarchy and perception of participation and influence will make a difference to his or her feeling of alienation. Similarly, at the contextual level, the ownership status of a factory (that is, whether or not it includes hired workers) and the character of control and decision making (that is, the extent to which the workers as a group are influential and are treated participatively) will make a difference to a person's feeling of alienation regardless of whether the person is a hired worker or of how the individual perceives influence and participation in the plant.

This analysis can be summarized in the form of a number of hypotheses:

(1) Feelings of alienation are a function of ownership of the means of production. Kibbutz members, therefore, will feel less alienated than hired workers.
(2) Feelings of alienation are also a function of organizational hierarchy. Persons at the lower levels (and who therefore exercise relatively little control in the organization) will feel relatively alienated compared to upper level persons.
(3) The nonownership status of hired workers along with their position in the hierarchy will have implications for influence processes in the plant. Hired workers experience less participation than kibbutz members.

Consequently, hired workers compared to kibbutz members will perceive their supervision to be less participative (that is, less open to influence) and will perceive the workers as a group to be less influential.

(4) Plants with hired workers will in general be less participative than plants composed exclusively of kibbutz members. Consequently, the former plants will be perceived by their members to be less participative than the latter plants, that is, persons (whether hired workers or kibbutz members) in the former compared to the latter plants will perceive their supervisor to be less open to influence and the workers as a group to be less influential.

(5) Part of the explanation of the alienation felt by persons, whether hired or not, in plants with hired workers is the relatively nonparticipative supervision and relative lack of workers' influence that exist in these plants or that are perceived to exist by persons in the plants. At the individual level, controlling for plant, respondents who differ in perception of supervisory participativeness and worker influence will differ in feelings of alienation. At the contextual level, controlling of individual perception of supervisory participativeness and worker influence, persons in plants that differ in supervisory participativeness and worker influence (as measured through the aggregated responses of persons in the plant) will differ in alienation.

All of the earlier cited conditions, ownership status, position in hierarchy, perception of supervisors' participativeness, and influence by the workers will jointly help to explain feeling of alienation. Plant level (contextual) effects are defined both in terms of objective characteristics (whether or not the plant has hired workers) and in terms of aggregated data based on the perceptions by members in plant (for example, perceptions of workers' influence). Firebaugh (1979) presents the following formula, which we shall employ, to distinguish contextual and individual effects:

$$Y_{ij} = \alpha + \beta_1 X_{1ij} + \beta_2$$

$$Y_{ij} = \alpha + \beta_1 X_{1ij} + \beta_2 X_{2ij} + \ldots + \beta_n X_{nij} + \beta_{n+1} \bar{X}_{1j} + \beta_{n+2} \bar{X}_{2j} + \ldots + \beta_{2n} \bar{X}_{nj} + \epsilon_{ij}$$

$$(i = 1, 2 \ldots k;\ j = 1, 2 \ldots m)$$

where . . . X_{Iij} represents the score on the individual-level) variable X_I for the i^{th} person in the j^{th} group. Equation 2 states that the Y score for the i^{th} person in the j^{th} group is a linear and additive function of n individual-level variables, n contextual variables (X_1 to X_n), and a random disturbance term . . . we assume that the disturbance term has zero mean, constant variance, is uncorrelated with the independent variables, and that the values of ϵ are mutually uncorrelated. In addition, we assume . . . that measurement error is absent and that equation 2 refers to a population. Unlike covariance analysis—where the group effect is assessed by fitting a constant for each group—in contextual analysis the group effect is assessed by n variables (X_1 to X_n) which are group means (Alwin, 1976). X_{Ii}, then, represents the mean of X_I for the j^{th} group, and the coefficient of X_I measures the contextual effect of X_I on Y.[1]

Figure 1 illustrates via a path diagram the joint effects of the predictor variables on feeling of alienation. It is possible that a relationship between any pair of variables in this (or any) model might be explained by a variable *not* in the model. We cannot entirely eliminate all such possible interpretations. We shall, however, introduce into our analysis several controls—the age and education level of members and an index defined by the size and age of the plant—as a means of eliminating some potentially important alternative explanations.

Figure 1 implies that an individual's feeling of alienation can be affected not only by his or her own perception of workers' influence or of supervisors' participativeness, but also, contextually, by the influence of workers or the participativeness of supervisors that characterizes the plant as a whole (as measured through aggregated perceptions of members). The way decisions are made and the consequences of the decisions will be different in plants characterized by participative supervisors and influential workers as compared to other plants. Furthermore, these material implications of participative decision making will affect a member quite apart from how he or she personally perceives participation and influence in the plant (Tannenbaum and Smith, 1964). Hence, respondents who do not themselves differ in their perception of workers' influence or supervisors' participativeness will nonetheless be less alienated in plants characterized as a whole by high levels of influence or supervisory participativeness than in plants characterized by low levels of influence or supervisory participativeness.

There is substantial literature but very few empirical studies concerning the effects of ownership on feeling of alienation. One such study included 10 kibbutz factories and 10 factories each in Italy, Austria, the

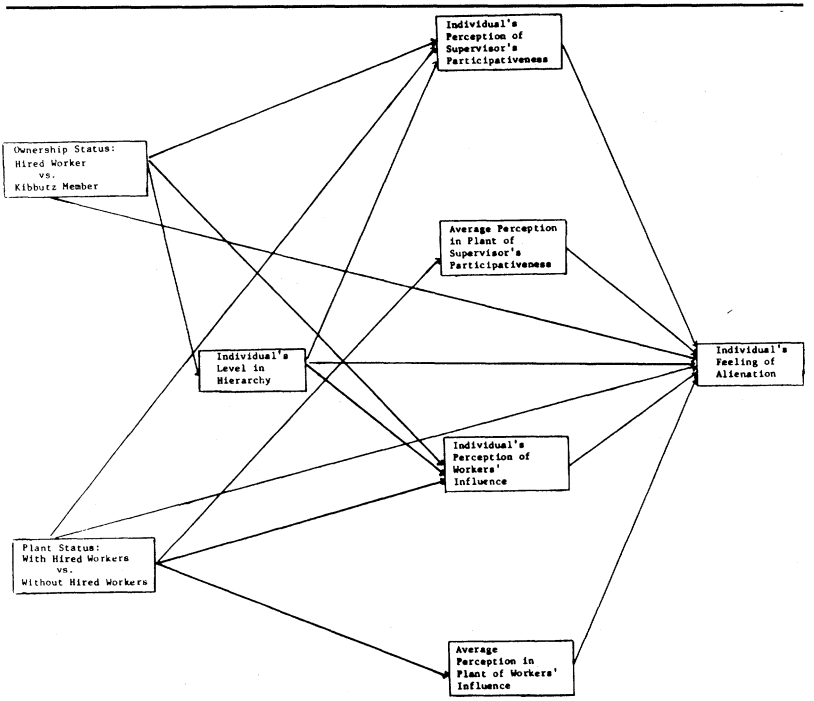

Figure 1: Path Diagram Relating Ownership Status to Feeling of Alienation

United States, and Yugoslavia (Tannenbaum et al., 1974). Workers in the kibbutz plants expressed the least feeling of alienation, whereas workers in the Italian and Austrian plants expressed the greatest feeling of alienation—consistent with the hypothesis that workers who own the means of production (as in kibbutz factories) will be less alienated than workers who do not own the means of production. Nonetheless, feeling of alienation in the kibbutz factory fits the usual hierarchical pattern; persons at the bottom of the plant hierarchy feel more alienated than do persons at the top.

Several studies of cooperatives and of employee-owned companies in the United States provide further evidence concerning the possible implications of ownership for feeling of alienation. Russell et al. (1977) describe members in several cooperatively owned refuse-collecting companies as having a sense of enthusiasm and pride in their work by way of contrast with the poor motivation of workers in conventional

companies. Hochner's (1978) statistical analyses of data based on interviews in these companies show employee owners expressing less alienation (powerlessness) than do nonowners. Furthermore, the differences between owners and nonowners are explained statistically, at least partly in terms of the greater participativeness of the employee-owned companies. Some of the implications of these analyses are similar to those of Kohn (1976), who studied a national sample of employees and owners in ordinary, non-employee-owned firms. Kohn concluded, on the basis of controlled analyses, that it is not ownership per se that reduces feeling of alienation; rather it is the owner's opportunity for self-direction that explains his or her relatively low level of alienation. On the other hand, in a study of one company, Long (1978c) finds a significant effect of ownership independent of participation. Employees who are owners are more involved in and committed to their company than are nonowners. Long (1978a, 1979b) also found that owners within two employee-owned companies have higher scores than do nonowners on measures of involvement and of integration into the company. Similarly, Hammer et al. (1982) found that owners of stock in two companies that are partially owned by their employees have a greater feeling of commitment to the company and are less alienated from their work than are nonowners.

Archibald et al. (1978) did a secondary analysis of two sets of survey data—one representing the Canadian labor force in 1974 (the Work Ethic Study) and the other representing the U.S. labor force in 1972-1973 (the Quality of Employment Study). These researchers conclude that "ownership remains an important explanation [of alienation] even when one controls the effects of position in the supervisory hierarchy and the complexity of work" (p. 170). Walczak (1982: 30) based an analysis on the 1977 Quality of Employment study and concluded that

> those who own the means of production control the labor power of others and control their own labor power [and thus] experience less subjective alienation than workers who do not own the means of production, do not control the labor power of others, and who do not control their own labor power.

Thus the limited research concerning ownership and alienation provides some evidence that is consistent with aspects of the path model of Figure 1. Lack of ownership contributes to feeling of alienation and part, if not all, of the effect of (non)ownership on alienation may occur

through the low hierarchical position of nonowners and the lack of opportunity to exercise influence.

We shall focus on two subjective aspects of alienation, namely, feelings of powerlessness and self-estrangement. These are among the components of alienation suggested by Seeman (1959) that seem the most central of Seeman's aspects of alienation in studies in the United States (Kohn, 1976; Roberts, 1982) as well as in Japan and Poland (research cited by Roberts, 1982, and Slomcyznski et al., 1981). The design of our analysis is comparable in a number of respects to that of some of the earlier cited studies. These studies, however, focused primarily on individuals, comparing owners and nonowners. Few of them have also used the company as a unit of analysis and therefore they have not dealt with "contextual" versus "individual effects."

METHOD

A total of 10 kibbutz plants were selected in matched pairs—one plant in a pair with hired workers and the other plant in the pair without hired workers—in order to make the plants with hired workers as comparable as possible to the plants without hired workers. Hired workers constitute about 30% of the work force in the 5 plants that have such workers. Several criteria were used to select and match the plants. First, the selected plants were restricted to kibbutzim in the Labor Alliance, a coalition of the Labor Party and Mapam, which constitutes more than 90% of the kibbutzim in Israel. Thus kibbutzim belonging to the relatively small religious federation were excluded. Plants within each pair were matched on federation since the federations differ somewhat from one another in their political orientation and interpretation of kibbutz ideology. Of the 5 pairs, 3 are in the largest federation, Artzi, with one pair each being in the remaining federations, Ichud Meuchad. Second, plants were selected and matched within three industries: plastics, metal works and shoe manufacturing. (Approximately 50% of all kibbutz plants are in the metal works and plastics industries. Only a small percentage are in shoe manufacturing, but the technology here is not very different than that in many kibbutz plants.) A selected plant within each industry employs essentially the same technology as its match within that industry. Finally, size and age of plant were included as matching criteria but we were not able to match

precisely on these characteristics. Size has a reasonably strong correlation with age of plant (r = .77). Therefore, we employ as a control in the analysis an index that is an average of the standardized scores of these characteristics for each plant. Table 1 presents information concerning the characteristics used for purposes of matching the plants.

Plants within each pair are in identical industries and kibbutz movements although the plants with hired workers may be a bit larger and older on the average than are the plants without hired workers.

Of the persons in the plants, 70% responded to the questionnaires, and Table 2 provides demographic information about these persons separately for hired workers and kibbutz members and for the plants with and without hired workers. Like kibbutz members, hired workers are Jewish citizens of Israel, but as Table 2 shows, the hired workers are on the average younger although more senior on the job, and they are less formally educated than kibbutz workers. Hired workers are also more likely than kibbutz workers to be male.

The measures to be employed in testing our hypotheses come from two sources: records from each plant and questionnaires administered to all members in each plant. The former include the measure of membership status (whether the respondent is a kibbutz member or a hired worker) and of the respondent's position in the plant hierarchy (whether a manager, supervisor, or worker). The following questionnaire items were employed to measure the remaining variables

Participativeness of respondent's supervisor:

(a) Is your immediate supervisor inclined to take into account your opinions and suggestions? (Scale: 1, not at all; 5, very much.)

(b) Does your immediate supervisor ask your opinion when a problem comes up that involves your work? (Scale: 1, always asks my opinion; 5, never asks my opinion.)

An index for each respondent based on an average of the responses to these questions (after appropriate scale reversal) has an alpha coefficient of .76.

Influence by workers in the plant:

On the whole, how much influence do the workers as a group have in this plant concerning the following?

- the allocation of tasks,
- the making and evaluation of budgets,

TABLE 1
Characteristics of the Plants

		Pair				
		1	2	3	4	5
Kibbutz Federation		Artzi	Artzi	Artzi	Ichud	Meuchad
Industry		Plas-tics	Plas-tics	Metal	Plas-tics	Shoes
Size of Plant (number of workers)	Without Hired Workers	94	56	76	52	88
	With Hired Workers	146	55	148	66	53
Age of Plant (years)	Without Hired Workers	27	16	29	11	12
	With Hired Workers	38	10	35	35	12

TABLE 2
Demographic Characteristics

	Plants With Hired Workers		Plants Without Hired Workers
	Kibbutz Members (N-204)	Hired Workers (N=67)	Kibbutz Members (N=139)
Age (years)	47.4	38.6	43.1
Sex (% male)	77	95	76
Education (years)	11.3	10.0	12.9
Job Seniority (years)	4.4	6.1	3.1

- light, noise, air in the workplace, and
- promotion and transfer.

(Scale: 1, no influence; 5, very much influence.)

An index for each respondent based on an average of the responses concerning each of these above issues has an alpha coefficient of .76.

Alienation:

Respondents were asked to express the extent to which they agree with the following statements.

(a) Men like me cannot influence the course of events; only men in high positions can have such influence.

(b) I have never had the influence over others that I would have liked.
(c) I can never do what I really like because circumstances require that I do otherwise.
(d) Life is so routinized that I do not have a chance to use my true abilities.

These items, based on Seeman's (1959) analysis of alienation and adapted from Dean (1961), are designed to measure the feeling of powerlessness (items a and b) and self-estrangement (c and d). They intercorrelate well, and, formed into an index of alienation, they have an alpha coefficient of .80. Earlier research employing regression analysis in a number of countries (including research in kibbutzim) showed these items (as part of a larger index) to relate predictably to hierarchical position and to education (Tannenbaum et al., 1974). Persons at upper levels and person with relatively high levels of formal education feel less alienated than do persons at lower levels and persons with less education.

RESULTS

Table 3 presents the average score of alienation separately for kibbutz members and hired workers in the two sets of plants and suggests several facts consistent with aspects of the hypotheses. First, hired workers feel more alienated than do kibbutz workers whether the kibbutz workers are in the same plants as the hired workers ($t = 6.49$, $p < .01$) or in plants consisting only of kibbutz members ($t = 7.90$, $p < .01$) (hypothesis 1). Second, in plants with hired workers, rank-and-file workers feel more alienated than do their managers and supervisors whether the workers are kibbutz members ($t = 3.80$, $p < .01$) or hired workers ($t = 6.30$, $p < .01$). The difference between managers and rank-and-file workers in plants without hired workers is in the expected direction, but the difference does not prove significant statistically, perhaps because of the small number of managerial and supervisory cases (hypothesis 2). Finally, although the difference is not large, kibbutz workers in plants that include hired workers feel more alienated than kibbutz members in plants without hired workers ($t = 3.56$, $p < .01$).

Table 4 presents product-moment correlations between all of the variables in the model of Figure 1 along with controls, age and

TABLE 3
Alienation, Average Scores

	Plants With Hired Workers		Plants Without Hired Workers
	Kibbutz Members	Hired Workers	Kibbutz Members
Managers & supervisors	1.68 (N=13)	------	1.75 (N=18)
Rank & file workers	2.78 (N=191)	3.65 (N=67)	2.44 (N=121)

education level of members, and an index of the size and age of the factory. It is based on scores assigned to individuals. Each individual who enters into this matrix has scores at two levels: (1) his or her own individual score for each of the individual-level variables and (2) a score that is common to all members in a plant for each of the plant-level variables. These plant-level scores are simply averages of the relevant individual scores within the individual's plant except for the variable Plant Status and Size/Age of Plant. In the case of Plant Status each person is assigned a score of 1 if he or she is in a plant that does not include hired workers, and a score of 2 if he or she is in a plant that does include hired workers.

Table 4 indicates a number of relationships that are consistent, in so far as they go, with the path model in Figure 1. For example, the presence of hired workers in a plant correlates –.66 with respondents' plant-aggregated perceptions of the participativeness of supervisors and –.75 with respondents' aggregated perception of workers' influence in the plant, suggesting a higher level of participativeness in plants that do not have hired workers than in plants that do include hired workers (hypothesis 4). Contrary to hypothesis 3, hired workers do not differ significantly from kibbutz members in their perception of their supervisor's participativeness and of workers' influence.

The determinants of alienation proposed in Figure 1 show the predicted direction of results in Table 4 although the correlations are modest in size. It is interesting that the largest of the correlations (.35) is with ownership status and the smallest (.01) is with age, which we included in the model as a control. A second control in the model, education, shows the predicted significant negative relationship (–.22) with feelings of alienation, consistent with an earlier study in the kibbutz and elsewhere (Tannenbaum et al., 1974).

TABLE 4

Product-Moment Correlations Between the Variables in the Model

		1	2	3	4	5	6	7	8	9	10
1.	Feeling of Alienation[1]	1.0									
2.	Ownership Status[1] (member=1; hired=2)	.35	1.0								
3.	Plant Status[2] (without hired=1; with=2)	.19	.27	1.0							
4.	Level in Hierarchy (bottom=1; top=3)	-.23	-.13	-.04	1.0						
5.	Perceived participativeness of supervisor[1]	-.30	-.10	-.15	.18	1.0					
6.	Perceived participativeness of supervisor (aggregated)[2]	-.22	-.17	-.66	-.04	.19	1.0				
7.	Perceived influence of workers as a group[1]	-.17	-.04	-.19	.04	.20	.17	1.0			
8.	Perceived influence of workers as a group (aggregated)[2]	-.17	-.13	-.75	-.04	.14	.70	.21	1.0		
9.	Respondent's age[1]	-.01	-.17	.07	.00	.00	-.17	-.01	-.13	.01	
10.	Respondent's education[1]	-.22	-.22	-.17	.06	.10	.19	.02	.12	-.15	
11.	Size/age of Plant[2]	-.10	.06	.52	-.05	-.03	-.45	-.14	-.45	.12	-.06

1. Individual-level score.
2. Plant-level score assigned to individual (see text).

Tables 5, 6, and 7 present the betas in the regression equations relevant to the model in Figure 1. In presenting and interpreting these equations we follow in large measure the general format and we accept the assumptions underlying the tests of significance proposed by Alwin and Hauser (1975) for the decomposition of effects in path analysis. We apply the two-tailed test in calculating equations that define the three stages, respectively, of the path model of Figure 1. The controls, age, education, and size/age of plant are included in all equations. Equation 1 includes the variables of the first stage that concern ownership at both the individual and plant level as the predictors of alienation. Equation 2 adds the variable of stage 2, hierarchical position of the respondent. This is an individual-level variable exclusively. Equation 3 adds the variables of stage 3, supervisors' participativeness and influence of the workers' assembly as perceived by respondents. These variables are included as predictors both at the individual level and, aggregated, at the plant level.

Each of the equations provides a basis for predicting the feeling of alienation, with multiple correlations increasing from .39 for equation 1 to .50 for equation 3. We have calculated these regressions by assigning scores to each member for the individual-level and plant-level variables as in the calculation of the correlations previously described. The respondent's status as an owner is the single best predictor of feeling of alienation in each case; the respondent's position in the hierarchy and the respondent's perception of his or her supervisor's participativeness also show a significant relationship with feeling of alienation. The negative relationship of education with alienation is consistent with earlier research in the kibbutz and elsewhere (Tannenbaum et al., 1974). These imply individual effects. The small but statistically significant beta associated with the aggregated perception of the supervisor's participativeness ($-.12$, $p < .05$), however, suggests a contextual effect. Persons in plants that are characterized (by average member) as having participative supervisors are likely to feel less alienated than persons in plants that are characterized as having less participative supervisors. This contextual effect, however, does not help to explain the effect of ownership on alienation.

Table 6 presents regressions that are designed to predict the variables in the stage of the path model immediately preceding feeling of alienation. Equations 1, 3, 4, and 6, designed to predict each dependent variable, include only the predictors at stage 1 in the path model. The remaining equations include the predictors at stage 2.

TABLE 5
Regression Betas in Equations Predicting Feeling of Alienation

	Equation Number		
	(1)	(2)	(3)
Predictors Multiple r	.39	.43	.50
a) Ownership Status[1] (member=1; hired=2)	.31**	.31**	.27**
b) Plant Status[2] (without hired=1; with=2)	.06	.10	.05
c) Individual's level in hierarchy[1] (rank & file=1; supervisors=2; managers=3)		-.18**	-.15**
d) Perceived participativeness of supervisor[1]			-.20**
e) Perceived participativeness of supervisor (aggregated)[2]			-.12*
f) Perceived influence of workers[1]			-.09
g) Perceived influence of workers (aggregated)[2]			-.02
h) Respondent's age[1]	.04	.04	.01
i) Respondent's education[1]	-.14**	-.14**	-.12**
j) Size/age of plant[2]	.04	.04	.01

1. Individual-level score.
2. Plant-level score assigned to individual (see text).
*p < .05, two-tailed; **p < .01, two-tailed.

These equations, unlike those of Table 5, are indicative of more substantial contextual effects. They suggest that persons in plants without hired workers are more likely than persons in plants with hired workers to see their supervisor as being participative and the workers as being influential even though at the individual level members are no more likely than hired workers to see their supervisor as participative or the workers as influential. We proposed earlier that plants with hired workers are likely to be less participative than plants that do not have hired workers. These data, based on the perceptions of organization members, support that proposition (hypothesis 5).

Table 7 presents the regression that is designed to predict the variable in stage 2 of the path model. Hierarchical position bears a small but significant relationship to membership status; kibbutz members are a bit more likely to play a supervisory or managerial role than are hired workers. The beta is small because of the small number of managerial

TABLE 6
Betas in Equations Predicting Aspects of Participation

		Dependent Variable and Equation Number					
		Perceived participativeness of supervisor (individual level)		Perceived participativeness of supervisor (aggregated by plant)	Perceived influence of workers (individual level)		Perceived influence of workers (aggregated by plant)
		(1)	(2)	(3)	(4)	(5)	(6)
	Multiple r	.18	.26	.68	.22	.22	.76
a)	Ownership status (kibbutz member=1; hired worker=2)[1]	-.05	-.01		.01	.01	
b)	Plant status (without hired workers=1; with hired workers=2)[2]	-.15**	-.18**	-.58**	-.16**	-.17**	-.71**
c)	Individual's level in hierarchy (rank & file workers=1; supervisors=2 managers=3)[1]		.18			.05	
d)	Respondent's age	.01	.01	-.10**	-.09**	-.09**	-.07**
e)	Respondent's education	.07*	.06	.06*	-.03	-.03	-.02
f)	Size/age of Plant	.06	.08*	-.13**	-.05	-.04	-.07**

1. Individual-level score.
2. Plant-level score assigned to individual (see text).
*$p < .05$, two tailed; **$p < .01$, level, two-tailed.

TABLE 7
Betas in Equation Predicting Hierarchical Position

		Dependent Variable: Individual's Level in Hierarchy
	Multiple 4	.14
a)	Ownership Status (kibbutz member=1; hired workers=2)[1]	-.13**
b)	Respondent's age	-.03
c)	Respondent's education	-.01
d)	Size/age of plant	-.03

1. Individual-level variable.
**p < .01, two-tailed.

and supervisory persons. Thus although all hired workers are at the rank-and-file level, so are most kibbutz members.

SUMMARY AND CONCLUSIONS

Analyses of cross-sectional data do not provide a definitive answer to the question of causal direction. Some of the relationships, therefore, might be interpreted to imply a direction of causality opposite to that predicted by our hypothesis. Such contrary direction does not seem very reasonable, however, with respect to at least a number of the relationships that we have found. It seems more reasonable, for example, that individuals are in supervisory positions in these plants because they are kibbutz members rather than that they are kibbutz members because they are in supervisory positions. Similarly, it is more reasonable to think that persons in plants without hired workers perceive that their supervisors are participative and that workers are influential because supervisors in those plants are relatively participative and workers are relatively influential rather than to think that perceptions of participation and influence determine that the plant will not have hired workers.

And it seems more reasonable that kibbutz members feel less alienated than hired workers because they are members rather than that they are members because they are less alienated. The greater reasonableness of one direction of causality versus the other is less compelling with respect to the relationship between feeling of alienation and supervisory participativeness. Feeling of alienation might very well affect supervisory participativeness and/or perception of supervisory participativeness just as supervisory participativeness and/or perception of supervisory participativeness might affect feeling of alienation, as we have proposed. We favor the hypothesized interpretation of direction because of its theoretical consistency with other aspects of the model for which the data seem to provide reasonable support.

Ownership status thus appears to have an effect at the individual level on feeling of alienation; owners feel less alienated than do hired workers. The "total effect" shown in Table 5 (using the interpretive scheme of Alwin and Hauser, 1975) is indicated by a beta of .31 of which .27 is a direct effect and only .04, or 13%, is transmitted via other variables in the model. Figure 2 helps illustrate the effect of ownership status through these other variables. It shows the statistically significant direct effect for each pair of variables in the model. Part of the indirect effect of ownership on alienation is explained by a direct effect of ownership status on the respondent's hierarchical position (beta = –.13). Position, in turn, has a direct effect on alienation (beta = –.15) and an indirect effect through supervisor's participativeness (or respondent's perception of supervisor's participativeness). This indirect effect is defined by a beta of .18 between hierarchical position and perception of supervisor's participativeness and a beta of –.20 between perception of supervisor's participativeness and alienation.

Thus the effect of ownership on the respondent's feeling of alienation can be explained in small part by the implications of the respondent's ownership status for the respondent's hierarchical position and for the responsiveness of the supervisor to the respondent's opinions and suggestions (at least as perceived by the respondent). These effects are at the individual rather than the contextual level. One variable in the path model at the individual level, however, does not help to explain the effect of the respondent's ownership status on alienation—the extent to which the respondent perceives the workers to be influential in the plant.

Marxists would argue that alienation can be explained in terms of objective structures, not just in terms of individual level characteristics—that "relations of production" are necessarily different in a plant with

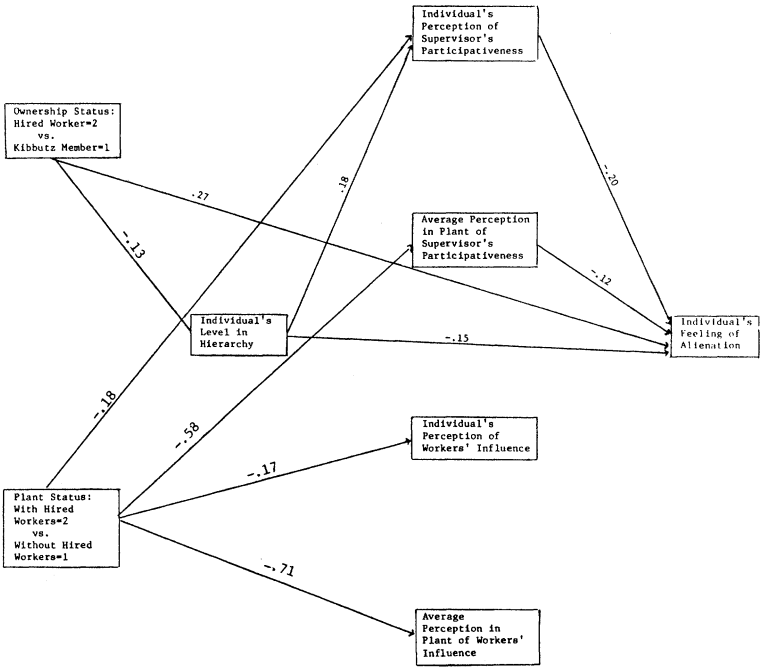

Figure 2: Direct Effects Among the Variables in the Path Model

hired workers than they are in a plant without hired workers, and that such difference is an important basis for explaining differences in alienation. The contextual effect shown in Figure 2, of plant ownership on supervisory participativeness and workers' influence, and of supervisory participation on alienation, are consistent with a Marxian analysis, although they do not go as far on behalf of the Marxian position as the model of Figure 1 hypothesized. Marx argued that relations between supervisors and workers would be less conflictive and more participative where the workers own the means of production and that in such plants the workers would be less alienated. Supervisors do appear to be more participative in plants without hired workers, and workers do appear to be less alienated in plants where supervisors are participative even when their own perception of their supervisor's participativeness is controlled. But they are not less alienated in the plants without hired workers under the controlled conditions of our analysis. Thus, while there is a predicted contextual effect of ownership

on participation and of participation on alienation, the relationship between ownership and alienation that we have been able to detect is an individual effect exclusively.

We have suggested that the workers' status as owners or nonowners helps to explain, directly of indirectly, their feeling of alienation. Membership in the kibbutz, however, implies personal characteristics and conditions of life that are unrelated conceptually to ownership and that might nonetheless help to explain the difference in alienation between members and nonmembers. Level of education is one such characteristic that we included as a control in our model. But we could not control all of the variables that might be associated with membership and that might conceivably affect alienation. Communal life in the kibbutz, for example, may imply friendships and social support that affect feeling of alienation. Furthermore, alienation as we have measured it implies a sense of powerlessness and self-estrangement that pertain to life in general, not only to life in the context of the workplace. Nonetheless, our analyses suggest that being a kibbutz worker rather than a hired worker has implications for the worker's experience in the factory—whether or not the worker may be a supervisor or manager, or whether the worker is treated (or perceives herself or himself to be treated) participatively by his or her supervisor—which in turn have implications for the feeling of alienation.

To what extent then is the relationship between membership and alienation to be understood as an effect of ownership rather than of other aspects of kibbutz life independent of ownership? Ownership is essentially a set of rights to control the means of production. This translates in the kibbutz into such rights of members as to elect and be elected a supervisor or managers and to have some upward influence through their supervisor. These are the implicit prerogatives of ownership that are measured in stages 2 and 3 of our path model. It is at least in some small measure because of these prerogatives of ownership—the prerogatives of which are not fully shared by workers who are hired—that members are less alienated than are nonmembers.

NOTE

1. Firebaugh (1979: 388-389) further compares the group effect of this linear regression model, which he refers to as "contextual analysis," with that of an alternative, covariance model.

In contextual analysis, as in covariance analysis, the group effect is a partial effect... However, contextual analysis more explicitly identifies the group characteristics involved in the group effect. "The point of contextual analysis . . . [is] to find out what *general characteristics* of contexts are related to the dependent variable" [Barton, 1970: 515].

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