

INTRAUROBAN LOCATIONAL PROCESS AND THE SPATIAL BEHAVIOR OF MANUFACTURING ESTABLISHMENTS

Ahmet C. ACAR

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1. The word "establishment" is used here to denote a single operating unit. "Plant" and "facility" are words synonymously used in the literature. An establishment may be an independent decision making unit or a branch of a firm.

In an industrializing country as Turkey, manufacturing exercises an increasing influence on the growth and form of especially large urban centers. One aspect of such influence is the creation of new job opportunities by this sector. Not only the sheer number, but also the type and intraurban location of jobs provided in this "basic sector" determine, to a large extent, the kind of urban growth to be observed. Hence, the impact of industries locating in an urban area is not limited to the proportion of total employment they represent. Perhaps more important from the urban planning point of view are the pressures they exert to create an impetus for new trends or to consolidate the existing trends in the location pattern. It is a widely held view that the location of manufacturing industries influences the locations of other urban activities, such as retail, wholesale, warehousing and residential. The locational interdependencies of manufacturing establishments¹ with other manufacturing and non-manufacturing uses are responsible for the observed joint-distributions of activities on the urban scene.

In this sense, any conscious effort to plan or control the growth of an urban area has to acknowledge the far-reaching impact of industry on urban development. In the absence of a satisfactory understanding of the factors affecting intraurban manufacturing decisions and the process of change in the existing industrial location patterns, the attempts to project and plan future developments in urban land use pattern will have limited success. The need for planning future locations of manufacturing industry stems from mainly two considerations. First, urban planning aims to facilitate the operation of manufacturing establishments by providing the essential advantages (external economies) in the land areas set aside for industrial use. Land areas earmarked for industrial development are intended to both help existing industries flourish and be instrumental in attracting new industries into the area. Second, and inherent objective of urban planning efforts is to minimize the adverse effects of externalities, such as congestion of infrastructure, high land prices and speculation and environmental pollution, caused by industrial operations. In this context, the impact of industrial operations on the natural environment becomes a major reason for studying the locational behavior of manufacturing establishments in urban areas.

THE PURPOSE OF THIS PAPER

2. See for example, S.H. PUTMAN, *Intraurban Employment Forecasting Models: A Review and a Suggested Model Construct*, *Journal of American Institute of Planners*, v. 38, 1972, pp. 216-230.

3. A. ACAR, *External Economies, Concentration and the Changing Location of Manufacturing Industry: A Case Study of the Minneapolis-St. Paul Metropolitan Area*, Unpublished Ph.D. dissertation, University of Pennsylvania 1976.

4. D.B. LEE, JR., *Requiem For Large-Scale Models*, *Journal of American Institute of Planners*, v. 39, 1973, pp. 163-178; B. HARRIS, "Large-Scale Models of Urban Location and Transportation", paper presented at the Regional Management Conference, San Diego, February 1973; B. HARRIS, "Change and Equilibrium in the Urban System", paper presented at the 49th Annual Meeting, Highway Research Board, Washington, D.C., January, 1970.

In this paper, the objective is not to provide a standard review of the literature on the theory and empirical studies of intraurban manufacturing location; such reviews are published periodically in several sources.² Instead, this paper reports an approach that has proved to be useful in studying the location of manufacturing industries in a metropolitan area.³ As the title suggests, the approach provides an explanation of a given location pattern, as well as the changes in it, in terms of the spatial behavior of manufacturing establishments. Rather than presenting a suggested model construct, this paper emphasizes on the characteristics of the locational process, the understanding of which may serve as a foundation for modeling efforts. It should, thus, be also noted that this paper is not intended to include a discussion of the problems of large-scale modeling. These problems are rather numerous and a discussion of them is apt to be involved and lengthy. Discussions of the large-scale modeling can be found in Lee, Jr., Harris and others.⁴

The applicability of this approach in dealing with the problem of manufacturing location in the Turkish urban areas is discussed in the concluding section of this paper.

A basic premise of this paper is that "employment change", rather than "employment" is the appropriate unit of analysis in studying the locational decisions of manufacturing industry, since the use of the latter entails some serious sources of bias in explaining the existing and predicting the future location patterns. The increasing dynamism in the location pattern of manufacturing activities in most industrialized and industrializing countries during the last several decades justifies this approach.

TRENDS OBSERVED IN INTRAURBAN LOCATION OF MANUFACTURING INDUSTRY

The location of manufacturing activity has attracted little attention compared to either the problem of locating industries among cities and within regions or the problem of locating residential and retail activities within urban areas. The static character of the clusters of manufacturing establishments within the central areas up to the late 1930s did not pose a challenging problem in the industrialized Western countries. The Weberian least-cost location models could be applied to the intraurban case due to considerable savings in transport costs for establishments located close to the center and major rail terminals and ports. Given the then existing transport technology, the transport costs rose sharply with distance from the center. There is indeed no doubt that the main force behind the central concentrations of manufacturing activity in cities of the industrialized countries during the nineteenth and early twentieth centuries was the desire to minimize the costs of moving raw materials, semi-finished goods and final products.

The situation, however, has changed drastically over the past four decades: the types of manufacturing have diversified; production technology has advanced rapidly; population has spread from the center city to the outlying areas. These factors, coupled with the impact of the increasing use of motor vehicles

have resulted in a location pattern that has been more dynamic. With the wide-spread use of motor vehicles and improved road systems, the friction costs were reduced and manufacturing establishments were able to operate outside of central areas.

Within the framework of changing urban structure, and changing sensitivities of manufacturing operations to different locational factors, the location decisions of new establishments have not replicated the existing location pattern. The observed deviations from the existing pattern have prompted Foster to claim :

The conclusion to be drawn...is not simply that cities are on the march centrifugally but towards a pattern in which the idea of a city centre loses meaning...Modern city road systems annihilate the importance of distance within urban areas so that it really hardly matters where anything stands in relation to anything else. Hence the random pattern of new development submerges the old centripetal pattern which is becoming an irrelevant accident of history.⁵

5. C.D.FOSTER, "Theories of Workplace Location", Discussion Paper, Oxford University Urban Group, 1968, as quoted in G.C.CAMERON, Intraurban Location and the New Plant, *Papers of the Regional Science Association*, v. 31, 1973, p. 125.

Even though the trend of manufacturing to decentralize is easily observed, it is not correct to attach a totally random character to the emerging manufacturing location pattern. In spite of the substantial decrease in the importance of transport costs, not all factors governing the location of manufacturing are uniformly distributed over the urban area and thus it may be reasonably assumed that regularities persist in new development. It may also be safely stated that in the present level of diversification of manufacturing, not all industries are equally foot-loose in their intraurban location. Furthermore, due to the generally slow response of existing establishments to changes in the urban environment, the existing pattern is also slow to change. Existing establishments, which are tied to their present locations as a result of their "sunk costs" and a host of other factors, react to changes in their cost and revenue factors with varying time lags depending, among other variables, on their size and employment type. Hence, within the network of the locational decisions of a large number of independent units with interacting outcomes, the changes in the intraurban location pattern display a complex structure and do not necessarily follow a unified trend.

It is in order, at this point, to take a broad outlook to evaluate the adequacy of the presently available body of knowledge to explain and model the process of intraurban manufacturing location.

ON THE THEORY OF INTRAURBAN MANUFACTURING LOCATION

The lack of an adequate theoretical base for studies of manufacturing location in urban areas still persists. Location theories which heavily draw on the theory of the firm do not sufficiently illuminate the question of the intraurban location pattern. The weakness in the Weberian least-cost theories produced the "market area" school of location theorists. However, the overemphasis on transport costs still remains: the Weberian problem is inverted by assuming invariant production costs between firms and the emphasis is on the effects of transport costs in delivering goods to the market. The market area approach is concerned with maximizing the market area of the firm, given the locations of its competitors and customers. Accordingly, the

location that maximizes the market area is optimal, since it also maximizes the profits. The classical market area approach basically assumes mill prices and transport costs proportional to distance. The more recent works have studied the effects of different pricing policies and the competitive versus monopolistic nature of the industry on the location pattern. Market area analysis, while very much concerned with micro-level analysis, is not useful for studies of manufacturing location, because it largely ignores the questions of cost and supply. Several attempts have been made to combine the two approaches by posing an interregional equilibrium theory of location wherein decision makers consider both costs and demands in selecting a profit maximizing location. Similarly, in addition to transport costs, a host of locational variables - population, land use and other - have been utilized in location analyses to explain and predict the distributions of manufacturing activity in the urban scene.

Recent studies based on certain classical or neo-classical formulations of these theories have provided some understanding of the influences of location on the operation of the manufacturing firm, and a considerable explanation of the tendency of manufacturing industry to decentralize within the urban area. The deficiency of these studies in dealing with the changes in the location of manufacturing stems from several characteristics.

First, a large majority of these studies have employed cross section data in studying intraurban manufacturing location. The deficiency of cross section data is caused by the fact that the location pattern is the cumulative result of decisions made over a long time period. Analyses based on cross section data are likely to be biased in favor of the existing location pattern. By suppressing the marginal and counter-balancing trends, cross section studies do not provide real insight into the process of change in location pattern. This is true mainly because the initial-year distributions of manufacturing employment provide a powerful device to reasonably successfully predict the future distributions owing to the relatively slow response of manufacturing industry to changes in the urban scene. Here, we face a rare example of the cases where an acceptable prediction precedes a satisfactory explanation of the phenomenon. Within reasonable time intervals, correlations of initial-year distributions of employment with projected-year distributions may be expected to yield high coefficients. Similarly, regressions of projected-year employment shares by subareas, on variables derived from the initial-year shares (such as employment density, accessibility to employment) may provide satisfactory results. However, considering the informational value of such efforts, what these models actually assume is that a given spatial distribution of manufacturing employment will be observed because a similar distribution is observed initially. More often than not, researchers or users of these models are content with the degree of significance afforded by the use of a form of base-year employment as an independent variable and do not find it necessary to deal with the unexplained variation, which is corollary to employment change. Although a successful prediction of employment location presumably captures employment change, it has been found that, in the first instance, most of the factors relevant in explaining the location of employment are insignificant in the case of employment change.⁶ When used in the same regression model, variables not highly correlated with the distribution of employment tend to fall out of the equation, even though some of them are significant in relation to employment change. Thus,

6. A. ACAR, "External Economies, Concentration and the Changing Location of Manufacturing Industry: A Case Study of the Minneapolis-St. Paul Metropolitan Area", Unpublished Ph.D. Dissertation, University of Pennsylvania, 1976.

in attempts to predict employment location, employment change is downplayed either consciously or unconsciously. Consequently, in order to understand the emerging pattern and the factors at work to create change, in studying manufacturing location attention should be shifted from the location of employment to the location of employment change. The bias in cross section data may be rectified by employing cross section data over time when time-series data are unavailable.

Second, the stringent assumptions in these studies on the omniscience and rationality of the decision maker are not totally realistic. It has already been suggested that firms do not necessarily locate as to maximize their profits. The firm's final location may not coincide with the "minimum cost" or "maximum profit" locations for that firm. This observation suggests that there exist factors other than the usual cost and revenue considerations that are important in decision making. One group of factors that may be responsible for diversions from the optimal locations are those referred to as "personal factors". This is not to say, however, that personal factors are purely non-economic. There are several areas of overlap between personal factors and costs and revenues. The attempts of Carrier and Schriever to distinguish between personal factors without economic advantages and personal factors with economic advantages proved to be fruitless.⁷ They found out that not only these types of factors contaminated each other, but also, at times, it was hard to place a factor in this group because of its obvious cost and revenue implications.

Greenhut postulates that in cases of decision making under uncertainty, few instances of economic "irrationality," as the term is used by economists, will be found when neither certainty nor objective probabilities fully apply.⁸ Irrationality defined in these terms is caused by limited information, as well as a compromising or satisficing attitude on the part of the decision maker. Moreover, a location decision may not be rational, using the same terminology, due to the subjective aspects in the locational decisions of an entrepreneur. As expected, there is a strong relationship between the size of the firm and the extent to which personal factors play a role in decision making. For small firms, personal considerations of the owner-manager may be very much influential on the final location. He may not wish to move his residence or, more important, he may not wish to give up the local linkages he has developed. The same considerations are likely to be controlling for medium-sized firms as long as they are individually owned.⁹ If the stocks of the firm become publicly held or a firm is bought by another corporation, the location decision will depend less on personal considerations and more on a systematic investigation of alternative locations. In this sense, the thoroughness of the analysis of locational advantages and thus, the economic rationality of the location decisions are likely to increase with the size of the firm.

Third, and most important, these studies do not explicitly deal with continuous versus discrete forms of employment change. Four distinct types of decisions are seen to determine the changes in the location of manufacturing industry in urban areas. In other words, the changes in the spatial distribution of manufacturing employment can be studied under four components. These components of change (types of decisions) are: opening of a new establishment in the area (birth); closing-down of an existing establishment (death); an increase or a decrease in the

7. R.E.CARRIER and W.R.SCHRIVER, *Location Theory: An Empirical Model and Selected Findings, Land Economics*, v.44, 1968, pp. 451-55.

8. M.L.GREENHUT, *Microeconomics and the Space Economy*, Chicago: Scott, Foreman and Co., 1963.

9. B.STEVENS et al., *An Investigation of Location Factors Influencing the Economy of the Philadelphia Region*, Philadelphia: Regional Science Research Institute, 1969, p. 30.

employment level of an establishment (locationally static change); and relocation in a new site within the urban area (migration). Deaths, births and migrations of establishments constitute the discrete forms of employment change, since they result in leaps or discrete changes in the spatial distribution of employment. Expansions and declines in the employment levels of the locationally static establishments represent the continuous forms of employment change. It is observed that in most studies of intraurban manufacturing location an overemphasis is placed on the discrete forms of employment change at the expense of the continuous ones. These studies fail to provide a satisfactory explanation of the economics of the firm and its growth subsequent to location, since location theories in the first place do not deal with the question of the growth of the firm. Theoretically, the emphasis is on the firm making *de novo* location decision. The implicit assumption is that a (more) desirable subarea which enjoys new or relocating firms also provides better growth potentials for the existing firms. In other words, a strong correlation is assumed between the distribution of locationally static and discrete forms of employment increase in an urban area. Similarly, in a subarea which suffers deaths and out-migrations, the remaining firms are expected to demonstrate relatively smaller rates of growth, if any, and are prone to lose employment. Thus, it is assumed that locational factors which affect discrete changes also determine the rate of continuous employment change. In effect, analyses based on location theories attempt to explain employment change through a comparison of locational advantages of the subareas. In reality, however, this is true of the firms making *de novo* locations and these firms base their decisions on a comparison (though not always a comprehensive one) of potential sites. Relocating firms, as elaborated in later discussions, are tied to their original sites due to labor, market and other considerations. In the case of locationally static employment change, however, the absolute advantages of a subarea with regards to the cost factors of a firm seem more relevant. Thus, an across-the-board approach is questionable, especially in cases where a small proportion of the total employment change is caused by discrete events. Indeed, there seems to be little theoretical justification for equating continuous and discrete forms of employment change in locational analyses. In determining the validity of a non-differential treatment of continuous and discrete forms of changes, an examination of the observed distributions of these components of employment change emerges as an obvious task.

In effect, the use of cross section data, the stringent assumptions on the omniscience and rationality of the decision maker and the nondifferential treatment of the continuous and discrete forms of employment change appear as the major shortcomings in the existing theoretical and empirical studies. When we define a model as a working hypothesis, it is only natural that the theoretical inadequacies are reflected in the models of manufacturing location. The most common goals of large-scale urban models include impact analysis, forecasting small-area population, employment and land use, as well as educating the model builder, the planner and the lay decision maker. A planning model does not necessarily produce a plan, but mostly it is a tool that enables the planner to test different policy decisions in producing a plan. The degree to which each of these goals are satisfied differs from one existing model to another. However, it is apparent that the state of intraurban manufacturing modeling is the least advanced in comparison to those of modeling other types of activities in urban areas. It is not surprising that

10. R.J.STRUYK, "Empirical Foundations for Modeling Urban Industrial Location", Washington, D.C.: The Urban Institute, 1972, p.1.

11. Some notable examples are: *Jobs, People and Land*: BASS, Berkeley; CREUE, University of California, 1968 and *BATSC Locational Model System*, Berkeley: Bay Area Transportation Study Commission, 1968.

manufacturing location modeling is regarded to be in its infancy stage.¹⁰ In spite of the numerous modeling attempts¹¹ within the last decade, a host of major problems of theory, specification and management remain to be solved. In view of the almost universal dissatisfaction with the treatment of intraurban manufacturing location in the existing transportation and land use models, there is an obvious need for developing new approaches to the problem of manufacturing establishments.

In order to uncover the process of change in the location of manufacturing industry, the responses of the different components of employment change to changing economic factors should be taken as major foci of inquiry. The recognition of these components of change greatly facilitates the understanding of the locational decisions of manufacturing establishments and of the factors affecting these decisions. Furthermore, such an analysis indicates the areas of concern where the existing literature on location theory remains insufficient, as well as suggesting possible reasons of this insufficiency.

In the next section which attempts to illustrate the distinct natures of the continuous and discrete forms of employment change, the emphasis is placed on the left side of the equation, that is the dependent variable. Consequently, no special effort is spent to provide a systematic and exhaustive evaluation of the right side of the equation, that is the independent variables which govern the locational decisions. A justification for the superficial treatment of locational factors in this paper is that, not only their independent impacts *per se*, but also their combinatorial effects on locational decisions differ from one urban area to the next. Hence, a discussion of these factors based on the experiences of the industrialized Western countries will have limited significance for Turkey. It is superficial to give a classification of locational factors to illustrate the types of locational factors influencing the locational behavior of manufacturing industries. Such a classification, due to Carrier and Schriver, is : (1) personal factors, (2) procurement-cost factors, (3) processing-cost factors, (4) distribution-cost factors, (5) location-demand factors, and (6) certainty factors.¹²

12. R.E.CARRIER and W.R.SCHRIVER, *Location Theory: An Empirical Model and Selected Findings*, *Land Economics*, v. 44, 1968, p. 451.

PROCESS OF CHANGE IN INTRAURBAN LOCATION PATTERN

As stated earlier, the changes in time in the intraurban location pattern of manufacturing industries may be attributed to the four types of decisions taken by individual establishments. It is the purpose of this section to elaborate on these decisions (components of change) and illustrate how they differ in their structures and their sensitivities to locational factors.

CONTINUOUS EMPLOYMENT CHANGE

In the face of the inadequacy of the location theory approaches to deal with continuous change, alternative formulations of the influence of the present location on the growth of the firm should be studied. The theory of the firm and the organization theory have been combined in numerous studies in order to interpret the way in which firms operate. The modern firm is

13. J.C.BOMER, Planning within the Firm, *American Economic Review*, v. 60, 1970, pp. 186-194.

14. S.G.WINTER, Satisficing, Selection and the Innovating Remnant, *Quarterly Journal of Economics*, v. 85, 1971, pp. 237-261.

15. J.M.HENDERSON and R.E.QUANDT, *Microeconomic Theory*, New York: McGraw-Hill, 1971.

16. Y.IYERI and H.A.SIMON, Business Firm Growth and Size, *American Economic Review*, v. 54, 1964, p. 77.

17. E.MANSFIELD, Entry, Gibrat's Law, and the Growth of Firms, *American Economic Review*, v. 52, 1962, pp. 1030-1035.

18. E.T.PENROSE, *The Theory of the Growth of the Firm*, New York: John Wiley and Sons, 1959, pp. 217-228.

19. Mansfield utilized the following smallest categories: steel industry --capacity under 4,000 tons; petroleum refining industry--daily capacity under 1,000 barrels; rubber tire industry--employment under 40.

viewed as a sophisticated and complex institution for the conduct of organized purposive behavior.¹³ The degree of specialization and the decision mechanism are emphasized in the organization of the human and material resources to achieve a multiplicity of objectives involved in conducting an efficient business. It is suggested that firms of different sizes, and with different organizational structures, may follow contrasting objectives. Accordingly, growth maximization as opposed to profit maximization appears as the goal in firms with dispersed stock ownership, enabling modern management to follow its own course.¹⁴ Considerations of growth, either in short-term or the long, may become the underlying objective for the non-shareholding management who is satisfied with an "adequate" return on investment.

In most studies, the growth of the firms is related to economies of scale. This concentration on the U-shaped long-run average cost curve does not indicate the growth pattern of the individual firm. It actually refers to the effect of scale on the average costs of a number of firms which start operation at a given point in time. The neo-classical theory predicts that the scale is chosen to maximize profits at a given price level. With the same costs under perfect competition, all firms will tend to eventually occupy the scale dictated by the longrun average cost curve.¹⁵ The assumption of identical costs for all firms is not realistic, since perfect competition is a model rather than a description of the reality. Also, this formulation is devoid of the considerations of the spatial distribution of cost factors and the trade-off between external and internal economies that determine the average cost of the firm.

In response to the question of what determines the achievement of economies of scale, and thus growth, various factors have been suggested. A central concept to the studies of the growth of the firm is the Gibrat's Law of proportionate effects. This law, in its simplest and strongest form, states that in an industry the probability of a given proportionate change in size during a given period is the same for all firms regardless of their size at the beginning of the period.¹⁶ However, in most cases it was found out that, contrary to the law, the initial size influenced the rate of change in size. Mansfield, for example, found that smaller firms tended to have higher and more variable growth rates than larger firms.¹⁷ Penrose, on the other hand, convincingly argues that the rate of growth of small firms tend to be lower than that of larger firms.¹⁸ She claims that small firms have competitive handicaps which hamper their growth in a growing industry. Firms that are both older and larger in a given industry have competitive advantages, in terms of internal funds they command and the ease of obtaining additional capital at lower rates of interest. Small firms, on the other hand, face an absolute limit to the amount of capital they can obtain and have to pay relatively higher rates of interest. Furthermore, training or the managerial skills of the "non-professional" owner-manager of a small firm and in some cases his lack of ambition to own a big business may result in a lower rate of growth. Hence, a small establishment is expected to absorb less than its share of the growth in the market. The apparent conflict between these assertions suggests that the definitions of a small firm that Penrose and Mansfield use are not the same. Indeed, the smallest size category specified for industries studied by Mansfield has a large interval and contains firms that can hardly be considered small in terms of both assets and employment.¹⁹ Penrose did not specify the size classes she employed. However,

20. These size classes are: 1-3; 4-7; 8-19; 20-49; 50-99; 100-249; 250-499; 500 and more.

using the eight size-class grouping of the County Business Patterns,²⁰ it may be hypothesized that the rate of growth of establishments will show an inverted U-shaped distribution with steep tails. Thus, the size of the firm at the beginning of a given period appears as a factor that influences its subsequent growth rate.

21. E.MANSFIELD, Entry, Gibrat's Law and the Growth of Firms, *American Economic Review*, v. 52, 1962, pp. 1035-1039 and 1044.

As for other factors of growth, it was that innovators (or users of more advanced production technology) tended to grow more rapidly than other comparable firms during a given period.²¹ Daly and Webber stress on experience as a crucial factor that influences the average costs and the growth of the firm. The experience of both the management and the labor and the skills obtained from this experience determine whether a firm moves upwards in order to achieve economies of scale.²² In moving to a higher size category, a firm will not immediately achieve all the benefits of its increased size, until managers and workers accommodate themselves to the new opportunities. If the firm learns from experience, it will move to the least cost position within its category. Thus, according to Daly and Webber managerial skills and labor quality merit emphasis in studying the growth of the firm. Other factors, such as mergers and financial policies, were cited as factors contributing to the differential rates of firm growth. These factors, however, do not provide a real leverage for studies of the growth of the firm, since data on these factors are notoriously difficult to find.

22. M.T.DALY and M.J.WEBBER, The Growth of the Firm Within the City, *Urban Studies*, v. 10, 1973, pp. 305-306.

One other factor suggested by Daly and Webber may lend itself to testing. The authors asserted that during a period of strong growth in a given industry, some of the large number of new or relocating firms will be pushed into sub-optimal locations because of the stiff competition for sites. Firms which locate in the sub-optimal sites in urgency to benefit from the rapidly expanding market, will probably enjoy a smaller growth rate during the subsequent period.²³ In contrast, the few new or relocating firms during a stable period will enjoy more favorable opportunities in site selection. Then, these firms may be expected to gain a higher proportion of employment during the following period. Accordingly, the growth rate of a firm becomes a function of its success in site selection.

23. M.T.DALY and M.J.WEBBER, The Growth of the Firm Within the City, *Urban Studies*, v. 10, 1973, pp. 308-309.

In an attempt to formulate a similar effect, Ijiri and Simon used Galileo's law of the inclined plane--that the distance traveled by a ball rolling down the plane increases with the square of time--in explaining the rate of growth of the firm.²⁴ This formulation was based on the assumption that there is a serial correlation in the growth rates of individual firms over at least short time periods. If, by innovation in production or marketing processes or as an effect of successful management, a firm grows more rapidly than the other firms in the industry, it is likely to grow more rapidly than average again in the following period. This may be due to the carry-over effects of an innovation: a firm which grew rapidly in a given period retains a greater share of the market.²⁵ However, these carry-over effects are more likely when the time period is short and over longer time periods the effects will wear off. Moreover, a contradicting hypothesis based on the Penrose effect was forwarded by Shen on the effects of growth in a firm's recent history. Accordingly, an expansion in the number of employees or output volume during the previous period may explain why no growth in a firm's size is observed in the subsequent period, while comparable firms grow in size.²⁶

24. Y.IJIRI and H.A.SIMON, Business Firm Growth and Size, *American Economic Review*, v. 54, 1964, pp. 72-83.

25. Y.IJIRI and H.A.SIMON, A Model of Business Firm Growth, *Econometrica*, v. 35, 1967, p. 368.

26. T.Y.SHEN, Economics of Scale, Expansion Path, and the Growth of Plants, *Review of Economics and Statistics*, v. 47, 1954, pp. 420-428

In summary, the treatment of the subject in the literature provides two interrelated factors in relation to the growth of the firm. The first one is the growth rate of the firm versus the average growth rate of the industry in the previous period. The second is the type of change (either an increase or a decrease) in the number of establishments in an industry in response to an overall change in the employment level of that industry. The remaining factors that have been mentioned in the literature point to a stochastic nature of growth in relation to the generally available information on establishments. Indeed, this is what Daly and Webber conclude in stating that "the analysis of the growth of the individual firm...implies a probabilistic base to spatial change."²⁷ Accordingly, even though the intensity of continuous growth varies significantly among different parts of an urban area, it is expected to display a stochastic character so far as the locational variables are concerned.

27. M.T.DALY and M.J.WEBBER, *The Growth of The Firm Within the City*, *Urban Studies*, v. 10, 1973, p. 304.

DISCRETE FORMS OF EMPLOYMENT CHANGE

On the discrete side of employment change, we have new, relocating and defunct establishments. A net change in the number of establishments is the difference between the sum of new and in-migrating establishments and the sum of defunct and out-migrating establishments in a subarea. The main reason for the usual omission of discrete events and the choice of continuous employment allocation functions in urban models is the unavailability of data sets that would enable the model-builder to trace discrete events in time and space. Indeed, a time-series data set which identifies individual establishments is required in order to trace deaths, births, and in- and out-migrations. More often than not, the researcher will have to work with a less detailed (comprehensive) collection of data. It is more likely to find a series of cross-section data, detailed at the establishment level, which do not identify individual establishments. With such a data set, a distinction between defunct and out-migrating establishments can not be made, and the same is true for the distinction comparison and immigrating establishments. The theoretical implications of the first shortcoming is more serious than those of the second one. In a comparison of the "industrial prospects" of the different subareas of a city, a death and an out-migration probably have different implications, although both of them result in loss of an establishment. A significantly high number of deaths may imply that the subarea is losing favor and is prone to lose more employment in the following time periods as well. A high number of out-migrations, however, may indicate (especially in the case of central locations) an environment conducive to the growth of the existing establishments. An examination of the process of relocation and of the general characteristics of new, migrating and defunct establishments sheds some light on the problem.

PROCESS OF RELOCATION AND MIGRATING ESTABLISHMENTS

In this discussion, we first assume a static environment while examining the factors that give impetus for change in an establishment's demand for space. The principal internal impetus for a change in the demand for space comes from the changes in production, marketing, labor management and financial policies of the establishment.²⁸ However, the main force behind the movement of establishments is growth in output volume. A typical

28. P.M.TOWNROE, *Locational Choice and Individual Firm*, *Regional Studies*, v. 3, 1969, pp. 18-22.

establishment operating at about 90-95 percent of its maximum capacity uses this buffer capacity when the market for its product(s) increases. The establishment incurs what Shen calls "stretching costs" in making full use of its presently available resources.²⁹ Stretching costs depend on the margin of buffer capacity in terms of machinery, space and work force. In case of sustained growth, additional investment in plant and labor is necessitated involving (again in Shen's terminology) "friction costs". Depending on the existing density of usage of floorspace, additional machinery and employees require additional floorspace.

Innovation and changes in production techniques are frequently mentioned as secondary factors for the movement of establishments. An innovation may result in new products, with a change in production and floor area requirements. The impact of product or process changes in terms of space requirements is the largest, especially when these changes render the existing building unsuitable.³⁰ Vertical expansion at site is becoming less likely with the use of modern production methods, because they involve long horizontal production lines. The efficiency of production and the flow of materials are hampered in multilevel plants and automated systems such as conveyors and elevators have high installation and maintenance costs and are inflexible in the size and weight of items that can be handled.³¹ Consequently, increased production and changes in production process almost invariably push for horizontal expansion.

Unavailability of adjacent land for expansion and insufficiency of labor supply at the present site contribute to the reasons for relocation. More space for expansion and better plant facilities emerge as more important motives than labor requirements for relocation. Surveys of relocated establishments have revealed these two factors as the principles for relocations.³² However, not all establishments in need of more space or more suitable plants move immediately. There are high costs involved in relocation.

The sale price of plant or equipment tend to be far less than the present value and the costs of transferring plant and equipment are prohibitively high in most cases. Furthermore, the network of suppliers and customers is disrupted by moves. The "inertia" is overcome when the expected benefits from relocating exceed the costs. Thus, the establishment moves only when the net gains from increased production and/or efficiency outweigh the friction and relocation costs.

In an ever-changing urban environment a host of external factors as well influence the rate of relocation. Changes in all forms of transport costs are an obvious and important consideration. Also of some saliency are the changes in availability of labor, either through moving away of population or increased competition for labor caused by new manufacturing or non-manufacturing uses. Such new uses also bid the land prices (rents) higher and increase the congestion level at the present site. Therefore, increases in the direct and indirect cost factors push for relocation even in the absence of increased production. In a relatively limited number of cases, a decline in the market and a drop in output level will increase the *fixed* unit costs and establishments move to smaller premises in order to cut down their costs.

Motivated primarily by land, facility and in some cases by labor considerations, the direction of migrations is quite apparent.

29. T.Y. SHEN, Cyclical Behavior of Manufacturing Plants, *Journal of Industrial Economics*, v. 16, 1968, pp. 106-125.

30. F.M. TOWNROE, Locational Choice and Individual Firm, *Regional Studies*, v. 3, 1969, p. 19.

31. A.N. MAKER, The Comparative Costs of Location of Manufacturing Firms in Urban Areas: A Boston Case Study, *Review of Regional Studies*, v. 3, 1972, pp. 110-112.

32. E.J. BURTT, JR., *Plant Relocation and Core City Workers*, Washington, D.C.: U.S. Department of HUD, 1967, pp. 24-26.

The congested core areas with high land prices and with concentrations of old facilities emerge as the old sites of migrating firms. However, the rate of out-migrations may be expected to fall sharply with distance from the core--since land price is generally expressed as a negative exponential function of distance from the core--and level off outside central areas. A survey in the Boston metropolitan area found that

Fourty-two percent of the sampled core firms and twenty-nine percent of the sampled suburban firms reported that they were considering a shift in location. Significantly, nearly eight-tenths of Boston sampled firms contemplating a new site were seriously considering locations outside the city, while only three percent of suburban firms with plans to move were considering central city sites.³³

33. A.N.HAMER, *The Comparative Costs of Location of Manufacturing Firms in Urban Areas: A Boston Case Study*, *Review of Regional Studies*, v. 3, 1972, pp. 96-97.

Despite the high rate of out-migrations, the core areas receive a number of migrating firms. Furthermore, not all firms migrating from the core areas locate in outlying sites: a high percentage of them choose locations in or near the central areas.

The figure below illustrates the trends observed regarding the origins and destinations of relocating establishments in urban areas.

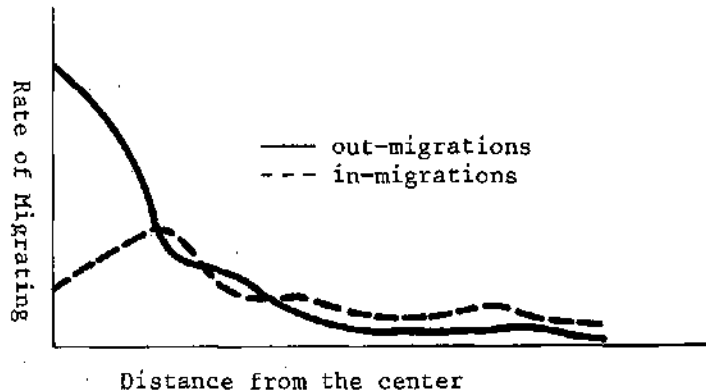


Fig. 1 Origins of out-migrating and destinations of in-migrating establishments in urban areas.

Fig. 1 illustrates an average behavior of relocating establishments concerning their origins and destinations in urban areas. It is very plausible that different curves will emerge when establishments are disaggregated on the bases of size and employment type. As mentioned earlier, some migrating establishments are limited in their movements by labor, supplier and customer considerations. In general, it was found that small firms tend to move shorter distances than do larger firms.³⁴ Thus, the distance moved is inversely proportional to the initial size of the migrating firm. However, it was also found that the distance moved by a firm is relatively independent of the distance of the origin of the move from the Central Business District.³⁵ This latter point is indicative of the importance of employment type which may influence the distance traveled from the original site. The obviously different locational requirements and the spatial distributions for establishments of different manufacturing industries will not be dealt with in this paper. It is sufficient for the purposes of this paper to state that the employment type, as well as the size and age, of the establishment play a central role in determining its behavior in relocation.

34. L.MOSES and H.WILLIAMSON, *The Location of Economic Activity in Cities*, *Papers and Proceedings of the American Economic Review*, v. 57, 1967, pp. 216-217.

35. L.MOSES and H.WILLIAMSON, *The Location of Economic Activity in Cities*, *Papers and Proceedings of the American Economic Review*, v. 57, 1967, pp. 215-216.

NEW AND DEFUNCT ESTABLISHMENTS

A number of factors dictate the rate of entry in an industry and the new firms display a discernible pattern in terms of both size and location. The primary force behind entry is the rate of increase in demand for the product(s) of the industry. Associated with this increase is the expected rate of profitability for a new establishment. For example, Mansfield found that the entry rate would increase by 60 percent if an industry's (expected) profitability doubled.³⁶ The rate of entry is inversely related with the capital requirements for a new plant of the "minimum officient size" in the industry. A comparison of apparel and steel industries, an oft-stated example, is illustrative of the wide differentials in capital requirements. Hence, the rate of births in response to a given rate of increase in the market is expected to be lower in industries with high capital requirements. A third and equally important factor is the nature of the industry with regards the size distribution of the existing establishments.³⁷ Presence of well-established large firms, which often indicates the non-competitive nature of the industry, will tend to reduce the rate of entry. This reciprocity is better understood when the overall characters of new establishments are considered.

A typical new establishment, unless it is a branch of an already established firm, tends to fall in the lower size categories of an industry. As it would be expected, size and chosen location show a close relationship in the case of new establishments. Cameron, for example, found that of the 526 new establishments locating in Clydeside, England between 1958 and 1968, about 79 percent had 49 employees and less and about 61 percent had 24 employees or less. In terms of location, 55 percent of these establishments chose sites in the central city and 45 percent located in the outlying areas.³⁸ Significantly, the average number of employees per establishment locating in the central city was 28 as opposed to 106 in the outlying areas. Though this distribution was not controlled for industry type, it shows a clear difference in the locational decisions of small versus large establishments. The attraction of the central city for new establishments is more striking when it is considered that the central city lost 560 establishments between 1958 and 1968 through deaths and out-migrations.³⁹ Thus, the central city of Clydeside witnessed a higher concentration of defunct firms: about 70 percent of total deaths took place in the central city. It is seen here that high rates of deaths and births of the typically small center city establishments tend to counter-balance each other and that the marginal trends are not reflected by the net change figures.

The task of predicting the rates of deaths and births (expressed as the proportion of either the base year total number of establishments or employees in an industry) is still a very challenging issue. Emphasis on this point is justified by the hypothesis that there exists a significant relationship between the rate of discrete events in an industry and the degree of change in its location pattern. Rate of discrete events is defined as the sum births, deaths and migrations of establishments during a period, divided by the base year total number of establishments in a given industry. Empirical findings point to a strong relationship between the rate of discrete events and the degree of stability in location pattern. An examination of twenty two-digit manufacturing industries in the Minneapolis-St. Paul metropolitan area yielded a correlation coefficient of

36. E.MANSFIELD, Entry, Gibrat's Law, and the Growth of Firms, *American Economic Review*, v. 52, 1962, p. 1043.

37. E.T.PENROSE, *The Theory of the Growth of the Firm*, New York: John Wiley and Sons, 1959, pp. 218-225.

38. G.C.CAMERON, Intraurban Location and the New Plant, *Papers of the Regional Science Association*, v. 31, 1973, pp. 132-136.

39. G.C.CAMERON, Intraurban Location and the New Plant, *Papers of the Regional Science Association*, v. 31, 1973, pp. 132-136.

40. A. ACAR, "External Economies, Concentration and the Changing Location of Manufacturing Industry: A Case Study of the Minneapolis-St. Paul Metropolitan Area", Unpublished Ph.D. Dissertation, University of Pennsylvania, 1976, pp. 82-83.

-0.848 (significant at 0.001 level) between these two variables, indicating that changes in location pattern tend to increase with increasing rates of discrete events.⁴⁰

An obvious question in this context is whether the rate of discrete events is related to the rate of change either in citywide employment or establishment totals. However, analysis of data on the Twin Cities area demonstrated no significant relationship along this line. In the first place, there was no discernible relationship between the rate of citywide employment change and stability of location pattern. As expected, the rate of discrete events appeared to be unrelated to the rate of citywide employment change. Similarly, no significant relationship emerged between the rate of change of employment and establishments. Furthermore, for some industries, an increase (decrease) in total employment corresponded to a decrease (increase) in total number of establishments.

Further analysis of the Twin Cities data, on the other hand, revealed some helpful insights. It was found that the changes in the size distribution of establishments of an industry during a given time period directly influenced the changes in the location of employment. More specifically, two interrelated findings emerged from the analysis. First, the changes in the location of an industry were found to be determined mostly by the locational decisions of medium-sized establishments in that industry. Perhaps, this point needs some clarification. As pointed out before, the decisions of small and typically center city establishments tend to counter-balance each other, i.e., deaths, births and relocations of these establishments occur in the same general area. Also due to the small number of employees involved in such decisions, the net employment change caused by the movements of small establishments is usually less important. As for the large establishments in an industry, they are rather immobile in character and the probabilities of a death or a birth of a large establishment are rather insignificant. Hence, it is not surprising that much of the mobility of employment was attributable to the movements of medium-sized establishments in the Twin Cities area.⁴¹ This finding emphasizes the need for developing a method for predicting the future changes in the size composition of establishments. The existing attempts which generally employ stochastic formulations are either too crude and/or they entail some stringent assumptions.⁴² The second finding concerned the general tendencies in the locational decisions of different sized establishments. In the case of the central areas, it appeared that the increases in the number of establishments in the lower size-categories were caused by births, whereas increases in the higher size-categories were most likely to be caused by the growth of the existing establishments. Similarly, a decrease in the lower size classes was attributable more to deaths than to outmigrations. A decrease in the higher size classes was more likely to occur in out-migrations, since—as mentioned earlier—the probability of death for large establishments is rather small.

41. A. ACAR, "External Economies, Concentration and the Changing Location of Manufacturing Industry: A Case Study of the Minneapolis-St. Paul Metropolitan Area", Unpublished Ph. D. Dissertation, University of Pennsylvania, 1976, pp. 178-204.

42. See for example the Markov chain approach proposed in J. ROSE, "Manufacturing Industries: Projections of Locational Decisions", Baltimore: Regional Planning Council, 1967.

CONCLUSION

As stated at the outset, the purpose of this paper was to discuss some selected aspects of the process of intra-urban manufacturing location. In this paper, the observed tendencies

in the spatial behavior of manufacturing establishments were elaborated, rather than capitalizing on the normative statements of location theories.

This departure from the traditional location theory approaches may be defended on several grounds. First, the stringent assumptions on the omniscience and rationality of the decision maker do not closely represent the reality. Not only do the spatial distributions of cost factors usually present a set of equally "acceptable" sites rather than an easily discernible global optimum, but also the decision maker, when faced with a large number of potential sites, displays a satisficing attitude. Furthermore, the overemphasis on the transport costs, which is largely unfounded in the case of intraurban location decisions, tends to overlook other cost and revenue considerations. The shortcomings of location theory in this context appear as oversimplifications which may produce misleading results.

A second consideration is even more important, at least, from the planning point of view. Being a future-oriented effort, planning must be preceded by a successful projection of the land use pattern. On the other hand, location theory provides, at best, only a partial explanation of the location pattern and is ill-equipped to deal with the changes in the location pattern.

As explained in the earlier discussions regarding the deficiency of cross section data, the cumulative nature of location decisions greatly decreases the explanatory power of the traditional location theory formulations. By the same token, problems persist in the transition from the theory of the firm to the "average" behavior demonstrated by the decision making units in the urban area. There is a considerable gap between the theory advanced for the single firm and the largely unorganized body of knowledge that presently directs the location studies.

These problems are further aggravated when the changes in the location pattern are considered. A general tendency --either explicit or implicit-- in the location theory approaches is to attribute the changes in the location pattern to either the changes in the urban environment or to the changes in the industrial mix of the area. The presently available examples of such approaches are characterized by the lack of scope to account for growth and decline subsequent to location and for the inertial effects of present location on the potential new sites of the relocating establishment. By differentiating between the components of employment change and the distinct behaviors associated with each type of decisions, a model may be constructed which promises to be theoretically more sound and empirically more useful to uncover the dynamics underlying locational processes.

In concluding this paper, it is in order to evaluate the suitability and the potential usefulness of the described approach in studying the locational behavior of manufacturing establishments within the major Turkish cities. We first consider the suitability of the approach. This task requires, in the first place, a reconsideration of the relevant premises of the described approach and an investigation of their validity for Turkey. A premise was that intraurban location influences significantly the costs and receipts of a manufacturing establishment. It was stated that not all locational factors which influence the costs and revenues are uniformly distributed over an urban area. Consequently, the existing and future location patterns exhibited by manufacturing

49. Murat BALAMIR of City Planning Department, METU raised this and some of the other questions dealt with in this context.

industries will be significantly different from a uniform or a random distribution. This contention is supported by mere observation, for example, of the concentrations of establishments of furniture industry in Ankara and of printing and publishing industry in Istanbul. Such concentrations in location pattern are unquestionably different from a pattern expected with a uniform or a random distribution. These and numerous other examples of concentrations of industries within the Turkish urban areas may reflect the presence of important economies in location. Alternatively, the presence of such concentrations may be attributed to the limitations dictated by zoning ordinances--either negative or positive--or by the spatially limited availability of infrastructure.⁴³ The later approach, generally called the "physical constraint argument" has the basic thesis that the requirements for certain natural resources (e.g. water) or facilities (e.g. railroad) and zoning ordinances so constrain their locational possibility that concentrations of manufacturing establishments are actually involuntary and should not be attributed to economies of location. While this argument is valid for some industries in industrialized countries and may conceivably be valid for some industries in Turkey, there is neither an empirical evidence nor a theoretical justification to generalize it for all industries and urban areas. Referring back to the example mentioned above, the physical constraint argument cannot account for the concentration of printing and publishing establishments in Cağaloğlu, İstanbul. The same is true for the concentrations of non-nuisance industries in the Turkish urban areas.

It may be claimed, even in the absence of an empirical study, that intraurban location does carry important cost and revenue implications for manufacturing establishments in Turkey. It may also be stated that intraurban location in Turkey is not solely determined by zoning ordinances or by availability of infrastructure and that external economies--either localization or urbanization economies--play a role of varying significance in the locational behavior of different industries. Otherwise, one could assume that city planning authorities have highly powerful means to control manufacturing development and can easily and effectively exercise such control. This is indeed an oversimplified view of the problem, since it takes into account neither the distinct locational requirements of different industries nor unplanned manufacturing developments which are widely observed in Turkey.

Another question that may be raised in relation to the validity of this approach is concerned with the presence of a well-established public sector in Turkish industry. One underlying assumption may be that the locational behavior of public sector establishments are inherently different from those of private sector establishments, since the former perform public services and do not seek profit maximization. Although the sole motive for public sector establishments is not profit-maximization, they, all other things being equal, seek optimal (sub-optimal) locations to decrease their costs or to increase their profitability. However, the main difference is not due to the emphasis placed on profit maximization. Public sector establishments are typically large establishments, the locational decisions of which are determined by political as well as economic considerations. Usually, they are not constrained by infrastructure and zoning limitations and can create the facilities necessary for operation and even arrange for alterations in master plans. Any establishment, whether publicly or privately

owned, which possesses these characteristics is a "unique locator" and should be subjected to a different treatment in location studies. This is actually the approach adopted in several models, where a steel mill or a car factory -whether public or private- is considered a "unique locator" and treated in a separate subroutine.⁴⁴

44. See for example the subroutine that allocates "unique locators" in: *Jobs, People and Land: BASS, Berkeley: CREUE, University of California, 1968.*

There are obviously crucial differences between the economic and political structures of a typical industrialized Western country and Turkey. However, unless the concrete consequences of these dissimilarities in connection with the economics of urban areas and especially the locational behavior of manufacturing establishments in Turkey are clearly identified, mere referrals to certain well-known yet loosely defined macro-level disparities do not rule out the validity of this approach. It is very plausible that in a Turkish urban area where a considerable portion of manufacturing activity of limited industrial differentiation is represented by traditionally owned and operated small establishments, the locational factors that govern the "average" spatial behavior will be significantly different from those factors that determine the location pattern in an highly industrialized country with larger, differentiated and modern enterprises. Nevertheless, the location pattern, as well as the changes in it, are determined by the four types of decisions explained above. In this sense, the approach described in this paper may provide a useful framework and recognition of these distinct types of behavior may greatly facilitate the efforts to analyze, project and control the location of manufacturing activity in the Turkish urban centers. Furthermore it may be stated that the relative importances of the different components of change will vary from one urban area to the next, as well as from one industry to another. It is plausible that in those urban centers witnessing relatively recent manufacturing development births and locationally static growth will account for most of employment change, whereas in the old and land-scarce centers with a history of manufacturing activity all forms of employment change will have an impact on the changes in the location pattern.

This approach may be instrumental in isolating the factors that are important for the existing operations and those attracting new establishments into a location. More concretely, it points to some central issues what should be investigated specifically for Turkey. One such issue concerns the presence of a spatial regularity in locationally static growth and decline in employment levels and whether significant correlation exists between the spatial distributions of continuous and discrete forms of employment change. The reasons behind concentrations in central as opposed to non-central locations and dispersed patterns of intraurban location will enlighten the structure of locational decisions. Similarly, it is important to know whether manufacturing establishments in different industries and size-classes display distinct locational behaviors and whether spatial regularities exist in terms of inter and intraindustry distributions of establishments. These and similar other questions will be instrumental in determining the impact of locational factors on the spatial behavior of existing and new establishments of different industries and sizes.

The discussions in this paper emphasize the vital need for data, in that the success of location studies and planning efforts is limited, in the first place, by the quality of available data

on the spatial behavior of manufacturing establishments. As suggested in the discussions, in order to study the processes of location and change, time-series data are needed, which should be disaggregated at the establishment level and detailed at least by two-digit industries and small geographical areas. Identification of individual establishments is essential in order to trace their movements in time and space. The advancement of the knowledge on the spatial behavior of manufacturing industries and the effectiveness of city planning practices in Turkey very much depend on the development of data and book-keeping systems.

KENTSEL ÖRÜNTÜDEKİ YER SEÇİM SÜRECİ VE ÜRETİM KURULUŞLARININ MEKANSAL DAVRANIŞLARI

ÖZET

Belli bir sanayileşme düzeyine ulaşmış veya sanayileşmekte olan ülkelerde, imalat sanayii özellikle büyük kentlerin büyümesinde önemli rol oynar. Bu rol sadece yaratılan iş olanaklarının hacmi nedeni ile değil, aynı anda kentsel yerleşme örüntüsünü (location pattern) belirlemek yönünden de önemlidir. İmalat sanayii kuruluşlarının diğer kullanışlarla ilişkileri, nüfusun ve diğer ekonomik kuruluşların kentsel alanlar içinde dağılımlarını da etkiler.

Kent planlaması, imalat kuruluşları için ayrılan alanlarda dışsal yararları (external economies) temin yoluyla mevcut endüstrinin gelişmesine yardımcı olmak; endüstri kuruluşlarının çevre üzerindeki olumsuz etkilerini en aza indirmek amaçlarını içerir. Bu amaçlara hizmet edebilmek için imalat sanayinde yer seçimi kararlarının anlaşılması ve kestirilebilmesi kaçınılmaz zorunluluktur. İmalat sektörünün, konut, ticaret ve servis sektörleri ile mekan içinde ilişkileri göz önüne alındığında, imalat kuruluşlarının yer seçimi kararlarının kent planlama pratiği yönünden önemi ortaya çıkar.

Diğer taraftan, kentsel alanlarda imalat sanayi kuruluşlarının mekansal davranışları hakkındaki bilgi çoğunlukla bütünleşmemiş varsayımlar ve görgül (*empirical*) çalışmalar halindedir. Modelleme atılımları ise yetersiz ve görelî olarak geri bir aşamadır. Bu duruma sebep olarak 1940 lara kadar gelişmiş ülke kentlerinde imalat kuruluşlarının mekan boyutu içinde durağan (*static*) nitelikleri gösterilebilir. Ancak, özellikle son otuz yıl içerisinde, ulaşım teknolojisindeki aşama, imalat dallarında çeşitlenme, üretim teknolojisindeki değişme, nüfus devinimi gibi etkenler sonucu, imalat sanayinde yerleşme örüntüsü önemli değişiklikler göstermiş ve dikkat verilmesi gereken bir sorun olmuştur.

Yer seçimi kuramlarının kentsel alanlarda yer seçimi kararları ve yerleşme dokusundaki değişmeler konularında yetersizliği, soruna yeni açılardan bakma zorunluluğu getirmektedir. Bu yazıda amaç, kentsel alanlarda yer seçimi ve yerleşme dokusunda de

süreçlerini incelemek ve modelleme uğraşlarına ışık tutabilecek bir seçeneğin tartışmasını yapmaktır.

Bu amaç çerçevesinde kabul edilen ana yaklaşım, kentsel alanlarda iş yerlerinin değil, iş yerlerindeki değişmelerin mekansal dağılımına ağırlık vermektir. Olgu bu açıdan incelendiğinde, kentsel alanlarda imalat iş yeri dağılımını etkileyen dört ayrı karar türü ortaya çıkmaktadır. Bunlar: yeni bir kuruluş için yer seçimi (*birth*); mevcut bir kuruluşu kapatma (*death*); mevcut bir kuruluşun kent içinde yerini değiştirme (*relocation-migration*); mevcut bir kuruluşun yerini değiştirmeden istihdam veya üretim hacminin kısılması veya arttırılması (*locationally static change*) kararlarıdır. İlk üç karar türü mekanda atlamalara, kesikli (*discrete*) değişmelere, dördüncü karar türü ise sürekli (*continuous*) değişmelere neden olmaktadır. Kentsel alanlarda iş yeri dağılımının değişme sürecini etkileyen bu dört ayrı karar türü, yer seçimi açısından değişik davranışsal yapıları yansıtır ve değişik etken grupları tarafından belirlenmektedirler.

Bu yazının yer seçimi kuramının geleneksel yaklaşımlarından ayrılması değişik açılardan savunulabilir. Bu yazıda kabul edilen yaklaşım, yer seçimi ve yerleşme dokusu olgularını birer süreç olarak ele alma olanağını sağlamak yönünden yer seçimi kuramlarının tek kuruluş için geliştirilmiş düzgüsel (*normative*) önermelerinden daha yararlı olmaktadır. Tanımlanan süreç kavramının kuramsal yönden kapsamlı ve doyurucu olması yanında, yazar tarafından Minneapolis-St.Paul metropolitan alanına uygulanması görgül yönünden başarılı sonuçlar vermiştir. Adı geçen kentsel alan ile Türkiye'deki büyük kentler arasındaki belirli yapısal değişiklikler açısından, bu yaklaşımın Türkiye için geçerliliği ve yararı soruları vardır. Bu sorular yazının sonuç bölümünde ele alınmaktadır. İleri sürülen sav, yer seçimi kararlarını etkileyen etmenlerin özellikler gösterebilmesine karşın, yerleşme dokusundaki değişmeler adı geçen karar türlerinin bir işlevi olarak ele alınabileceğidir.

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