

Change in the Small Boat Building Industry: the Case of the Lake Washington Ship Canal*

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1. Introduction

The rapid development of multi-plant and multi-functional, even multi-national corporation, in the economically more advanced nations has been followed by many recent studies dealing with this process.¹⁾ Nonetheless, the vast majority of industrial firms

are still of the single-plant and single-functional variety.²⁾ Moreover, such firms still loom highly significant in the shaping of the industrial structure and spatial pattern in most urban areas.³⁾ They also often loom important in the "industry" related environment of large scale organizations in that they provide ancillary and auxiliary industrial products and services through subcontracting,

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- 1) Hamilton, F. E. I. and Linge, G. J. R., 1979, "Industrial Systems," *Spatial Analysis and the Industrial Environment*, Vol. 1: *Industrial Systems*, eds. F. E. I. Hamilton and G. J. R. Linge, John Wiley & Sons, New York, pp. 1-24; Krumme, G., 1969, "Toward a Geography of Enterprise, Economic Geography of Enterprise," *Economic Geography*, Vol. 45, pp. 30-40; idem, 1970, "The Interregional Corporation and the Region," *Tijdschrift voor Economische en Sociale Geografie*, Vol. 61, pp. 318-333.
- 2) Hamilton, F. E. I., 1978, "The Changing Milieu of Spatial Research," *Contemporary Industrialization: Spatial Analysis and Regional Development*, ed. F. E. I. Hamilton, Longman, London, pp. 1-19.
- 3) Chaudhuri, M. R., 1978, "Trends in Industrial Location in India," *Industrial Change: International Experience and Public Policy*, ed. F. E. I. Hamilton, Longman, London, pp. 132-143; Lim, Y., 1971, "Spatial Variation of Medium and Small Textile Industry: A Case Study of Western District in Daegu," M. A. Thesis, Kyungpook National University, p. 143.

particularly in metropolitan areas.⁴⁾ In fact, in most inner cities, they substantially affect the social and economic fabric work of the area.⁵⁾ Finally, such single-site firms contribute a significant part of the life cycle of manufacturing enterprise in a city⁶⁾ and, in the aggregate, are highly significant in the understanding the industrial development in any particular city.

Even in the United States which is "large corporation country"⁷⁾, small firms prominently exceed large firms in number.⁸⁾ As pertains to the boat building industry an industry in which small firms are prominent.⁹⁾ This is concentrated in Seattle, a city in Washington which is a major boat building state in the United States.¹⁰⁾ Thus this boat building industry in Seattle is not only specialized with millwork and commercial

printing, but occupies an important position in this regional economy.¹¹⁾ Noticeably, all the boat building industry in Seattle, are composed of small firms.

In these respects, this can be a good object of study on the small firms. Unfortunately, however, little study with respect to the location of this industry has occurred.¹²⁾ This is a case study on the location of small firms in which its main purpose is to clarify the location and locational changes of small boat building industry in Seattle.

2. Selection of Study Area and Interview

First, the location of small boat building firms in Seattle was plotted (Fig. 1). Of the

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- 4) Singh, A and Whittington, G., 1975, "The Size and Growth of Firms," *Review of Economic Studies*, Vol. 129, pp.15-26.
 - 5) Hamilton, F. E. I., 1976, *The Moscow City Region*, Oxford University Press, Oxford; Bastie, J., 1975, "Industrial Activity in the Parisian Agglomeration," *Locational Dynamics of Manufacturing Activity*, eds. L. Collins and D. F. Walker, John Wiley & Sons, London, pp.279-294.
 - 6) Edward, R. S. and Townsend, H., 1961, *Business Enterprise: Its Growth and Organization*, Macmillan, London.
 - 7) Hamilton, F. E. I., 1978, op. cit., p.6.
 - 8) U. S. Dept. of Commerce, Bureau of Census, 1979a, *County Business Pattern*, 1977, United States, p.10. In the United States, small firms occupy 80.7% (264,471 establishments) of whole industry (327,850 establishments)
 - 9) U. S. Dept. of Commerce, Bureau of Census, 1979a, op. cit., p.10, p.50. In this study, small firm was defined as the firms with less than 49 employees in accordance with the Regulation of Korean Cooperative Association of Medium and Small Firms. In terms of this definition, the percentage of small firms in the U. S. boat building industry (1,830 firms) is 88.9% (1,631 firms) and this is higher than the percentage of small firms (80.7%) in U. S. manufacturing industry.
 - 10) U. S. Dept. of Commerce, Bureau of Census, 1979b. *County Business Patterns*, 1977, Washington: Seattle, 1979, *Contracts Influential Commerce and Industry Directory Business Reference Book*, 1979-1980. Boat building industry in the United States are concentrated mainly along the Pacific Coast and Gulf Coast. Among these, most boat building industry are concentrated in California, Washington, Pacific Coast, and in Florida and Texas, Gulf Coast. In Washington, 21.3% (30 firms) of boat building industry in this State are concentratede in Seattle.
 - 11) U. S. Dept. of Commerce, Bureau of Census, 1979a, op. cit., p.21, p.26, p.50; idem., 1979c, *Statistical Abstract of the U. S. A.*, 1978, p.14; Office of Financial Management, State of Washington, 1978, *Pocket Data Book*, 1978, p.190; Seattle, 1979, loc. cit.. Location Quotient of millwork, commercial printing and boat building in Seattle are 8.5, 4.5 and 8.2. The Percentage of each in the regional industry are 2.4%, 6.5%, and 2.1%, Thus their L.Q and percentages are much higher than other industries in this city.
 - 12) Ellis, R. C. et al., 1977, *Economic of Marine Recreation in Washington State, 1977*, Coastal Program, Institute for Marine Studies, University of Washington, p.1.

thirty firms listed in the Directory,¹³⁾ twenty seven were found to be concentrated along the waterfront area between Lake Washington and Shilshole Bay. Consequently, the ship Canal area between Lake Washington and Shilshole Bay was selected as the primary area.

The Ship Canal area lies north of the CBD of Seattle and was formerly a transition area between the salt water of Puget Sound and the fresh water of Lake Union.¹⁴⁾ After completion of the Chittenden Locks, the eight mile long Ship Canal area became a fine fresh water home for the commercial fishing fleet, situated at Fisherman's Terminal, and for pleasure boats moored along this waterfront area.¹⁵⁾ Especially, it is noticeable that this is a most important water-dependent industrial district in Seattle. Most of marine-related industrial activities in this city are concentrated in this region.¹⁶⁾ On the other hand, however, untidy looking structures are scattered in this waterfront area.¹⁷⁾ Old shabby residences of low income whites are found next to fashionable apartment buildings and restaurants. Railroads crowd the shorelands in places.

Most of data in this study was collected from interviews with owners of twenty seven small boat building firms in this study area. The questionnaire used in the interview was prepared after preliminary interviews with

the owners of firms selected at random.¹⁸⁾ Interviews with owners were conducted between May and June, 1980. Available responses from twenty one interviews with owners were obtained in this period.¹⁹⁾

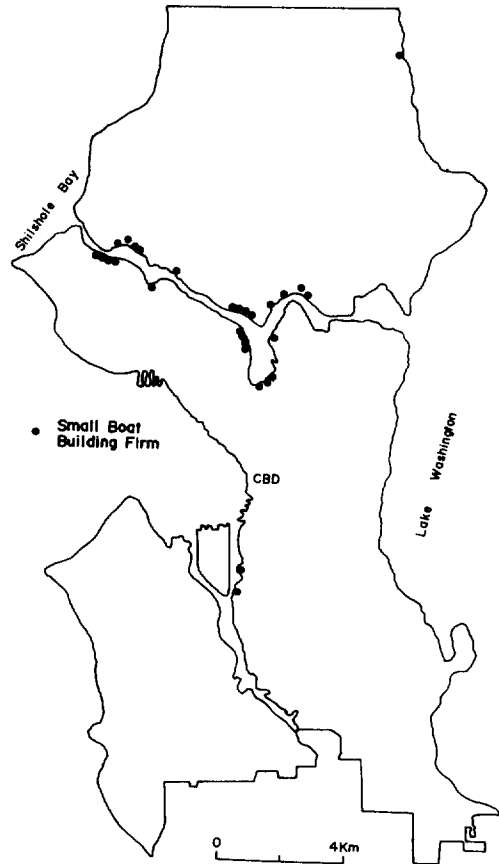


Fig. 1. Distribution of Small Boat Building Industry in Seattle, 1980.

13) Seattle, 1979, loc. cit.

14) Andrus, A. P. et al., 1976, *Seattle*, Balling Publishing, Cambridge, p. 5.

15) Seattle Office of Planning, 1979a, *Industrial Area Background Report*, Vol. 1, pp. 25-31; idem., 1979b, *Industrial Area Background Report*, Vol. 2, pp. 19-24, pp. 29-30; Andrus, A. P. et al., 1976, op. cit., p. 10, pp. 40-44.

16) Seattle Office of Policy Planning, 1979a, loc. cit.; idem., 1979b., op. cit., 19, pp. 30-36.

17) Andrus, A. P. et al., 1976, op. cit., pp. 44-47; Boyce, R. R., 1968, *Residency Change in Seattle*, Social Change Evaluation Project, Research Report, No. 3, Part II, University of Washington, pp. 51-54.

18) Lees Marine Ways and Nelson Plastic Inc. were selected for the preliminary interviews.

19) Interviews with six firms were impossible because five firms no longer existed and one firm refused interview.

3. Spatial Distribution of Small Boat Building Industry in the Study Area

Small boat building industry in study area, as shown in Fig. 2 is distributed along both sides of the waterfront between Lake Washington and Shilshole Bay. However, there are physical restrictions on its distribution in this area. All location of firms are localized within the waterfront between Portage Bay in the east and Chittenden Locaks in west, and no small boat building firms are found outside of these limits.

Another characteristics in the distribution of these industries is closeness to road and water. All firms are very close to the water: all of them are localized within the areas 200 meters from the water. Also all firms locate very close to the roads which run along the waterfront at the foot of hills located to the north and south of this waterfront area. Thirteen firms are found along the roads to the north of this waterfront connecting NW Market Street, Leary Way, N 36th Street and Pacific Street, and eight firms along the roads to the south of this waterfront connecting Commodore Way, W. Emerson Pl., Nickerson Street, Westlake Avenue and Eastlake Avenue.

On the other hand, all small boat building firms are concentrated in two areas: Lake Union area in the east and Salmon Bay area in the west. In contrast to this, no small boat building firms are found along both sides of the canals. Thirteen firms are found in the Lake Union area and eight firms in the Salmon Bay area. Both of these areas have prominent moorage functions for ships

and boats.²⁰⁾ The former is a home of pleasure boats and the latter is a home port of northwest fishing fleet.

In short, such characteristics found in spatial distribution of small boat building industry in study area as distributional localization within Portage Bay and Chittenden Locks, and closeness to roads, water and moorage area are noticeable. These distributional characteristics of this industry suggest that there would be some factors affecting the spatial distribution of industry in the study area. However, such present distributional pattern of industry is a product

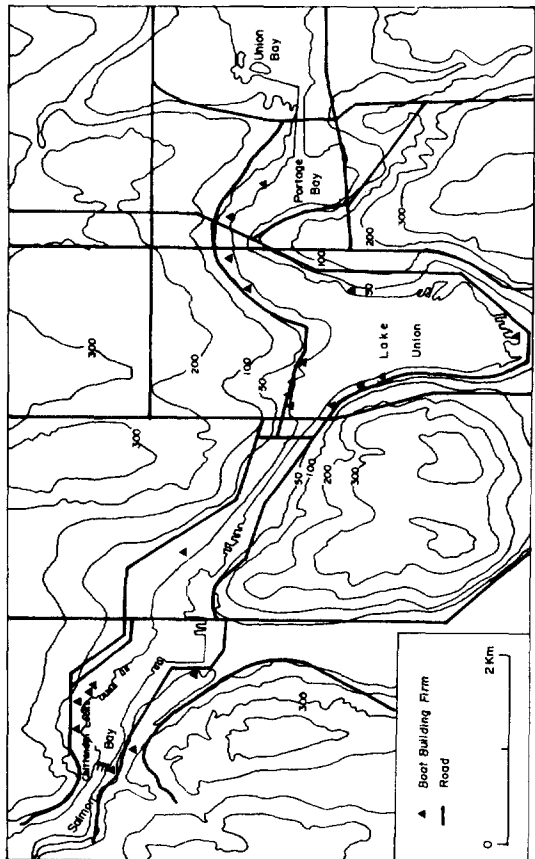


Fig. 2. Distribution of Small Boat Building Firms in the Study Area, 1980.

20) Andrus, A. P. et al. 1976, *ibid.*, Seattle Office of Policy Planning, 1979a, *ibid.*, *idem.*, 1979b, *ibid.*

of the initial firm's location and its locational changes after location as response to its environmental changes.²¹⁾ Therefore, this study attempts to explain the location of small boat building industry in the study area by means of its decision-making on initial location, its locational changes and its linkages after location.

4. Decision-Making of Small Boat Building Industry in the Study Area

Industrial business can be initiated only when the entrepreneur has the motives and abilities to establish the business.²²⁾ When the entrepreneur has the capital to invest, his choice of production is made in response to 1) a personal or vested interest in a technique which he invented himself and which he wishes to use, 2) his contact with inventor, and innovator or an adapter of an innovation who has knowledge of a particular production process and with whom he can establish a business partnership, 3) the search for the use of local resource which the entrepreneur owns or about which he has knowledge, 4) the imitation of successful entrepreneurs

either with whom he had regular contact or with whom he had little or no direct contact but whom he perceives to be successful in a particular product needs of local manufacturers, landowners, transport entrepreneurs and others with whom he had contact or of whom he had information.

Choice of firm location subsequent to these motives and abilities of the entrepreneur may be considered in three levels: regional, sub-regional and site level.²³⁾

At regional level, new firms typically are located where their founders have lived or acquired the experience and knowledge while employed by other firms in the same or related industries.²⁴⁾ Such locations of new firms, tied with the immediate surrounding environment, often resulted from personal contacts with financiers, suppliers and customers when they lived or worked there.²⁵⁾ Because of the disability of small firms to adapt to their environment, most of their locations are localized within the areas in which personal contacts are formed, in order to reduce the risk and the uncertainty.²⁶⁾ For these reasons, when the entrepreneurs establish their firms in their hometowns or the places they have worked, they cannot

21) Fredriksson, C.G. and Lindmark, L. G., 1979, "From Firm to Systems of Firms: A Study of Interregional Dependence in a Dynamic Society," *Spatial Analysis, Industry and the Industrial Environment*, Vol. 1: *Industrial Systems*, eds. F.E.I. Hamilton and G.J.R. Linge, John Wiley & Sons, New York, pp. 352-355.

22) Hamilton, F.E.I., 1978, op. cit., p.14; Stafford, H.A., 1974, "The Anatomy of the Location Decision: Content Analysis of Case Studies," *Spatial Perspectives on Industrial Organization and Decision-Making*, ed. F.E.I. Hamilton, John Wiley & Sons, London, p. 184.

23) Norcliffe, G.B., 1975, "A Theory of Manufacturing Places," *Locational Dynamics of Manufacturing Activity*, eds. L. Collins and D.F. Walker, John Wiley & Sons, London, p. 37.

24) Hamilton, F.E.I., 1974, "A View of Spatial Behaviour, Industrial Organizations and Decision-Making," *Spatial Perspectives on Industrial Organization and Decision-Making*, ed. F.E.I. Hamilton, John Wiley & Sons, London, p. 6.

25) Onyemelukwe, J.O.C., 1974, "Industrial Location in Nigeria," *Spatial Perspectives on Industrial Organization and Decision-Making*, ed. F.E.I. Hamilton, John Wiley, & Sons, London, pp. 479-480.

26) McNee, R.B., 1974, "A Systems Approach of Understanding the Geographic Behaviour of Organizations, Especially Large Corporations," *Spatial Perspectives on Industrial Organization and Decision-Making*, ed. F.E.I. Hamilton, John Wiley & Sons, London, p. 49.

only make profits in many respects of management but can reduce the risks and uncertainties from the environment around them.

At a subregional level, small firms locate in the immediate proximity to suppliers and customers for contact profit,²⁷⁾ and often locate near the same industrial activity for external economy.²⁸⁾ On the other hand, the boat building industry has orientation to fresh water and to its customers,³⁰⁾ because of the characteristics of its product and the importance of information about preference and orders of its customers.³¹⁾ Often this industry orients to the area where abundant skilled labour exist.³²⁾

At site level, when small firms seek their locational site in the urban area, it is a big burden for them to build a new factory. They don't have enough money to purchase land and to build their new factory. In this situation, most small firms prefer to take the cheaper way which is to purchase existing factories or buildings and then erect them for their location.³³⁾

In this study, because the main decision-makers in the location of small firms are the owners,³⁴⁾ the data of the decision-making was collected through interviews with owners of small boat building firms in the study

area. The results are as follows.

Motives and abilities of owners to initiate boat building industry in the study area are as shown in Table 1.³⁵⁾ Most owners indicated interest (39.7%), identity or similarity of past jobs (20.7%), and desire to establish their own business as the main motives prompted them to engage in the boat building industry. They also indicated available technology and knowledge acquired through past jobs (31.1%), availability of capital (22.3%) and interest (20.0%) as the main factors that got them into the boat building industry. As shown in Table 2, eighteen of twenty owners of firms previously have engaged in the boat building industry, boat repairing industry, boat service industry, ship building or carpentry, all of which are the same or related to their present business. On the other hand, in response to the inquiry about conditions of the boat building business at the time they initiated their business, most owners answered "good" suggesting that there was great demand for boats at that time.³⁶⁾ On the basis of the above facts, the main motives of owners of small boat building industry to initiate their business were the demand for boats, interest in boat building and the desire to establish their own

27) Pred, A. R., 1964, "The Intrametropolitan Location of American Manufacturing," *Annals of the Association of American Geographers*, Vol. 54, p.176, p.180.

28) Smith, D. M., 1971, *Industrial Location: An Economic Geographical Analysis*, John Wiley & Sons, New York, pp.82-83.

29) Pred, A. R., 1964, op. cit., p.178.

30) Bastie, J., 1975, op. cit., pp.280-284.

31) Alexander, J. W. and Gibson, L. J., 1979, *Economic Geography*, Prentice-Hall, Englewood Cliffs, pp. 286-287.

32) Hamilton, F. E. I. and Linge, G. J. R., 1979, op. cit., pp.1-24.

33) North, D. J., 1974, "The Process of Locational Change in Different Manufacturing Organizations," *Spatial Perspectives on Industrial Organization and Decision-Making*, ed. F. E. I. Hamilton, John Wiley & Sons, London, pp.242-243.

34) Hamilton, F. E. I., 1974, op. cit., p.14.

35) Owners listed two motives and factors that got them into boat building industry and these answers were scored.

36) Nineteen of twenty-one firms answered "good" to inquiry of how the boat building industry is.

Table 1. Motives and Factors got Owners into Boat Building Industry

Motives	Score	%
Interest	23	39.7
Identity or similarity of past jobs	12	20.7
Desire to establish one's own firm	11	19.0
Family business	7	12.1
Better job than before	2	3.4
To use vacant land	2	3.4
To help friends	1	1.7
Total	58	100.0

Factors	Score	%
Technology and knowledge	14	31.1
Availability of capital	10	22.3
Interest	9	20.0
Availability of factory building	6	13.3
Unfitness of past jobs	4	8.9
Advice of Family	2	4.4
Total	45	100.0

Table 2. Jobs of Owners of Small Boat Building Firms in the Study Area before Present Business

Past jobs	Number of owners	%
Owner of boat building firm	4	20.0
Employee of boat building firm	1	5.0
Owner of boat repairing firm	2	10.0
Employee of boat repairing firm	3	15.0
Owner of ship building firm	2	10.0
Employee of ship building firm	2	10.0
Carpentry	3	15.0
Others	3	15.0
Total	20	100.0

business. The main factors that made it possible to initiate a boat building industry were available technology and knowledge of boat building they acquired through their past jobs as well as capital to invest in their businesses. Therefore, initiation of the boat

building industry in the study area must be a product of cooperation of these motives and abilities of the owners of small boat building firms. More importantly, owing to more available technology and their knowledge of boat building, more personal contacts with suppliers, customers and financiers, owners are better able to manage their firms.³⁷⁾

Locational choice of small boat building industry in the study area is as follows.

As shown in Table 3,³⁸⁾ owners of small boat building firms in the study area indicated "place where boats are concentrated," "residence," "lake area," "boom in boat business", and "preference to Seattle" as the main reasons for the location of their firms in Seattle. These reasons could be classified to two broader categories: "place where boats are concentrated-boom in boat business-lake area",

Table 3. Reasons for the Location of Small Boat Building Firms in the Study Area

Reasons for the location in Seattle	Score	%
Place where boats are concentrated	24	40.0
Residence	27	45.0
Lake area	7	11.8
Boom in the boat business	1	1.6
Preference to Seattle	1	1.6
Total	60	100.0

Reasons for the location in the study area	Score	%
Waterfront	32	53.3
Accessibility to boat center (consumer)	8	13.3
Availability of site	10	16.7
Accessibility to suppliers	8	13.3
Accessibility to related industries	2	3.4
Total	60	100.0

37) Hakanson, L., 1979, "Towards a Theory of Location and Corporate Growth," *Spatial Analysis, Industry and the Industrial Environment*, Vol. 1: *Industrial Systems*, John Wiley & Sons, New York, pp. 115-138.

38) Owners listed two important reasons for the location of their firms in Seattle and in the study area, and these answers were scored.

which is related to the characteristics of product and demand for product of this industry; "residence-preference to Seattle," which suggests the impact of owner's residence on locational choice.

There would be a variety of factors which made Seattle a boat center. These factors would affect to attract the location of this boat building industry into Seattle. That is to say, waterfront environment around Seattle³⁹; climatic condition which is favourable for pleasure boating all the year round but inadequate to other recreations⁴⁰; construction of Chittenden Lock and Lake Washington Ship Canals which encouraged pleasure boating in Seattle⁴¹; increased income of residents making possible to develop recreations;⁴² settlement of Scandinavians who played an important roles in the development of boat industry in Seattle;⁴³ and development of related industry to boat building industry⁴⁴, especially, location of Boeing Company, a pioneer of engine development in Seattle⁴⁵. All these factors would make Seattle a boat center, and again the function of Seattle as boat center would make boat building industry locate in Seattle.

However, though Seattle had favourable locational conditions for boat building industry, it couldn't be certain whether this small boat building industry would locate here without the owners residing in Seattle. As

shown in Fig. 3, all owners of boat building firms reside within Seattle and its vicinities, especially, most of them reside in Ballard area which helped to promote the new recreational industry of pleasure boating in Seattle and its vicinities.⁴⁶

In the locational choice of this small boat building industry within Seattle, as shown

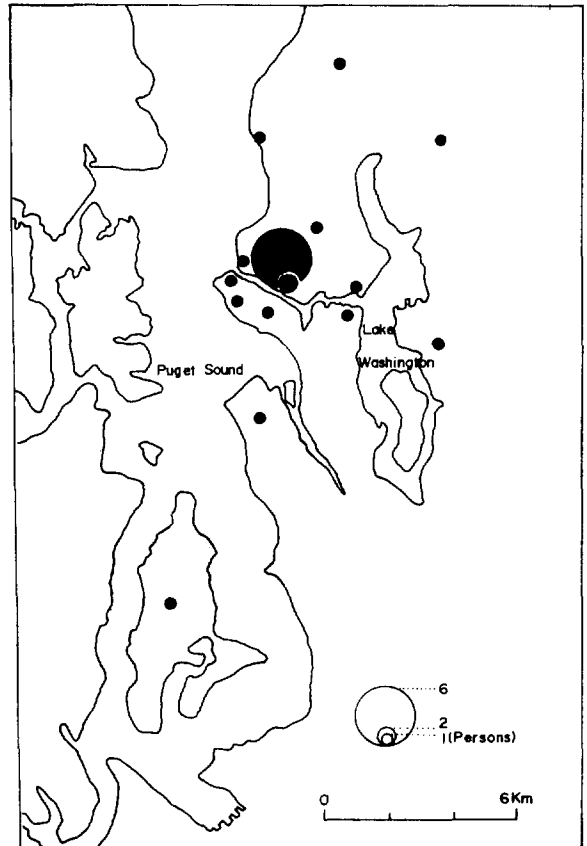


Fig. 3. Owners' Residences of Small Boat Building Firms in the Study Area, 1980.

39) Andrus, A. P. et al., 1976, op. cit., p. 38.

40) Andrus, A. P. et al., 1976, loc. cit.

41) Historic Seattle Preservation and Development Authority, 1979a, *An Inventory of Building and Urban Design Resource*, Ballard.

42) Pred, A. R., 1974, "Industry, Information and City-System Interdependencies," *Spatial Perspectives on Industrial Organization and Decision-Making*, ed. F. E. I. Hamilton, John Wiley & Sons, London, pp. 109-115.

43) Historic Seattle Preservation and Development Authority, 1977a, loc. cit.

44) Karaska, G. J., 1978, "The Metropolitanization of Industry," *Contemporary Industrialization: Spatial Analysis and Regional Development*, ed. F. E. I. Hamilton, John Wiley & Sons, London, p. 34.

45) Andrus, A. P. et al., 1976, op. cit., p. 15.

46) Historic Seattle Preservation and Development Authority, 1977a, *ibid*.

in Table 3, owners indicate “waterfront”, “accessibility to boat center (consumers)”, “availability of site”, “accessibility to suppliers”, “accessibility to related industries” as the main reasons for the locational choice of their firms. These suggest that the location of this industry in the subregional and site level was influenced by such factors as orientation of waterfront, availability of site and accessibility to suppliers and customers. Therefore, locational process of this industry in subregional and site level could be explained as follows.

First of all, due to the characteristics of this industry orienting to fresh water, waterfront area between Shilshole Bay and it of Duwamish waterway could be the candidate for location of this industry in Seattle. However, the former has more advantages than the latter in the following respects. As described, with the completion of Lake Washington Ship Canals and Chittenden Locks, the former area has played such roles as a gateway and home of ships and boats in Seattle,⁴⁷⁾ and as a result, many consumers of this boat building industry are found in the former area. For this reason, as shown in Fig. 4 and 5, 63.2% (327 firms) of boat related industries in Seattle (517 firms), which is more than in the latter area, is concentrated in the former waterfront.⁴⁸⁾ As shown in Fig. 6, also many skilled labourers who are important in the boat building industry, are found in the former area and its vicinities.⁴⁹⁾ Furthermore, as shown in Fig. 3, most owners of a small boat building industry reside in the former area and its vicinities.

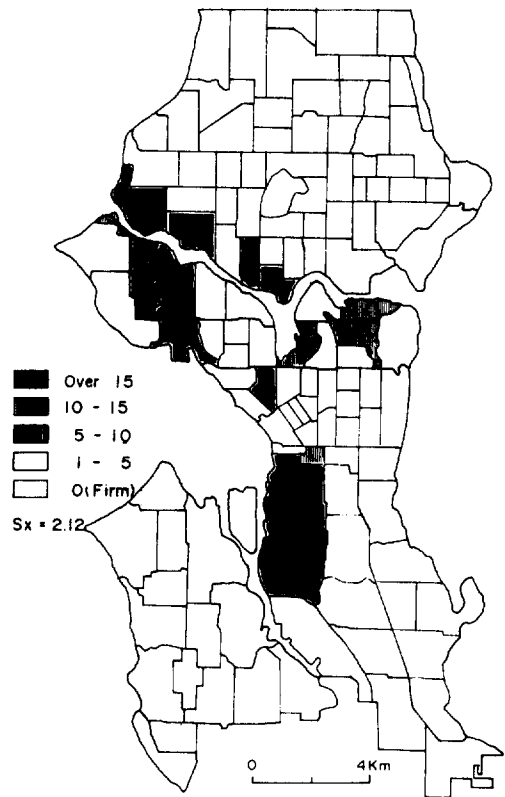


Fig. 4. Distribution of Backward Related Industry to the Boat Building Industry in Seattle, 1980.

In final, for these reasons, the small boat building firms are located in the former waterfront area.

However, due to some locational constraints, the location of this industry was localized in the waterfront between Portage Bay in the east and Chittenden Locks in the west. In the east, Lake Washington where any kind of industrial activity is prohibited to locate by the policy of local government.⁵⁰⁾ In the west, Shilshole Bay which has unfa.

47) Historic Seattle Preservation and Development Authority, 1977a, *ibid*.

48) Pacific Northwest Bell Telephone Company, 1980, *Sell System Yellow Pages for Business and Consumers, Seattle Including Mercer Island, 1980-1981*, pp. 237-254, pp. 846-852.

49) U.S. Dept. of Commerce, Bureau of the Census, Social and Economic Statistics Administration, 1972, *Census of Population and Housing: Seattle-Everett, Washington, 1970*, pp. 53-64.

50) Andrus, A. P. et al., 1976, *loc. cit*.

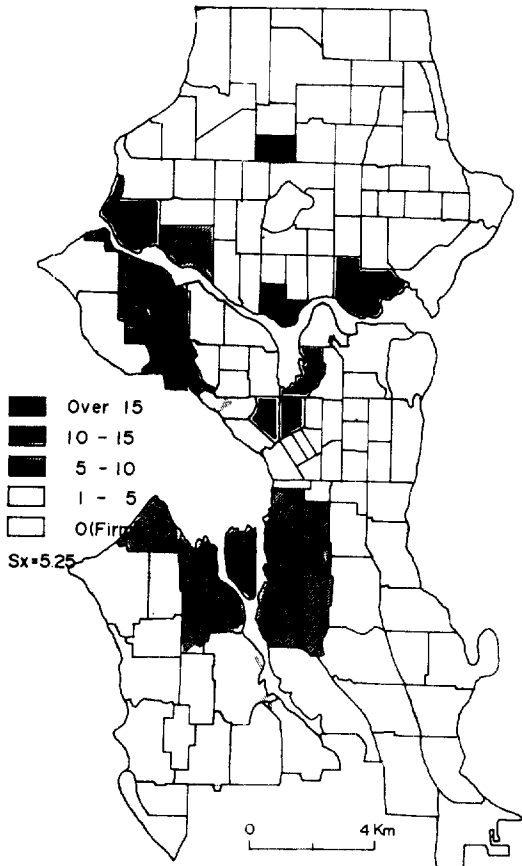


Fig. 5. Distribution of Forward Related Industry to the Boat Building Industry in Seattle, 1980.

avourable locational conditions such as salt water and landforms that hinder location of this industry outside of Chittenden Locks.⁵¹⁾ In contrast to these two areas, the waterfront area between Portage Bay and Chittenden Locks has various locational advantages to this industry as described above.

In the location of site level, the location of this industry was influenced by such factors as orientation to water, location of more intensive commercial and residential land use behind waterfront, and landform (hill). Thus,

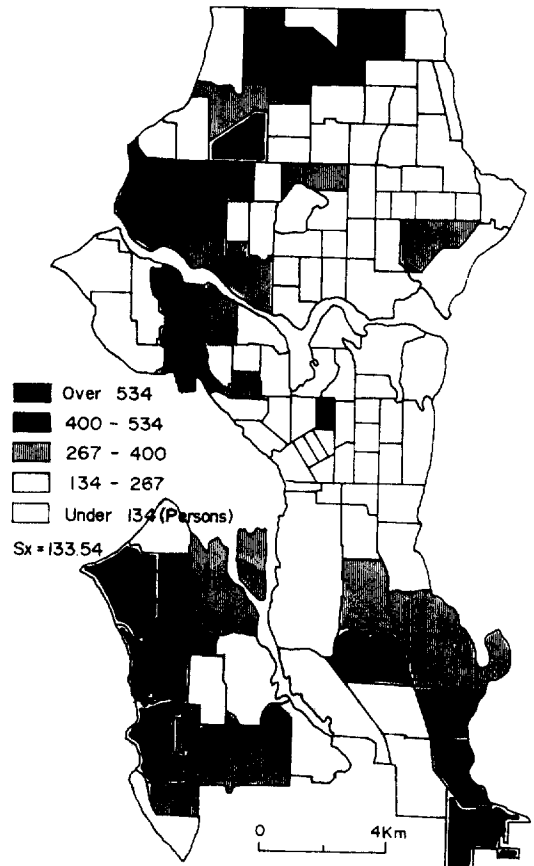


Fig. 6. Distribution of Craftman, Foremen and Kindred Workers in Seattle, 1970.

its location was restricted within cheap waterfront of near-by water. Also due to its weak financial ability, most of small boat building industry took the cheaper way which purchased existing factories (47.7%) or buildings (38.1%) such as boathouse and warehouse, and thus erected them for the location of firms.⁵²⁾

In short, to meet increasing demand in boats, small boat building industry in the study area was initiated by entrepreneurs who had interest and knowledge in boat

51) Griffin, P. F. et al., 1976, *Culture, Resource, and Economic Activity: An Introduction to Economic Geography*, Allyn and Bacon, Boston, p. 292.

52) Of Twenty one firms, eighteen firms established their factories by means of existing factories (ten firms) and buildings (eight firms). Only three firms used vacant land for their establishments.

building, desire to establish their own business, and capital to invest. Due to favourable functions of Seattle for the location of boat building industry and residence of owners, this industry located in Seattle. Its location within Seattle was influenced by orientation of this industry to fresh water, location of its suppliers and customers, policy of local government, residence of owners, landform and source of skill labours, and thus was localized within waterfront between Portage Bay and Chittenden Locks. In final, as a result of more intensive landuse and landform along the waterfront, and financial ability of these firms, most of firms purchased existing factories or building, and thus erected them for their location in this waterfront area.

5. Linkages of Small Boat Building Industry in the Study Area

As a firm begins to operate for its production at a certain place, it has linkages with its related industries in input and output. Recently these linkages have proven to be very important in the explanation of industrial location.⁵³⁾

In general, due to their narrow action space, small firms have stronger linkages with their related industries in the local area rather than with the outside. In contrast,

large firms have stronger linkages with their related industries in the outside areas rather than with the locals due to their wide action spaces.⁵⁴⁾ Moreover, small firms tend to continue their location by means of close contacts with their local suppliers or customers.⁵⁵⁾ As a result, they exist frequently as subcontractors of large manufacturers of commercial firms.⁵⁶⁾

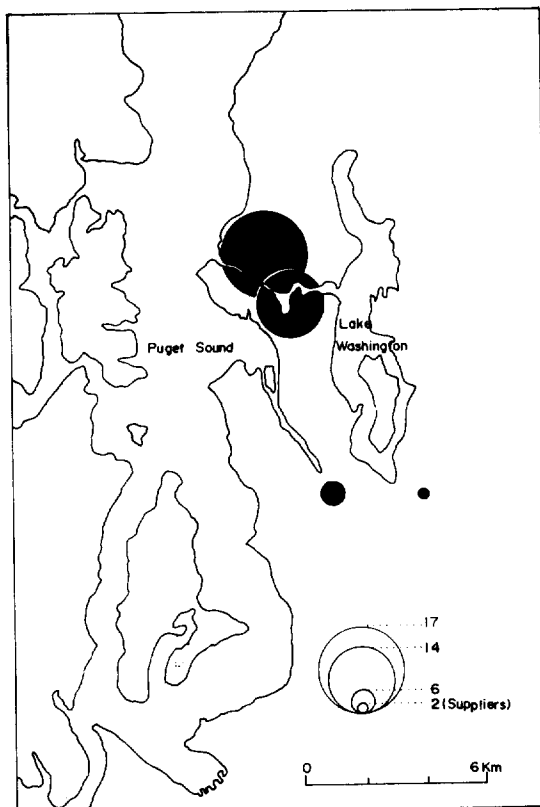


Fig. 7. Distribution of Main Suppliers of Small Boat Building Firms in the Study Area, 1980.

53) Barr, B. M. and Fairbairn, K. J., 1978, "Linkage and Manufacturer's Perception of Spatial Economic Opportunity," *Contemporary Industrialization: Spatial Analysis and Regional Development*, ed. F. E. I. Hamilton, Longman, London p. 122.

54) Britton, J. N. H., 1978, "Influences on the Spatial Behaviour of Manufacturing Firms in Southern Ontario," *Contemporary Industrialization: Spatial Analysis and Regional Development*, ed. F. E. I. Hamilton, Longman, London pp. 117-118.

55) McNee, R. B., 1974, op. cit. p. 49.

56) Fredriksson, C. G. and Lindmark, L. G., 1979, "From Firm to Systems of Firms: A Study of Interregional Dependence in a Dynamic Society," *Spatial Analysis, Industry and the Industrial Environment*, Vol. 1: *Industrial Systems*, eds. F. E. I. Hamilton and G. J. R. Linge, John Wiley &

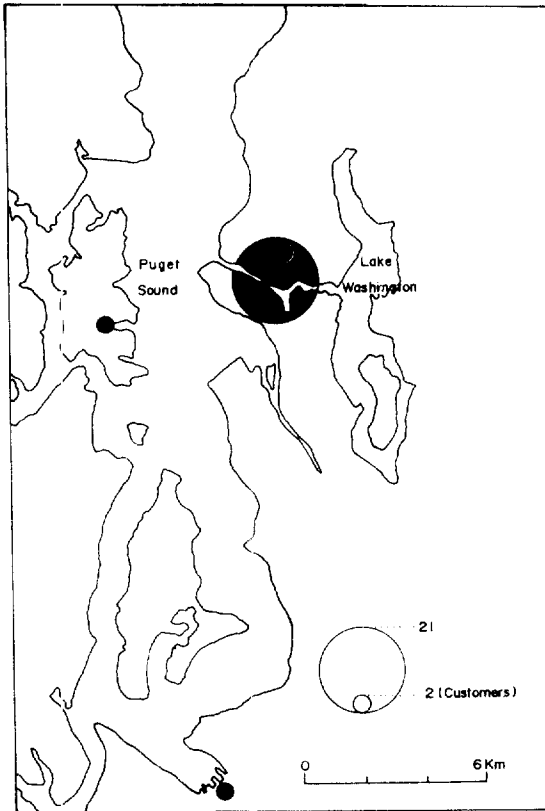


Fig. 8. Distribution to Main Customers of Small Boat Building Firms in the Study Area, 1980.

Inferring that one of the main locational reasons of small boat buildings in the study area as described, was accessibility to their suppliers and customers, and that most boats were made to order it is expected that these small boat building firms may have close relationships with their suppliers and customers.

Suppliers and customers of small boat building industry in the study area are shown in Fig. 7 and 8. As shown in Fig. 7, these small boat building firms purchase their raw materials (frame, engine, propeller and accessories) from Ballard, Lake Union, Boeing Field and Renton-43.6% from Ballard and

35.9% from Lake Union, totaling 79.5%. As shown in Fig. 8, though they sell their products to such area as Green Lake, Angel harbour and Tacoma, 77.8% of total products also falls in the study area. Thus, they form stronger backward and forward linkages with the locals rather than the outsiders.

Main suppliers and customers of this small boat building industry in the study area are shown in Fig. 9. All of the small boat building firms in the study area purchase their raw materials from such suppliers as manufacturers, distributors and dealers. Especially, they depend more on the manufacturers than distributors and dealers in purchase of raw materials. On the other hand, they also distribute their product to such customers as the marine community-pleasure boaters, boat dealers and rental firms. In particular, they distribute 81.5% of their products to the marine community and pleasure boaters. On the basis of above facts, small boat building industry in the study area has relationships largely with local manufacturers in input and with local consumers forming a community, in output. The formation of these strong backward and forward linkages of this industry with the locals would result partly from the concentration of its related industries and consumers in this waterfront area as described. As shown in Fig. 4 and 5, 61.8% of backward related activities and 64.7% of forward related activities to boat building industry in Seattle are concentrated in this waterfront area.⁵⁷⁾ Therefore, needless to say, it is evident that these small boat building firms with tendency to depend on the local suppliers and customers, would have close relationships with these related industries in the study area.

Sons, New York, pp.164-169.

57) Pacific Northwest Bell Telephone Company, 1980, *ibid.*

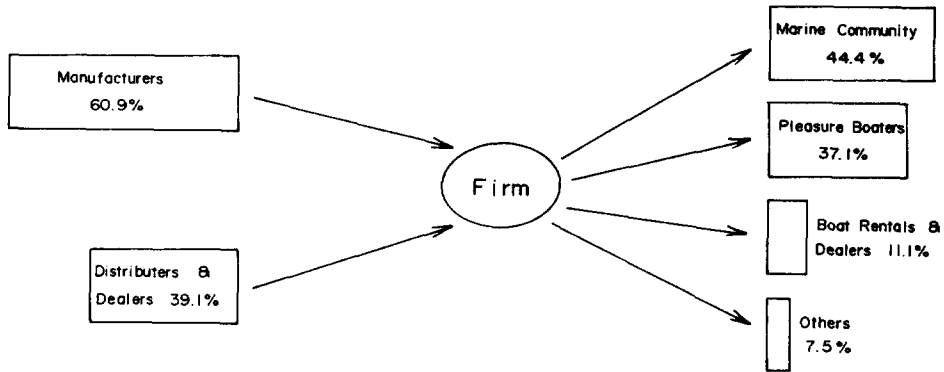


Fig. 9. Backward and Forward Relationships of Small Boat Building Firms in the Study Area with the Related Activities, 1980.

On the other hand, owners of small boat building firms in the study area listed the following as the main reasons for purchasing their raw materials and for selling their products;⁵⁸⁾ they answered “no alternatives” and “closeness” to the inquiry regarding the main reason for purchase of their raw materials. They answered “long standing customers resulted from reputation,” “accessibility to water” and “no alternative community” to the inquiry regarding the main reasons for sale of their products. It is noticeable that the reasons related to transportation cost are insignificant. Among these reasons, “no alternatives” as main reason for the purchase and “long standing customers resulted from reputation” as the main reason for the sale were most important. That is to say, in the purchase of raw materials, their raw material seems to be supplied by the condition of spatial monopoly due to sparseness of suppliers.⁵⁹⁾ Under such market conditions suppliers could control the price of raw materials as well as the supply.⁶⁰⁾ Therefore, it is certain that the behavior pattern of suppliers

favourable impacted development of the small boat building industry in the study area. The best way for such firms to accommodate themselves to such conditions was through proximity with their suppliers, particularly as resulted to the price and quantity of their raw materials. Through such contacts, they were able to gain a favourable and reliable supply of raw materials. For this reason, small boat building firms in the study area locate near to the source of their raw materials.

On the other hand, in the sale of their products, their reputation with the customers seems to be very important. Most of them have customers of long standing which has resulted from this good reputation. This means that these firms have to make boats that suit the customers’ taste in order to gain a good reputation with their consumers. To make suitable boats for their consumers, these boat building firms have to collect exact information from the consumers. As described, because the main customers of this industry are the marine community and

58) Owners listed two reasons for purchasing their raw materials from suppliers and for selling products to consumers, and these answers were scored.

59) McDermott, P. J., 1974, “Market Linkage and Spatial Monopoly in New Zealand Manufacturing,” *New Zealand Geographer*, Vol. 30, pp. 1~17.

60) Smith, D. M., 1971, op. cit., pp. 60~61.

pleasure boaters, which form another community, the boat building firms gain new customers from their good reputation as well as secure their existing customers. In contrast, the boat building firms that gained bad reputations from their customers couldn't attract new customers and would even lose existing customers. Moreover, most of boats made to order, it is necessary to contact with the clients. For these reasons, these small boat building firms locate near to their customers.

In short, due to spatial monopoly in the supply of its raw materials, and characteristics of its customers and its product, small boat building industry in the study area, locates near its suppliers and customers, and has close contact with them. As a result, this industry forms very strong backward and forward linkages with its suppliers and customers. The role of transportation cost is not important in the formation of its linkages. No firms exist as a subcontractor subordinated to large manufacturers or commercial firms which is frequent in the location of small firms.

6. Locational Changes of Small Boat Building Industry in the Study Area

Locational patterns of firms are not static but everchanging. At any one time in the life of a firm, its management faces a

number of stresses, some being the direct result of changes in the firm's environment, others stemming from the intentional and unintentional process operating within the firm.⁶¹⁾ North indentified the following stress that led to locational decisions:⁶²⁾ planned growth of existing product lines; development of regional markets for existing products and services; unplanned growth of existing product lines; horizontal integration; externally generated stresses, stresses imposed by the pattern of the market distribution; decision imposed by the parent company; and rationalization of the operation. If in this situation, the firm is to survive, then the management has to react and adjust to these stresses. Thus internally and externally generated stresses may result in a specific location problem for a firm that requires a change in the locational arrangement of its activities.

Small firms are more influenced by the externally generated stresses rather than internally. Especially, they are sensitive to the stresses imposed by the pattern of the market distribution.⁶³⁾ Also their locational changes are more frequent than that of large firms.⁶⁴⁾ Strategies of firms to these stresses are to control input of production, but if it is impossible to control by means of this, then to relocate, close firms or transfer to other activities.⁶⁵⁾

In the short-term, small boat building firms in the study area have experienced seasonal fluctuation due to the characteristic

61) Gold, J. R., 1980, *An Introduction to Behavioral Geography*, Oxford University Press, New York, pp. 219~224.

62) North, D. J., 1974, op. cit., p. 214.

63) Wadley, D. A., 1979, "Enterprise in Trouble: the Geography of Wholesaling in the Australian Agricultural Machinery Industry, 1967~1972," *Spatial Analysis, Industry and the Industrial Environment*, Vol. 1: *Industrial Systems*, John Wiley & Sons, New York, pp. 195~196.

64) North, D. J., 1974, op. cit., p. 222.

65) Walker, D. F. and Collins, L., 1975, "A Perspectives," *Locational Dynamics of Manufacturing Activity*, eds. L. Collins and D. F. Walker, John Wiley & Sons, London, pp. 1~2.

of this seasonal industry. However, in long term, they have experienced only good times.⁶⁶⁾

As shown in Fig. 10, there are prominent seasonal changes in the distribution of production amount in contrast to the minor changes in the operation days. There is no prominent gap between maximum (May to September) and minimum (December to March) of operation days. In contrast to this, there is a prominent gap between maximum (May to September) and minimum (December to February) of production amount. This suggests that there is a relationship between seasonal variation of production amount and seasonal fluctuation of demands for boats, and that these firms enlarge or reduce components of its input to meet seasonal fluctuation of demands without change of operation days. Also all owners of small boat building firms in the study area indicated factors related to the seasonal fluctuation of demands as the reasons for these seasonal control of production inputs.⁶⁷⁾ Therefore, it is evident that small boat building firms in the study area meet the seasonal fluctuation of demands by means of control-not of operation days but of production inputs. In the face of this seasonal fluctuation, multi-plant, multi-functional large firms can transfer their employees to other sectors within the same firm. In contrast to this, small firms with no such ability must reduce their employees.⁶⁸⁾ As a result, as shown in Table 4,⁶⁹⁾ looking for

skilled labour is the most severe of the operational difficulties which small boat building firms in the study area have suffered.

On the other hand, because small boat building firms in the study area have met with only good times in the long-term, locational changes of firms only in response to good times could be observed in this study.

Of twenty one small boat building firms in the study area, only five firms have not experienced locational change, sixteen firms have experienced such locational changes as continuous extension (nine firms) or relocation (seven firms) in response to the increase of storage stemmed from increase of demands.

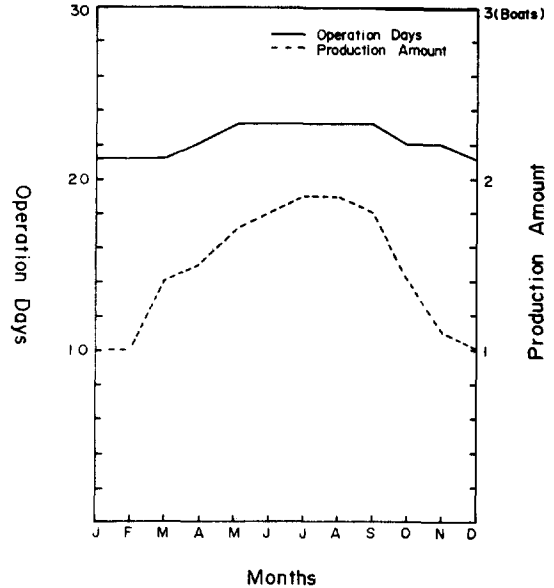


Fig. 10. Monthly Distribution of Operation Days and Production Amount of Small Boat Building Firms in the Study Area, 1980.

66) Of twenty one firms, only two firms indicated "bad" and the remainder answered "good" to the inquiry of how business has been.

67) Owners of boat building firms indicated the fluctuation of demands (eleven firms), changes in the amount of boat users (one firm) and changes in the amount of works (one firm) as the main reasons for the monthly changes in operation days and production amounts.

68) Lever, W.F., 1979, "Industry and Labour Markets in Great Britain," *Spatial Analysis, Industry and the Industrial Environment*, Vol. 1: *Industrial Systems*, eds. F. E. I. Hamilton and G. J. R. Linge, John Wiley & Sons, New York, pp. 89~114.

69) Owners of boat building firms listed three major difficulties in the operation of their firms and these answers were scored.

As shown in Table 5, most firms took the cheaper way which facilitated existing factories or buildings not only for their continuous extension but also for their relocation. It is noticeable that most of relocations as shown in Fig. 11, are localized within their existing action spaces. This verify again that locational changes of small firms occur frequently only within their existing action spaces and that they take the cheaper way for their locational changes.

In short, small boat building firms in the short-term have coped with seasonal change of demands by means of control on production inputs. In the long-term, because they have experienced only good times, they have coped with the increasing demands by means of such locational changes as continuous exten.

Table 4. Difficulties in the Operation of Small Boat Building Firms in the Study Area, 1980

Difficulties	Score	%
Looking for skilled labour	59	47.6
High wage rate and insurance cost for skilled labour	33	26.6
High insurance cost for transportation of boat	8	6.5
Environment law	8	6.5
High taxes	7	5.6
Purchase of raw materials	5	4.8
Lack of capital	2	1.6
Competition between firms	1	.8
Total	123	100.0

Table 5. Landuse for extension and Relocation of Small Boat Building Firms in the Study Area

Landuse	Extension (number of firms)	Relocation (number of firms)	Total
Other's factory	3	2	5
Other's building	4	3	7
One's own vacant land	1	1	2
Other's vacant land	1	1	2
Total	9	7	16

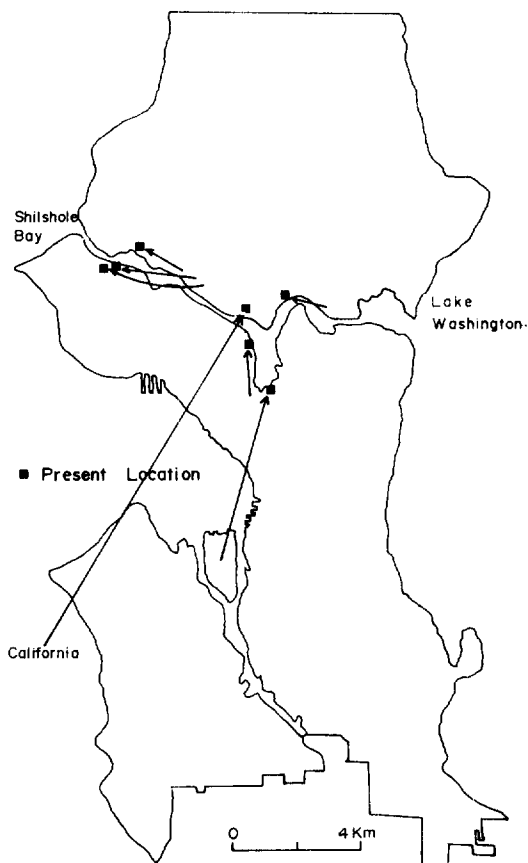


Fig. 11. Relocation of Small Boat Building Firms in the Study Area.

sions through merges of existing factories or buildings, and relocation to existing factories or buildings within their action spaces.

7. Conclusion

Small boat building industry in the study area was originated from the initiation by entrepreneurs with interest and ability in boat building who were stimulated by demands from the favourable environment of Seattle for the boat industry. However due to the locational characteristic of this industry oriented to fresh water, the location of suppliers and purchasers, the landforms surrounding, and the policy of local government, the location of this industry localized

within waterfront area between Chittenden Locks and Portage Bay. Within this waterfront area, due to the surrounding landform and landuse, and financial ability of firms, existing factories or buildings along this waterfront were used for their location.

Since its location, this industry have had strong linkages with both its suppliers and purchasers. Furthermore, due to the spatial monopoly of suppliers stemmed from the scarceness, and characteristics of their customers and product, most of small boat building firms in the study area have had close contacts with their local suppliers and customers, and they have continued their location through these contacts.

On the other hand, owing to the favourable business environment for boat industry in Seattle, small boat building firms have not suffered from the long-term depression but from labour supply stemmed from the seasonal fluctuation of demands. Therefore, they have experienced only such locational changes

as control on production input to meet this seasonal fluctuation, and continuous extensions through merges of existing factories or buildings surrounded or relocations to existing factories or buildings within their action spaces.

Thus, this small boat building industry has actively worked as an important subsystem of Seattle's economic system. However, if one of its related activities, in particular, the marine and marine recreation industry, decline due to the stress from external environment e.g., decline of resident's income, relative development of other recreation industry, this industry also will decline.

In short, with exception of the locational characteristics related with orientation of this industry to fresh water, this small boat building industry in the study area has the same locational characteristics as that of other small firms.

(Busan Women's University)

소규모 boat 공업의 입지에 관한 연구 : Seattle 의 Washington 운하지역의 경우

임 영 대*

요 약

본 연구는 미국에서 boat 공업의 중심지 중의 하나인 Seattle 의 boat 공업의 입지와 그 변화를 고찰함으로써 소기업의 입지를 구명하려고 하였다.

본 연구에서는 먼저 Seattle 에서 소규모 boat 제조업체가 가장 많이 집중한 Washington 호와 Shilshole 만간의 운하지역을 연구지역으로 선정하여 이 지역내에 입지하고 있는 boat 제조업체의 기업주와 interview 한 결과를 기본자료로 이용하였다.

이상에서 언어진 결과는 다음과 같았다.

연구지역의 소규모 boat 공업은 boat 제조에 흥미와 능력을 가진 기업가들이 boat 공업에 유리한 Seattle 의 환경의 영향을 받아 그들의 기업을 그들의 오랜 거주 지역에서 시작하므로서 발생하게 되었다. 그러나 담수를 지향하는 이 공업의 입지상의 특색, 원료공급처와 제품판매처의 위치, 주위의 지형 그리고 지방정부의 정책에 기인하여 이 공업은 Chittenden Locks 와 Portage 만간의 운하지역에 그 입지가 국한되었다. 다시 이 지역내에서는 주위의 지형과 토지이용, 기업의 재정적인 능력 때문에 이 운하지역에 연해있는 기존공장 혹은 건물을 이용하여 입지하게 되었다.

입지후에 이 공업은 원료공급처와 제품판매처와의 강한 linkage 를 형성하고 있다. 더구나 원

료공급처의 회소성에 기인한 공간적 독점과 소비자 및 제품의 특성 때문에 연구지역의 대부분의 소규모 boat 제조업체는 바로 근처에 있는 원료공급처 및 소비자와 긴밀한 contact 를 하고 있고 이러한 contact 를 통하여 그들의 입지를 존속시키고 있다.

한편 Seattle 이 가지고 있는 boat 공업에 유리한 기업환경의 덕택으로 이들 소규모 boat 제조업체들은 수요의 계절적인 변동에서 초래되는 노동력의 공급 때문에 곤란을 받을 뿐 장기적인 불황에 직면한 적은 없다. 이리하여 이들 업체들은 이러한 계절적인 변동에 대처하기 위해 생산 input 의 조절, 주위의 기존공장이나 건물의 병합을 통한 연속적인 확장 혹은 그들의 action space 내에 있는 기존공장이나 건물을 이용한 이동등과 같은 입지변화를 보여왔을 뿐이다.

이리하여 연구지역의 소규모 boat 공업은 Seattle 의 경제 system 내의 주요 subsystem 의 하나로서 활발히 움직이고 있다. 그러나 만약 기업의 외부환경에서 초래되는 stress, 즉 주민의 소득저하, 타 recreation 기업의 상대적인 발달등에 의해서 그 관련 경제활동, 특히 해양산업, 해양 recreation 산업이 쇠퇴하게 되면 이 공업 또한 쇠퇴될 것이다.

요컨대 담수 지향성과 관련된 입지상의 특색을 제외하고는 연구지역의 소규모 boat 공업은 타 소규모 공업과 동일한 입지상의 특색을 가지고 있다.

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