

HOUSING PROCESS AND MANPOWER MOBILIZATION
(LOCATIONAL RELATIONSHIP BETWEEN LABOR
& INDUSTRIES IN DEVELOPING ECONOMIES)

by

Hok Lin J. Leung
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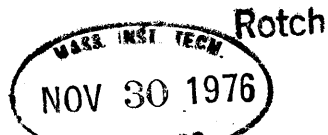
SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF CITY PLANNING
OF THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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-ABSTRACT-

This research is part of an overall effort to re-examine the meaning of the housing process in economic and social development. It looks at the locational relationship between certain manufacturing industries and their labor supply in order to understand how the housing (urbanization) process may affect the supply of labor for economic activities outside housing construction.

It is a case study of the location of the plastic and shirt manufacturing industry in Hong Kong in the early 50's and the late 60's. These industries represented the typical industrial opportunities available to entrepreneurs in Hong Kong. Their production processes and labor requirements were representative of many industrial undertakings at significant stages of economic and social development.

The logic of location is perceived as an optimization of all the factors of production and market consideration. Each of these location factors are analysed. Empirical evidence of the patterns of factory location is used to verify the relative importance of these factors.

Location of labor supply is found to be the most important location consideration at the early stage of industrialization when flexibility of production was the paramount concern and labor mobility was severely limited. At a later stage stabilized market demands, systemized and mechanized production, and improved labor mobility made labor concentration a much less important location consideration.

This research challenges the validity of conventional theories of industrial firm location in a micro-urban developing economy context. It confirms the heterogeneity

of the location factors within a micro-urban setting and the dynamics of these factors in a rapidly developing economy.

However the most revealing finding is that the location of factories is but a physical manifestation of the underlying dynamic urbanization-industrialization-social development inter-relationship, that urbanization, industrialization and social development can cause and reinforce one another. Depending on the stage of development of each of these elements and the macro socio-economic condition any of these can be critical to the development of the others.

Their dynamic inter-relationship has significant policy implications. Narrowly defined policy "concerns" (whether in urbanization, industrialization and social development) will often miss the critical impact of policy actions (or non-action) on other important and relevant development issues.

Thesis Supervisor: _____

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making of this thesis.

I wish to dedicate this thesis to

my wife for her love and encouragement.

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CHAPTER 1: INTRODUCTION

point of departure
the hypothesis
reason for the enquiry
methodology
empirical materials

POINT OF DEPARTURE

A preliminary investigation on the social and economic environment and the economic activities of the inhabitants of an old resettlement estate in Hong Kong (Shekeipmei)¹ revealed the following.

A large concentration of low and medium skill labor having the following characteristics:

- a. urban experience of some kind,²
- b. willingness to work long and irrgrular hours,³
- c. willingness and capability to acquire occupational skills,⁴
- d. willingness to work in factories as well as in own dwellings, and
- e. approval of children and housewives to work in industries⁵ constituted a special kind of labor supply which was particularly useful for a pattern of industrial development which had
 - a. long hours and/or irregular shifts,
 - b. dispersed yet coordinated production processes,⁶ and
 - c. large number of individual establishments with small scale operation.⁷

Such labor supply seemed to have a certain "monopolistic" advantage over other sources of labor supply.⁸

These industrial types, due probably to external economies, tended to aggregate. They tended to locate near their labor supply sources. There seemed to be an symbiotic relationship existing between the industries and their labor supply. They both "grew" on each other.⁹ When the industries began to be

replaced by more modernized, mechanized and systemized modes of production the labor supply was replaced by a younger, better educated and more mobile labor force.

THE HYPOTHESIS

The research is an attempt to test the hypothesis that for certain manufacturing industries in a developing economy the logic of their micro-urban location requires them to place their production sites at sources of labor supply viz-a-viz at market or other factors of production.

REASON FOR THE ENQUIRY

The research is part of an overall effort to

- a. re-examine the meaning of the housing process in economic and social development.
- b. challenge the conventional wisdom of public intervention in housing as to render it relevant and useful in a development context.

One area of investigation is the relationships between the housing (urbanization) process and manpower mobilization in developing economies.

Manpower mobilization in this context includes the mobilization of the labor force of all skill and education levels and demographic descriptions as well as the conventional meaning of training and development of occupational skills. The housing process on the policy level includes the production, distribution and consumption of housing the corresponding socio-economic implications for the society in general and for the people housed in particular.

It has been demonstrated that the problem of housing for the urban poor is a problem of poverty where the physical conditions of housing is only one of the many symptoms (and cause for further poverty). Improvement in the physical conditions of the dwelling place are often irrelevant and sometimes contrary to the cause of poverty which public intervention in housing is supposed to help to eliminate.

The problem with poverty for an individual is the lack of income or lack of ability and opportunity to realize income. Housing as a social welfare undertaking does not intend to enhance his chance to obtain income. The most it does is to make his poverty less unbearable. Therefore if one looks at housing for the poor as only a social welfare undertaking one necessarily finds housing drains away resources from other productive sectors. The conventional equation for housing is one of economic cost and social benefit. Social cost and economic benefit are seldom examined.

The housing process can contribute to economic growth (for the individual and for the society) through its effects on employment, skill training, labor supply reservoir for other economic activities and other on-site productive functions. The housing process can be important in mobilizing the most abundant, yet often neglected resource in developing countries --- the human resources.

It has been recognized that the mobilization and development of manpower in developing countries is not only vital to economic growth but also essential to the sustenance of a social environment conducive to economic growth. Idle labor is ostentatiously undesirable socially as well as economically. The sheer volume of the potential labor force is enough to warrant a most sensitive and responsive development policy. A comprehensive and responsible development policy should integrate its manpower mobilization and development strategy with the overall resource mobilization policy. A practical and realistic manpower strategy should aim not only

at short-term goals such as temporary reduction of unemployment but also at development of skilled and motivated labor force at the right place, the right time and in the right scale for overall economic growth.

This research chooses to look at the location relationship between certain industries and their labor supply in order to understand how the housing process may affect the supply of labor for economic activities outside housing construction.

METHODOLOGY

This is basically a case study of the location of manufacturing industries in Hong Kong. Two industries are chosen --- the shirt and plastic-ware manufacturing industries. Two time periods are selected for examination --- the early to mid 50's and the late 60's.

The time period of the early to mid 50's is chosen because it represented a very definite stage of socio-economic development in Hong Kong. It was a period of massive immigration and industrial take-off. The experience of Hong Kong, though unique in itself, was similar in many respects to that of other developing regions undergoing similar processes of economic and social change. If Hong Kong's model of development can be useful in any way to other countries the early development of its industries can offer important clues of its success.

The late 60's in Hong Kong was a period of renewed expectations --- the children of refugees had become young men and women with different education levels, cultural values, and mobility than their parents. It was a period of foreign restriction for the older industries and expansion for the new ones. It was a period of direct investment of multi-national corporation from the outside and consolidation, merging and diversification from the inside. All in all the period after the civil disturbance in 1967-68 (corresponding to the Cultural Revolution in China) marked a very different Hong Kong than the one existed before 1967.

The two industries are chosen because they represented the typical industrial opportunities available to entrepreneurs in Hong Kong. The shirt and plastic manufacturing industry were introduced in the early 50's and prospered during the 50's and 60's. Although new industries began to appear (e.g. electronic assembly, tourism) these two industries still formed a major portion of the gross national product and employed large volumes of labor in the late 60's.

The production processes and labor requirements of these industries are studied. The logic of location of the production sites is examined and tested with data of the actual location patterns.

The following methodology will be used.

1. Critical review of the relevance and adequacy of the assumptions and theoretical framework of traditional theories of industrial firm location to explain the logic of manufacturing location in a micro-urban developing economy context.

2. The case study.

For each of the two time periods chosen the following will be studied.

- a. general socio-economic background:

This includes the pattern of urbanization, the demographic and personal characteristics of the labor force and the pattern of industrialization.

- b. production process and labor requirements of the industries:

This includes the production and marketing operation of the industries, the process of manufacture and the labor requirements in terms of type, quantity and quality of labor.

- c. logic of location of manufacturing sites from the perspective of the entrepreneur:

This includes considerations of market, input factors (raw materials, capital, land, transportation and labor) and external economies of scale and agglomeration.

- d. empirical evidence of the pattern of location:

This includes the existing pattern of factory location as well as the pattern of potential location demand.

The conditions of each of the critical factors identified in c. at each location will be examined.

- e. verification of the logic of location by the empirical evidence and identification of the dynamic relationship between labor and the production process.

- 3. Examination of the relationship between the process of industrialization and the pattern of urbanization (housing) and investigation of policy implications in light of the findings.

EMPIRICAL MATERIALS

1. Interviews.

In-depth interviews covering

- A. Entrepreneurs who were engaged in the manufacturing industries (shirt and plastic) in the early 50's and the late 60's:

These included owners of small to medium size factories from different branches of the industries.

- a. decision criteria for entry into and exit from the industries
- b. description of business operation and practices
- c. production processes and labor requirements
- d. description of types and qualities of labor employed, including where the labor came from
- e. location consideration --- factors, priorities and trade-offs

- B. Workers who were, or had been engaged in the industries:

- a. economic, social and physical considerations in choice of factories (industries)
- b. job description
- c. preferences of location of "work place"

- C. Industrial building developers:

They were not interviewed for the purpose of this research. These interviews were conducted for the purpose of real-estate development by the author

while working as an architect in Hong Kong.

- a. types of industrial space --- size, facilities, building types (high-rise flatted factory vs uni-purpose factory)
 - b. location demands for the different types of industrial space
 - c. development implication of industrial land-use control
 - d. industrial development pattern and potential differences between Hong Kong island and Kowloon
- D. Labor Department officials:
- a. labor laws especially child labor and female labor laws
 - b. industrial description and classification
 - c. labor statistics
- E. Housing Department officials:
- a. housing statistics
 - b. criteria for choice of housing project location

Interviews were conducted by the author and his relatives who were also engaged in the industries. Informants were not selected by random sampling. They were acquaintances and their connections. But care had been exercised to include all different types and sizes of factories and business operation in the industries. About 10 entrepreneurs were interviewed for each of the industries. About 5 workers were interviewed for each of the industries.

2. Census and related studies.

A. Government of Hong Kong:

- a. general census data
- b. industrial, labor and trade statistics
- c. descriptions and informations of urbanization, industrialization and social development

B. University of Hong Kong:

sociological and architectural studies on squatter settlements and resettlement estates in Hong Kong island and Kowloon

C. The Chinese University of Hong Kong:

sociological and economic study on Kwun Tong --- the first industrial town

D. United Nations High Commission on Refugees:

demographic and personal characteristics of refugees and their locations of concentration

E. Surveys by the Far Eastern Economic Review and

Wah Kiu Yat Po:

- a. general physical, social and economic background
- b. industrial and trade and labor statistics and descriptions
- c. information on urbanization, industrialization and social development

3. Personal contacts and observations.

- A. 1955-1958 while living in a squatter area (Shekeipmei) and working in one branch of the plastic industry (used material reprocessing)

B. 1958-1973 while living in the immediate area of squatter and resettlement areas in private tenements or in low-cost housing projects for the low-income.

CHAPTER 2: CRITICAL REVIEW OF THEORIES
OF LOCATION

introduction and definitions

critique of the theories '

the minimum cost approach

the maximum market area approach

the marginal location approach

the behavioral approach

conclusion

Theories of location of industries have been developed by economists and urban geographers to explain the logic of location and the inter-relationship between land and industry. They can broadly be classified into 3 groups according to their concerns.

1. those that seek to understand the social and economic implication (e.g. migration, employment, linkages etc.) of particular industries at particular locations.¹
2. those that describe past and/or present location systems and to predict possible location trends.²
3. those that seek to optimize production and delivery cost of industries, and those that seek to optimize the market areas.³

In this research we are interested in how theories explain the logic of location of "labor-intensive" "secondary manufacturing" industries in a micro-urban developing economy context. The perspective of the entrepreneurs is adopted in the evaluation of the location factors.⁴ The above classification is a functional classification and theories do overlap in their functions. The first two groups are positively policy-oriented in the sense that they adopt a priori the perspective of the policy makers and operate on a scale not normally within the grasp of the individual entrepreneurs. The third group of theories seek to explain the logic of location from the perspective of the entrepreneurs, and will therefore be examined in detail in this Chapter.

In order to limit the evaluation of the theories to issues relevant to the research terms concerning the scope and nature of the investigation must be first defined. These are

1. labor-intensive industries,
2. secondary manufacturing industries, and
3. urban areas in developing countries.

1. labor-intensive industries

Industries with high $\frac{\text{labor cost}}{\text{total production cost}}$ ratios or high $\frac{\text{labor cost per unit output}}{\text{capital cost per unit output}}$ ratios are traditionally classified as being labor intensive.

Labor intensity is a relative concept. It depends on the price of labor and the price of other inputs, as well as the volume of labor used. In developing countries where the perceived scarcity of capital and abundance of labor reduce the relative price of labor. It can be argued that labor productivity is lower in developing countries. But this is a misinterpretation because the productivity of labor is a measure of the labor cost to capital cost ratio in production. If productivity is low the ratio is low. But if price of capital is high, as often is the case in developing countries the $\frac{\text{labor cost}}{\text{capital cost}}$ ratio comparison (i.e. productivity comparison) between more developed countries where capital cost is low and labor cost high and developing countries where capital cost is high and labor cost low becomes

irrelevant. Of course this is a much simplified argument, but it nevertheless indicates the weakness of the concept as traditionally defined.

Labor intensity by the volume of labor employed can be a more appropriate measure depending on where and how it is used. In this research the hypothesis to be tested involves industries which supposedly employ large volumes of labor per unit production, whether in terms of number of labor or man-hour input to produce a unit value of output. $\frac{\text{labor cost}}{\text{capital cost}}$ ratio per unit value of output is not of primary importance in the analysis. In fact in certain industries where $\frac{\text{labor cost}}{\text{capital cost}}$ is high such as in R. & D. and other technologically advanced industries or service industries the labor consideration will be quite different from that to be tested in the research. In this research emphasis will be placed on industries that have high labor cost per unit value of output and employ large volumes of labor.

2. secondary manufacturing industries

These are manufacturing industries using products of other primary manufacturing industries as raw materials. Their outputs are usually finished products ready for consumption (as defined conventionally).

- a. The apparel industry uses cloths which are made from cotton. Cloth is at least two stages (weaving, spinning) away from cotton growing and processing which is a primary agricultural industry.

b. The plastic industry uses polystyrene which is made as a petroleum bi-product. It is at least one stage (petrochemical processing) away from the extracting and refining of petroleum which is a primary extracting industry.

The manufacturing process may (though not necessarily) increase the bulk (e.g. furniture from wood or rattan, bread from flour). It does not normally add weight to the raw materials.

The size of the individual firm to be investigated will be restricted. The research will concentrate on firms whose sizes in terms of capital investment, employment and physical size are such that no individual firm or combination of a small number of firms can effectively alter the physical, economic and social environment within which they locate. In other words they can only respond individually to the macro productive environment. Whether or not they are classified as "formal" or "informal" industries is of no consequence.

3. urban areas in developing countries

This working definition refers to geographic areas which have high concentration of population measured in number as well as in density, and with a non-agricultural character. Most cities in developing countries will qualify for this definition. Significant variations in the quality of urban infrastructure and facilities are anticipated. This research will consider only micro-urban and not regional locations.

There are four distinct schools of theories of industrial firm location.

1. the minimum production and delivery cost approach
2. the maximum market area approach
3. the marginal location approach
4. the behavioral approach

The review includes discussions on the following.

1. basic assumptions and the analytical framework of the theories
2. their relevance to the issues of concern in the research
3. their operational feasibility in a developing economy context
4. the possibility of relaxation of basic assumptions and/or analytical logic to better explain the location phenomena in a micro-urban developing economy context

Illustrative diagrams are taken from R.C. Riley: Industrial Geography, London, Chatto & Windus, 1973.

1. the minimum cost approach (Alfred Weber⁵ to Edgar Hoover)⁶

A. the theory

This school stresses the need to minimize cost, especially transport cost, while assuming that price and demand are not significant in themselves.⁷ The theory was first developed in the late 19th Century and the early 20th Century in Europe and America amid an environment of rapid industrial transformation from the earlier manufacturing to heavily capitalized and mechanized operations (e.g. steel, coal, aluminum extraction and processing, and the automobile industry), where value to weight ratios were usually low.

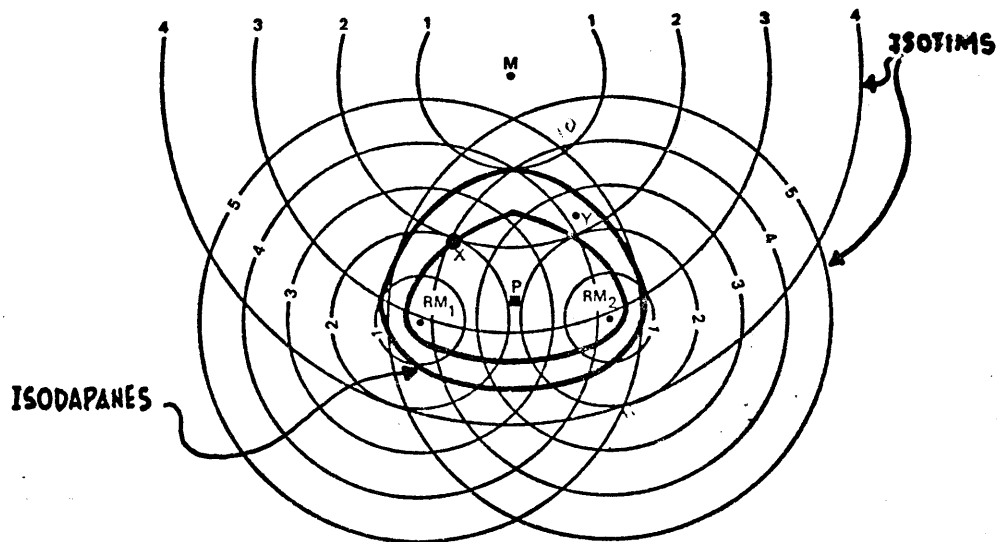
It is an attempt to construct a general "pure theory" of location. Three factors are emphasised --- transport cost, labor cost and agglomeration effect.⁸ Transport cost⁹ is considered the most important single determinant providing the basic orientation of the industries, with labor costs as the "first distortion" and agglomeration effect from external economies as the "second distortion".

The following assumptions are adopted.

- a. Within an area cultural, economic (including technology) and political systems are uniform.
- b. Material and energy sources are predetermined.
- c. Points of consumption are predetermined, i.e. each producer seeks to one given market.
- d. Distribution of labor with fixed (not equal) wages at different location is given. Supply of labor at fixed cost is unlimited. Labor is completely immobile.

e. Transport costs are a function of weight and distance (size of shipment, nature of goods, characteristics of terrains are handled by adjusting the transport cost).

The exercise is to discover the least transport cost location for one product and one plant. Isotims¹⁰ are geographic cost contours drawn by joining points of equal transport cost for an equal unit to be transported. They are drawn from sources of raw material and market (location predetermined). These different sets of isotims are combined to form isodapanes (see diagram below) which are cost contours drawn by connecting points representing equal "combined" costs derived from the different isotims. The least cost isodapane represents the best location set. Often the least cost isodapane is at sources of raw materials or markets. The distortions of labor and agglomeration are then added on the isodapane system as distortions to be modified.



CONSTRUCTION OF ISODAPANES :

M = MARKET RM = RAW MATERIAL

e.g. X = 8 ISODAPANE : $\left\{ \begin{array}{l} \text{TRANSPORT COST FROM RM}_1 = 2 \\ \text{RM}_2 = 4 \\ \text{DELIVERY COST TO M} = 2 \end{array} \right.$
 P IS ON 7 ISODAPANE

B. evaluation of the theory

This is a highly mechanistic model and has been severely criticized. The following are some general criticisms.

- a. It requires graphical or analog methods for solution, since the determination of the minimum transport cost point in a location polygon does not submit to straightforward analytical methods.
- b. Transport cost is often determined more by transportation networks and nodes than by pure geometry, as suggested by the theory.¹¹
- c. It disregards institutional factors, especially government actions, which are important to location.
- d. The agglomeration effect assumption is too simplistic in that industries "necessarily" move and combine at a common segment formed by the geometrical intersection of the isodapanes.
- e. The assumption of limitless demand and non-fluctuating price is unrealistic.

It must be emphasised that the theory was developed to explain the regional location of heavy extracting or primary manufacturing industries where transport cost of material and finished product was the most important variable given the rigid production methods and factor endowment assumptions. Its relevance in explaining the location of non-primary manufacturing industries in a micro-urban context in developing economies is severely restricted.

- a. Some assumptions are more realistic in a micro-urban context than in the larger regional context which the theory is supposed to deal with --- such as economic and political uniformity and predetermined material resource and energy sources. But heterogeneity of certain other location factors are magnified on the micro-urban level, especially for small scale manufacturing industries --- such as the supply and cost of labor and land, and the distribution of transportation and agglomeration. Such location variations have no transport cost significance but are more relevant to micro-urban considerations.
- b. The transport cost of materials and products depends on the distance between destinations, the number of breaking points and the freight structure. Their micro-urban variation is not likely to have significant impact on the total production cost. Transportation concerns of labor mobility and communication with economic intelligence centres may be of more relevant concern.
- c. The relevance of transport cost in industries of high labor content is further reduced because transport cost is usually marginal to the total production cost. This is especially true in developing economies where urban manufacturing industries are largely labor-intensive.

Transportation allows the opening up of cheaper land at the urban fringe, gives access to the economic intelligence system of the city, and permits the tapping of a wider range of labor and material resources and market. For the urban manufacturing entrepreneurs availability of proper transportation is often a basic necessity for production. This is even more important in developing countries where transportation networks (for goods and personnel) may be developed quite unevenly within the same metropolitan area. The cost of transportation is only secondary because it is likely to be only marginal to the total cost of production. These entrepreneurs are unable to provide their own transportation network if such is not given as infrastructure. Cost of transportation is only a minor consideration once it becomes available.

However, it should be recognized that transportation is not the only, or even the chief variable in consideration of labor mobility at constant price in developing countries. There are cultural, social and institutional variables which may exert far greater force than transportation availability and cost.

This theory considers only the cost side of the equation. It deals with regional differences in natural endowment, labor and agglomeration. Location options are separated over large distances, where transport cost is a significant share of the production cost. The theory is unsuitable to address the issues of concern in this research. Even if the

assumptions are accepted (they are not) the theory has to be rejected on its analytical capacity. Its dependency on transport costs makes it impossible to analyse situations where transport cost is only marginal and the substitutability capacity of transportation for other factors is restricted.

2. the maximum market area approach (Frank A. Fetter¹² to
August Losch)¹³

A. the theory

This is a theory based on the behavioral assumption of maximizing market area to maximize profit under constraints of production costs and transport costs.

Instead of Weber's search for lowest cost location¹⁴ Losch claims that greatest profit can be achieved by ascertaining what production costs will be at various locations, and establishing the maximum size of market area which can be controlled at those various locations. Losch accepts the importance of production cost but does not incorporate spatial variation in production cost i.e. his basic model assumes a homogeneous land surface.

The analytical framework consists of the creation of the "demand cones" and then the Loschian "landscape".

DIAGRAM

Several important assumptions are involved here.

- a. The Loschian landscape is a uniform plain with uniform natural endowment and transportation surface and uniform tastes and consumption power.
- b. Market competition occurs only along the boundary of market areas and not inside the boundary --- monopolistic competition.
- c. The price system should reflect adequately at least a partial equilibrium system. The total Loschian landscape reflects a general equilibrium.
- d. There is the implicit assumption of necessary competition in a locational sense among industries producing the same goods.

Instead of using the traditional price and consumption volume relationship he hypothesises a quantity of goods salable at each distance to transport cost scaled to reflect distance relationship. (see diagram above) The theory of deriving market boundaries as a set of breaking points in a "gravitational" model was first proposed by Schaffle in 1878.¹⁵ Using the quantity of goods to distance curve it is then able to rotate the distance axis to form a "demand cone". (see diagram above) Each demand cone represents the optimal market area of one firm selling one product. Different market areas can be delineated for different firms selling the same product. A system of interlocking market areas in the shape of hexagons will represent the optimal market capacities of the firms.

This produces a partial Loschian landscape. When location patterns of different industries and urban functions are introduced, superimposing one upon the other and reconciling their centres and boundaries with one another a total Loschian landscape is produced.

B. evaluation of the theory

If the theory is used to explain the location of certain industrial type by adopting the partial equilibrium framework there is some validity of its descriptive power.

But in extending the theory to a general equilibrium system the theoretical and computational difficulty is unsur-

mountable.¹⁶ The following are some general critiques of the partial equilibrium model for a single industry.

- a. With some modification the simplistic assumptions on uniformity can be relaxed to represent a better view of reality. But such relaxation is extremely limited unless the coherence of the analytic structure becomes so weakened as to produce highly unstable and unrelated "demand cones".
- b. The assumption of competition at the margin is unrealistic. The price structure of most industries hardly reflects this. Competition occurs not only at the edge of market areas but extends far into the territories of the competitors.
- c. The equilibrium (partial) price system poses problems for multi-locational consideration. The price system

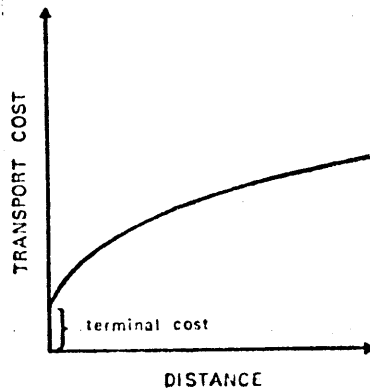
must be solved before price relationships (equalities and inequalities) can be established. The pure analytics of marginalism cannot suffice computationally as well as deductively to deal with such systems.

- d. This is a market-oriented approach assuming rigid production cost structure and no economies of scale.
- e. Even the amount of information required to produce a partial Loschian landscape is formidable (e.g. market capacity and size, price variation over distance, amount of salable goods over distance etc.) for a single entrepreneur to handle. Besides much of it has to be obtained from competitors.

This theory deals with market areas and offers an alternative approach to industrial location decision. But again transport cost is the major variable in determining the optimal market size. As such the same criticism of dependency on transport cost as in the case of the "minimum cost" approach can be applied here.

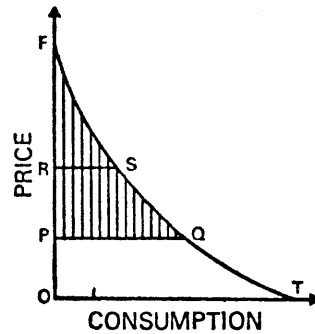
There is also the implicit assumption that production and distribution are taking place simultaneously at the same location, and that market areas contract or expand according to the condition (intensity) of competition. But if industries do not distribute products directly to consumers then market consideration becomes the concern of the distributors. For example, if plastic utensils are distributed through retail outlets which sell other goods as well, then the location of the plastic factory

has no direct relationship to the market area of the plastic utensils. The nature of competition of the retailers selling different products is entirely different from that assumed by the theory.

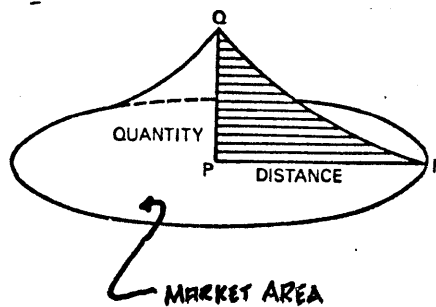


3 STEPS IN THE CONSTRUCTION OF THE DEMAND CONE

TRANSPORT COST & THE LENGTH OF HAUL



THE DEMAND CURVE



THE DEMAND CONE

3. the marginal location approach (E.M.Rawstron¹⁷ to D.M.Smith¹⁸)

A. the theory

The proponents of this school are mainly geographers who regard Hoover and Losch (the two former schools) as lacking in reality and of being concerned with ideal locations. This approach stresses that entrepreneurs locate for many different reasons which conflict with the least cost or maximum market theories. They contend that for most entrepreneurs there are only areas within which it is possible to make a profit, and other areas within which losses are incurred. It stresses the identification of margins i.e. zones in which profit changes to losses and vice versa.

The theory examines the structure of costs and their variation through¹⁹ space. It assumes that when at least one of the components in the cost structure (the components being labor, material, market, land, capital and energy) varies appreciably from place to place, and if this variation form a large proportion of the total cost, then this component becomes the binding constraints of location.

Space-cost curves²⁰ are constructed to obtain the margin of profitability. Cost and price are allowed to fluctuate. Managerial skill, taxation etc. which affect price and cost can be introduced into the cost or price structure. The profit zone is indicated by the area between the "margins". (see diagram)

B. evaluation of the theory

This is a more realistic and flexible approach which acknowledges that entrepreneurs operate without sufficient information, and in non-perfect competition. But nevertheless it is a variation on the same theme as the previous two approaches in that distance was taken as the major variable in the cost structure. The following general criticism have been levelled against this approach.

- a. The more realistic and flexible the theory is the less vigorous it becomes. It lacks the positivistic appeal of the two former approaches.
- b. It still assumes a quasi-linear relationship between cost and distance. It is not clear how distances relate to the spatial aspect of the urban structure in the analytical framework.
- c. It is a difficult theory to operate even though it does not require to pin-point the optimal location. By accepting intangible constraints such as managerial skill, and institutional factors etc. quantification becomes impossible.
- d. The average cost curve still requires much information to construct.

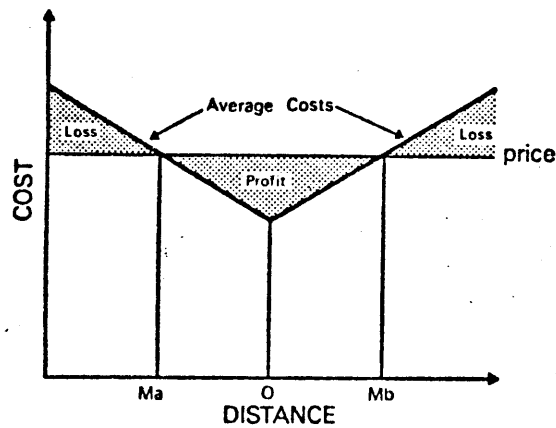
It accepts the non-substitutability of location variation in production cost and revenue by transportation i.e. factor immobility is allowed. The analysis of the cost structure makes explicit the importance of certain production factors. Although it is not always true that the factors which

share a large portion of the total cost are critical factors in location consideration this is definitely an improvement over the assumption that transport cost is necessarily the important factor. The recognition of the inter-relatedness of the factors in the cost structure is an important contribution because the analysis allows for changes in the cost structure and changes in the relative importance of the factors (unlike the other approaches which allow only changes in modes of transportation and freight rates).

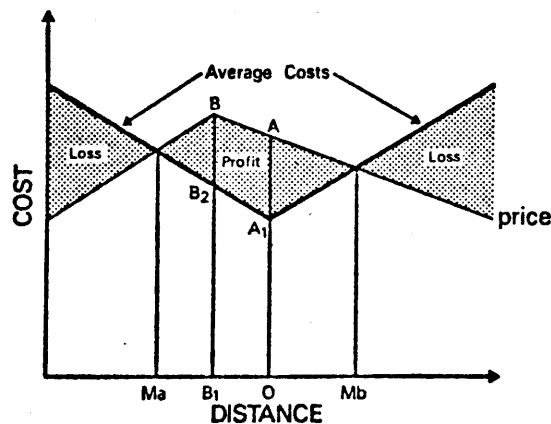
Instead of pin-pointing location the analysis prescribes a range of areas. But in a micro-urban context, as well as in the regional context, thresholds of factor cost or revenue must be recognized. There is no necessary continuity of cost structure within the geographical margins of a "profit zone" or a "loss zone". Factor costs may change drastically over administrative boundaries (e.g. tax structure) or over socio-economic boundaries (labor cluster) or over geographic boundaries (e.g. natural barriers). These boundaries do not always coincide. The average cost curve is therefore not necessarily continuous over distances as suggested by the theory.

A more realistic description will be a range of location options, not necessarily related in any geographical sense, with similar average cost curve and price curve. The average cost curve and price curve in each option has to be computed separately, taking into consideration the cost

structure and factor costs appropriate at each location. In other words the cost-distance relationship should be replaced by a cost-location relationship. The geographic margins defining profit or loss zones are fussy and there can be more than one profit or loss zone. There is a range of possible location options with no distance relationship among them.



**OPTIMUM LOCATION & PROFITABILITY MARGINS WITH PRICE HELD CONSTANT
Ma TO Mb IS PROFIT ZONE**



**OPTIMUM LOCATION & PROFITABILITY MARGINS WITH VARIABLE PRICE AND AVERAGE COST
Ma TO Mb IS PROFIT ZONE
MAX. PRICE AT B1
MIN. COST AT O**

4. the behavioral approach (Allan Pred)²¹

A. the theory.

This is an attempt to explain industrial location through the human factor --- a psychological approach. It regards subjective attitude that different people have about all aspects of life as a vital part of the study of industrial location. It rejects the assumption of the classical "rational economic man" and replaces him by individuals making decision in light of information available and in manner related to their own ability to use that information. The economic man is a "satisficer" rather than an "optimizer".

The entrepreneur is perceived as a function of a range of psychological factors --- aspiration experience, age, social and economic contacts, education level, emotional stability etc. The theory contends that as industries become more and more footloose the behavioral influence in siting becomes more relevant and important. The behavioral matrix²² (see diagram) relates the amount and quality of information and the ability to use the information by the firm. Firms on the lower right sector have higher probability to locate at the more optimal location. Firms on the top left sector are least equipped to make the right (profitable) decision.

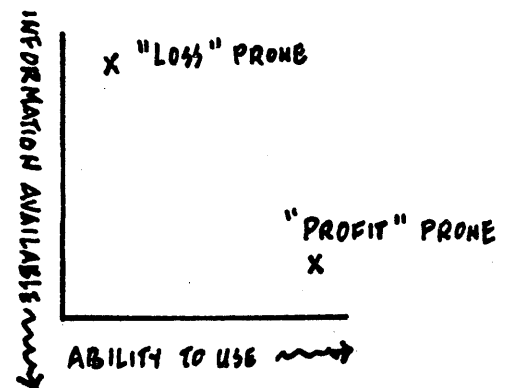
B. evaluation of the theory

This may be a good descriptive model of how entrepreneurs are supposed to have worked but as far as how entrepreneurs should work the theory offers little help. This may provide interesting insight into the decision-making mechanism of location but it does not offer operational suggestions as to what should be done if the entrepreneur wishes to optimize his goals (however defined).

Quality of information and ability to use it are relative concepts within a given context. It is self-fulfilling prophecy to construct a matrix from observations made on the existing pattern of location. Such observations will necessarily confirm the hypothesis that firms had better information and were more able to use it located at better locations.

As far as developing countries are concerned the theory is even less useful because footloose industries (industries with high-level manpower, and little dependency on natural resources, transportation and labor) implied in the theory are rare. Input factors for production and market concerns are still the more important considerations.

BEHAVIORAL MATRIX



CONCLUSION

Traditional location theories deal primarily with regional variations in production costs and market areas.²³ Most of them were developed in the late 19th and early 20th Century to analyse heavy or primary industries --- steel, coal, automobile etc. Transportation was the major concern. In the pursuit of pure general theories reality had been sacrificed. Many of the assumptions are far too simplistic to be useful. Even in the area of regional analysis the theories have not been proven very useful. This is evidenced by: (a) extension and modification of the theories and formulation of new theories have not been undertaken vigorously by scholars since the 1930's, and (b) little empirical studies have been carried out to validate the theories because it has been difficult to generate testable hypotheses.²⁴

When the theories are applied in a micro-urban scale to explain secondary manufacturing industrial locations where variation in transport costs is not significant and transport cost is only marginal to the overall production cost they become even less useful.

When labor factor is concerned the following important considerations are overlooked by all location theories.

1. heterogeneity of the labor supply

There is heterogeneity in the availability and cost of labor in a micro-urban context. This is partly due to the imperfection of the labor market (e.g. variations in inform-

ation diffusion processes, recruitment methods, labor price structure etc.). But most important of all it is the inherent differences in cultural values and norms and economic rationality of each of the labor groups (according to age, sex, education, ethnicity etc.) that account for the different levels and modes of participation in economic activities. Entrepreneurs accept these "imperfections" as given and try to cope with them pragmatically. Economists, and to some extent planners, tend to start off with perfect condition.

2. dynamics of the production process and labor quality and quantity

a. time dynamics

Economic, social and cultural conditions are changing constantly. The pace and nature of change is much faster and more drastic in many developing countries than in the developed ones. Part of the reason may be that industrialization in developed countries has been completed and new frontiers are still not in sight. Education and industrialization in developing countries are changing rapidly the skill and expectation of the labor force. Production processes and labor specifications have to be revised constantly to keep pace with the general development of the country. Industries (or production processes) which cannot keep up with the social and economic development of the country will have to be discarded altogether. A vivid example is the "labor-

intensive" semi-mechanized apparel industry. In the late 40's Japan began to take over from places like New York in the manufacture of medium to low price apparels. In the late 50's when Japan moved onto more sophisticated modes of production made possible by technological advancement as well as by improved ability of the work force this industry moved to Hong Kong. The same phenomenon was repeated in the early 70's when the same industry began to move from Hong Kong to Taiwan and Korea.

b. cross-sectional dynamics

Factors for production is not a static concept. There is no factor of production if there is no production. Consider the labor input in the production of shirts in the early 50's in Hong Kong. The sewers of shirts were mainly housewives who worked in their own homes, and used their own sewing machines. When the first shirt manufacturing factories were formed there were no housewife-sewers. But when large volumes of demand came housewives were recruited. If a survey of potential labor force for the shirt industry was taken before the housewives actually joined the labor force in large volume it would indicate that the labor force would not support the phenomenal growth of the shirt industry. The volume of labor is therefore a dynamic and relative concept. Jobs create labor. To calculate the volume of labor supply by counting heads of the

"working age" population is misleading. The volume of labor depends on the labor content of the job, the accessibility of the job and the "attractiveness" of the job, all of them relative to the macro social and economic environment.

In a micro-urban context the entrepreneur may not always locate at the best site in terms of labor or any other factor. Choice of location in the urban areas is severely limited. The appropriate location does not come easily and competition is keen especially when choice of sites is limited. Even if he does locate at the optimal location the quality of the location or the production process may change thus dissolving the location-industry match. The entrepreneur is concerned in locating at a "profitable" area, and not necessarily the "most profitable" location.

Two criteria for production location selection are important: (a) availability of "acceptable" production factors and market, and (b) cost of the production factors and marketing.

His first consideration is the market and production factor quality offered by a particular location. Only after this can he consider the costs. Since he has no capacity to affect the economic and social environment of a location his choice is to accept or reject locations with the environments as given.

Location options are highly restricted in urban areas because of the density and compactness of development. Land and infrastructure is totally immobile. There is only a limited number of choices. The entrepreneur is interested

only in those location where factors appropriate to his use are available to him. His first job is therefore to identify the locations with acceptable factor availability. Then he will examine the location variations in cost and revenue.

Markets and production factors are much less mobile in a developing economy. Substitutability through transportation is not often feasible. Instead of locating at the optimal location with the best combined cost and revenue the entrepreneur often has to locate at the most crucial factor.

CHAPTER 3: INDUSTRIAL LOCATION IN HONG KONG
--- 1ST PERIOD

section 1: background

- A. Hong Kong --- the place
- B. the people
- C. the refugees
- D. industrialization

section 2: the industries

- A. the industries
- B. the production process
- C. labor requirements
- D. generalizations of labor requirements
- E. relevance of classification of industrial type in labor terms

section 3: logic of location

- A. market consideration
- B. raw material consideration
- C. capital consideration
- D. land consideration
- E. transportation consideration
- F. labor consideration
- G. external economies consideration
- H. conclusion

section 4: empirical observations

section 5: conclusion

This Chapter looks at the shirt and plastic manufacture industry of the early to mid 50's in Hong Kong.

Section 1: background

It deals with the general physical, social and economic background of the time with special emphasis on the influx of refugees from China and the start of industrialization in Hong Kong.

Section 2: the industries

This looks at the two industries ---their general business operation and practices, and their production processes and labor requirements.

Section 3: logic of location

This section investigates the logic of location. Each location factor is evaluated from the perspective of the entrepreneur.

Section 4: empirical observations

This section looks at the pattern of factory location to identify the critical location factors.

Section 5: conclusion

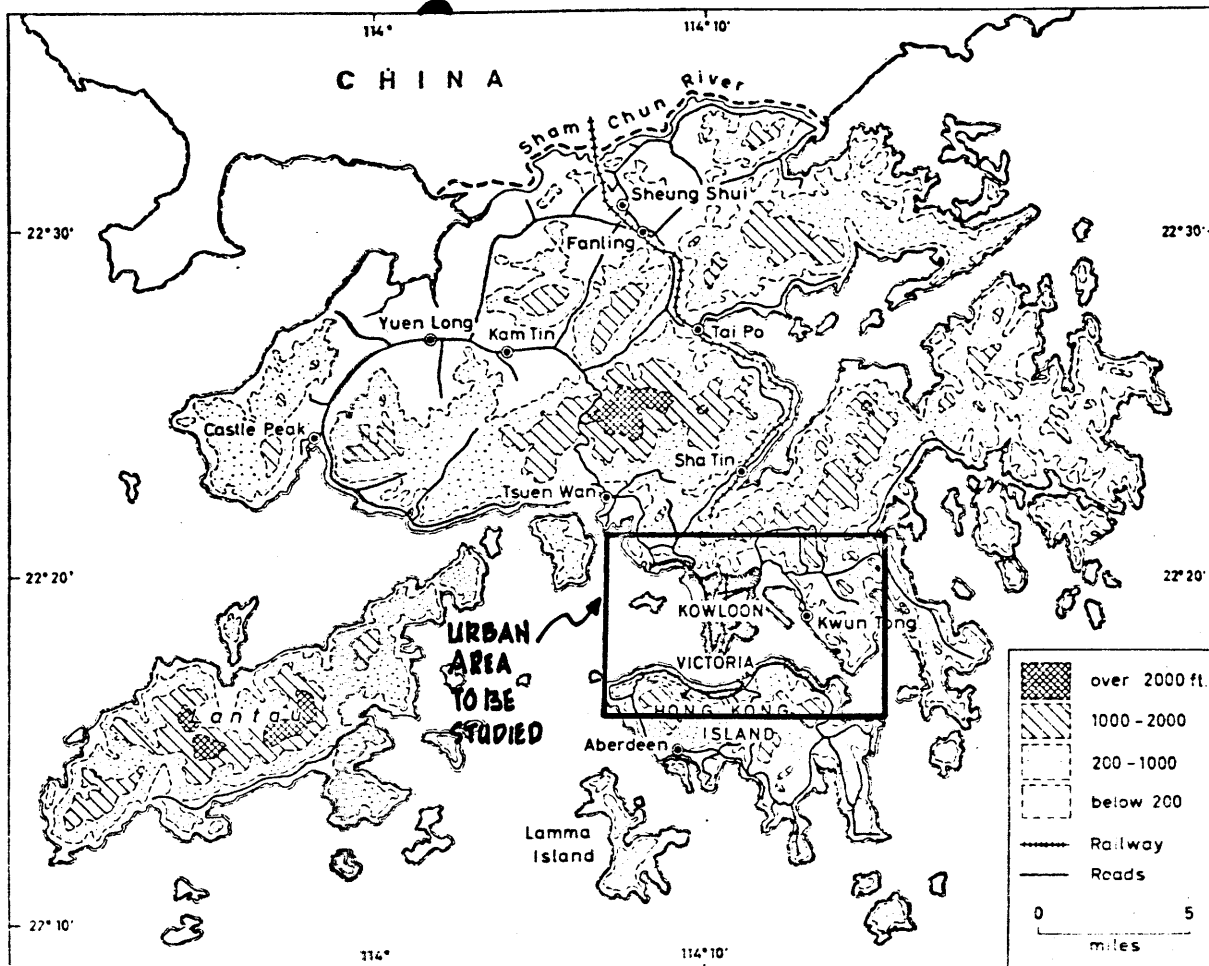
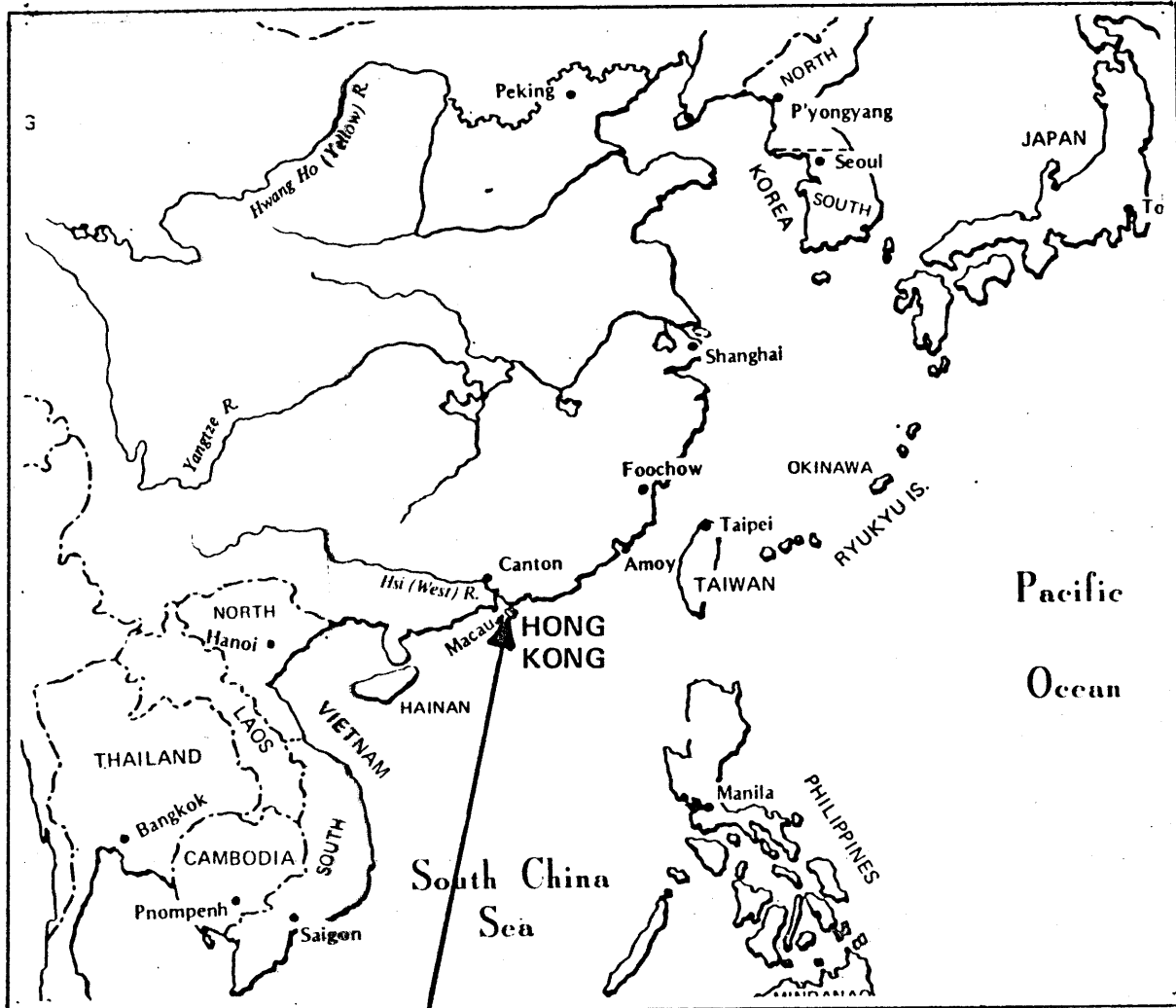
This section draws conclusions on the importance of the labor factor in location decision.

SECTION 1: BACKGROUND

A. Hong Kong --- the place

The total area was roughly 398 square miles of which 82% was marginal land, 13% arable and only the remaining 5% built. The Colony could be divided into three parts --- the island of Hong Kong (29 sq.mi.), Kowloon and New Kowloon (35 sq.mi.), and the New Territories including some 235 islands (334 sq.mi.).

- a. The island of Hong Kong was steep and rugged with a spine of hills. Victoria, the name given to its trading post when the Colony had been first founded, was still the main business centre. Because of the sharply rising ground, much of Victoria was built on reclaimed land. Many of its side streets were stepped.
- b. Across the harbor to the north was the ceded territory of Kowloon, and New Kowloon. The land was generally flat rising to the foothills to the north. Here were the wharves, the railway terminus to China and the airport. On here and on the northern coastal strip of the island (i.e. 13 square miles around the harbour) lived 80% of the population --- some 2 million by 1955.
- c. Behind Kowloon, a range of steep hills divided the bustling urban area from the placid New Territories. The greater part of the New Territories, both island and mainland, was steep and barren. For the most part, the area remained unspoiled and the lives of the inhabitants of the small isolated villages were serenely rural.



B. the people

The total population in Hong Kong before the Japanese Occupation in 1941 was about 1,600,000. But at the end of the War in 1945 the total was approximately 500,000. Then came the rapid increase. By 1955 the total population was estimated to be 2,500,000. The great majority of the people were Cantonese (estimated to be 98% of the local population).

Most people lived in the urban areas lying on the north and south of the harbor. Except for the few rich who could afford to live in houses of their own most of the local inhabitants lived in "cubicles" in tenement houses. These were small rooms (50 - 100 sq.ft. each) with wooden partitions. Whole families lived in each of these cubicles. There could be many cubicles in each floor. The urban areas were densely packed, with average density for the low and medium income areas at 500 persons per acre.

The working population was engaged in commerce and industry though there were about 150,000 working in agriculture in the New Territories. Most of the industries were small and owned by Chinese entrepreneurs. The ordinary worker worked from 7 a.m. to 5 p.m. (with an hour off at mid-day) but extra work from 6 p.m. to 8 p.m. at ordinary wages was not uncommon. It was a 7 day work-week.

C. the refugees

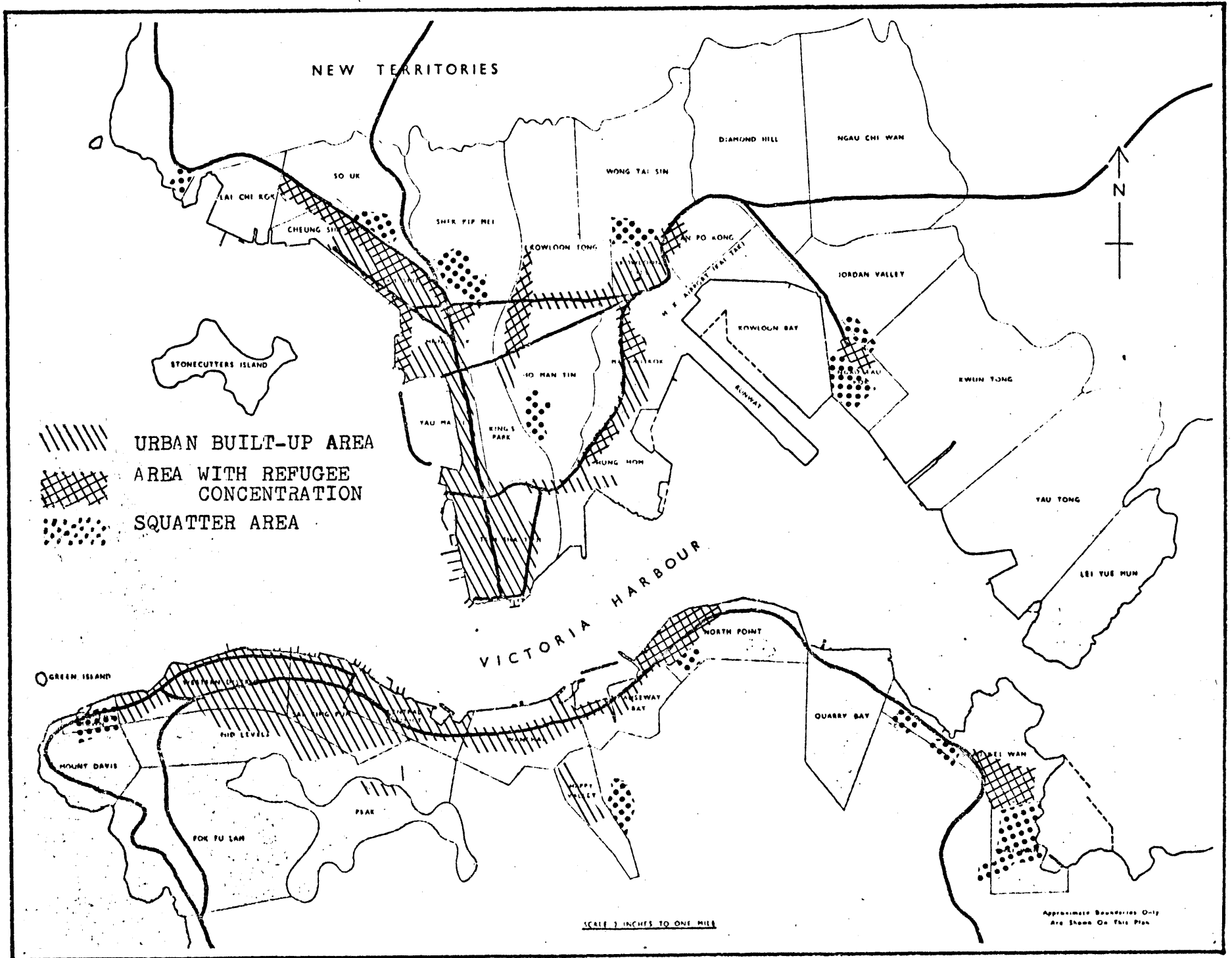
These included political and economic immigrants from China during the period between 1945-1955.

Some half million refugees (22% of the total population in 1954) came between 1949-1954. If people coming in after 1945 (end of the 2nd World War and beginning of drastic political changes in China) were included the number reached one million. However many of the refugees were not total stranger. Approximately 45% of the inhabitants belonging to refugee families were born in Hong Kong¹. Many had relatives and friends in Hong Kong. When they arrived in Hong Kong they would stay with their friends and relatives, or they would secure their own shelter either in residential housing or in squatter areas. (see maps for urban areas and refugee concentrations) Many of them lived in the urban built-up areas in tenement houses. But most of them (about 400,000) lived in squatter areas on public land on the urban fringe, in the streets and on rooftops of tenement houses.

The demographic characteristics of the refugees were markedly different from those of the "local population". There was a high proportion of adult males² and single person households³. Ethnicity pattern also changed⁴ and non-Cantonese found it difficult to adapt to local conditions.

Unemployment was much higher in the refugee group⁵. They had, however, better education⁶ and much better professional

PATTERN OF URBANIZATION IN THE EARLY 50'S



and occupational skill. (see Table 1) These refugees also brought in entrepreneur skill and capital. But they were undergoing an occupation deterioration in which their income and occupational status shifted downwards. (see Table 2)

D. industrialization⁷

The Colony of Hong Kong had virtually no natural resources other than the sheltered deep-water harbor, and a geographical position favoring trade with South China and reasonably suited to the role of a commercial centre serving the whole of the Far East. Entrepot trade in goods moving to and from China was its traditional livelihood. To serve that trade, banks, insurance and shipping companies, dockyards, warehousing and stevedoring companies had been built up and flourished. Fluctuation in trading condition which occurred during 1930-40 was balanced by an ebb and flow of population to and from China, the population adjusting itself to the prosperity of the times. This convenient arrangement was suddenly upset by the advent of political changes in China. These changes brought about one million immigrants into the Colony in the period 1948-1950 and at the same time, the Korean War resulted in an embargo on trade with China to the great disadvantage of Hong Kong's economic position.

The influx of a great number of hard-working, adaptable people and the fall in entrepot trade, together formed the base and provided the stimulus from which Hong Kong's industry had sprung.

Industry was a late starter in Hong Kong. Construction of dockyards and sugar refineries, development of electric power and the construction of the railway to China (canton) formed the foundation for industrial development. The Imperial Preference in 1932 granting privileges to exports from Hong Kong to England and the Commonwealth countries encouraged the development of small manufacturing industries producing rubber footwear, textiles, torches and metalware. The real industrial take-off did not occur until the late 40's with the influx of population and change in macro-economic conditions.

Industrial development in Hong Kong was handicapped by a lack of level land, and the high cost of site formation in the predominantly hilly terrain. Virtually all raw materials had also to be imported and there were no protective tariffs behind which local industry could shelter and develop on a firm basis of internal consumption.

Offsetting these fundamental disadvantages was a large working population, industrious and adaptable, allied with world-market connections of the merchant community. Its government was stable and orderly, and had attracted a heavy influx of capital from pre-Communist China and the shaky regimes of South-east Asia. Its banking, shipping and insurance services were also efficient.

SECTION 2: THE INDUSTRIES.

A. the industries

1. the shirt industry⁸

Up to 1949 the industry was practically non-existent. There were some under-garment manufacturing catering for the local consumers and some Southeast Asian countries.⁹

The first attempt was staged by refugee industrialists to manufacture for export quality shirts on a large scale for the high price market in U.K. and in Europe. This attempt was not successful because foreign buyers found the styles and workmanship not satisfactory. Moreover these industrialists were Northerners and had the further problem of recruiting local workers who did not speak their language.

The second and successful attempts were staged by the local people and refugees from southern China, who had some foreign connections. They were not industrialists but merchants who were more accustomed to business negotiations than to industrial organization. There were also entrepreneurs who were former employees of the unsuccessful firms (technicians, foremen, skilled workmen, junior managers and salesmen), who recognized the market potential and the production problems. They started business with their own personal savings or pooling resources of friends and relatives. They moved into the medium to low price products capable of

being produced by local skill and were able to establish foreign markets. Most entrepreneurs were small scale operators with only a few large factories.

The shirt manufacturing industry involved different entrepreneurs. The following was a typical procedure of how a shirt was manufactured.

An order was received from overseas buyers through exporters specifying the quantity, style determined by prior samples, workmanship, price and date of delivery. The order often came in the form of a "letter of Credit" or L.C. It might come to the exporter form or directly to the manufacturer, which was much less often. With the L.C. the manufacturer could borrow cash from commercial banks and credits from material suppliers. Payment was usually upon delivery and credit from material supplier was 60 days. Orders for the Christmas season (deadline October) and Easter season (deadline January) could be substantial. These were the hectic and profitable months. May to July were the usual lean months.

When an exporter received an order he would either he either give the whole order to a manufacturer of his choice or split the order among different manufacturers. The system of bidding for orders by the manufacturers was based on competition as well as on personal connections.

There were only a few large manufacturers who might

receive orders directly. The medium and smaller operators had to go through the exporters or through some larger "parent" manufacturers. Upon receiving the go-ahead signal they would purchase the necessary cloth from suppliers. Supplies were normally delivered at several stages in small quantities at each delivery. The usual set-up of a medium or small manufacturer with less than 50 sewing machines was about 500 sq.ft. to 1,500 sq.ft. with cutting, inspecting, packing, storing and some sewing done in the premise. The cutter would cut the cloth according to the specification of the order and prior samples. The different segments would be sewn in the factory or contracted out to some sewer-manufacturers or to individual sewers. There were never enough sewers during the high seasons. During the low seasons a number of sewers would be retained working probably at reduced shifts. Except for the sample-sewers all other sewers, whether working inside or outside the factory, would be paid the same piece-wage. Sewer-manufacturers or individuals would come to the factory to pick up the cut colths. They would then sew these in their own premises with their own machines (manually operated in the 50's) and return them to the factory. These would be inspected and would either be accepted or rejected to be modified. In the early 50's the sewing would include the whole shirt although later parts were more standardized and collars and cuffs were

done separately. The sewn shirts would then have the button holes made and buttons sewn on by the button-and-hole manufacturer. Labels would then be put on and collar stiffeners inserted in the factory. The shirts would then be ironed and packaged (folded, stitched to cradboard backers, and wrapped). They would be placed into cardboard cartons. These would then be sent to be packed in crates ready for shipment.

The different processes would involve the following distinct participants.

- a. the exporter
- b. the chief manufacturer whose label would be put on the shirts (sometimes the labels of the buyer-distributor would be used)
- c. the sewer-manufacturer or the individual sewers
- d. the button-and-hole manufacturer
- e. the label manufacturer
- f. the collar stiffener manufacturer
- g. the packer
- h. the transporter

The major employers of labor were

- a. the chief manufacturer, and
- b. the sewer-manufacturer.

They accounted for up to 80% of total employment in the industry.

2. the plastic industry¹⁰

The story of the development of the plastic industry was similar to that of the shirt industry. The first pioneering effort was for sophisticated products manufactured in large and mechanized factories. But the successful market went to the cheaper, smaller products.

Plastic wares were exported to East Africa and Southeast Asia in the 50's. There were only a few large factories (employing over 200) and a large number of smaller factories (employing 20 or less). The most common product weighed no more than 10 ounces¹¹ and could be handled with manual moulding machines.

The following was a typical procedure of plastic manufacture.

An order was received from oversea buyers through the exporter specifying the quantity, price and delivery date. Moulds would be designed in collaboration with the metal mould workers. Design was not an important concern in the 50's because the plastic products exported were ordinary utensils, beads and simple toys to countries where design sophistication was not a major marketing issue. The designs were standardized to a large extent.

A typical medium to small scale manufacturer would have some twenty moulding machines (either injection or extrusion, though injection machines were more commonly used in the early 50's) and would require about 1,000

sq.ft. factory space. All moulding was done in the factory. But much work would be contracted out to other manufacturers when the order became too large or too urgent to be handled by one manufacturer. Competition for work was similar to that of the shirt industry i.e. by competitive pricing and personal relationship. There was less seasonal fluctuation for smaller manufacturers which catered for the African and Southeast Asian markets, although the few larger manufacturers catering for the U.S. and European markets might have larger fluctuations. The credit system was similar in both the shirt and the plastic industry --- payment on delivery and 60 days credit on materials. Raw materials were¹² either imported or reprocessed. Quantity of each purchase could be quite small. New imported materials cost more and usually required a longer delivery period and a larger order each time. The moulding machine would be operated 24 hours if necessary during periods of high demand. The product might require more than one single mould and more than one single moulding operation. Often several identical pieces would be manufactured in one mould. The pieces coming out from the mould would be trimmed (with the trimming going to waste to be recycled by other manufacturers). Sometimes touching up jobs or assembly jobs would be required --- such as painting, inserting and assembling. Other materials might be required --- cloth, metal parts, machine parts

or even motor for toys. Much of this assembly work would be sent out to contractor manufacturers or to individuals. For plastic toys the packaging would be more elaborate and would involve designers and printers. Daily utensils and wares would be packed in cartons and then in crates.

Reprocessing raw materials was an important sub-industry because of the size of employment.¹³ Raw materials for reprocessing came from wastage in former manufacture. Such wastage could be quite substantial. These would be collected from manufacturers by special agents or sold directly by the manufacturer to the reprocessor. But the main source of waste came from foreign countries (England and W. Germany). The reprocessing could be quite elaborate. The plastic wastes would first be separated from other alien materials such as metal and fibre. It would then be washed in diluted caustic soda, dried and assorted according to their colors and qualities. These would be machine crushed, melted and mixed, and ground to form reprocessed plastic grains to be sold to plastic manufacturers.

The different processes would involve the following distinct participants.

- a. the exporter
- b. the raw material supplier (new and reprocessed)
- c. the manufacturer where the plastic products were moulded

- d. the mould maker
- e. the assembler
- f. the packer
- g. the transporter

The major employers of labor were

- a. the chief manufacturer,
- b. the material reprocessor, and
- c. the assembler.

They accounted for up to 80% of total employment in the industry.

B. the production process

These were new industries in Hong Kong and entrepreneurs were concerned primarily with establishing the market.¹⁴ This was a trial period by foreign buyers. There was no continuous flow of orders and there was no second chance for any failure to meet the requirements of the orders. Capital supply was not the major problem because the size of the orders were small.¹⁵ This meant that large factories would not be needed. Given the workmanship required by the middle and low price market there was no lack of aggregate supply of labor (qualified unemployed locals and refugees). Market consideration was therefore the binding constraint in the design of the production process. What was needed was high flexibility in meeting fluctuating demands,¹⁶ speedy production in meeting short notice orders,¹⁷ and smooth coordination among different entrepreneurs in the production chain in meeting the order specifications.

According to some entrepreneurs operating in the early to mid 50's the production process was defined in the following manner. "Export market exploration by some enterprising entrepreneurs revealed that medium and low price products were marketable. The initial ventures were modest in scale.¹⁸ These first entrepreneurs used the existing labor skill employed either in producing similar products for the local market or in supporting or related industries.¹⁹ The first products which were successful in the export market were simple and standardized in many respects. These initial productions established the criteria for the standards

of workmanship to follow. Other entrepreneurs, recognizing the markets pioneered by those initial ventures, joined the field. However, the basic production standards had already been set and accepted by the export market. The main concern was then to mobilize sufficient labor force to serve the rapidly expanding market."

1. flexibility of production

a. seasonality of demand

Fluctuation in the production process was a result of the fluctuation in export demand. Seasonal fluctuation meant very different levels of production at different times of the year. Manufacturers must be able to accommodate very high levels of production during certain periods of the year and also to maintain a basic maintenance level at other times.

b. competition for orders

The demand signal for production was further confused by the pattern of distribution of export orders among manufacturers. They must bid competitively and work through personal relationships. Their fortune was tied to that of the exporter. This required flexibility of production on the part of the manufacturer. In order to establish good working relationship with an exporter the manufacturer must out-perform other competing manufacturers by both high quality of production and speedy delivery. It has been remarked by foreign buyers that

the quality of the manufacturer's products is not an end in itself but is the result of the manufacturer's adherence to the standards of the market.

the success of the manufacturing industries in Hong Kong was due largely to the near perfect record of adherence to delivery deadlines as compared with the records of other competing countries exporting similar goods.²⁰

2. division of labor and standardization

This was a continuously evolving process.

a. for the shirt industry

In the early 50's the sewing part of the whole shirt was done by one operator with the exception of the collar.²¹ This method appropriately exploited the craftsmanship skill of the labor force and minimized the need for process coordination. But speed and cost of production were important consideration in the competition with other exporting countries. Later standardization brought about a more elaborate system of division of labor. The trunk, sleeves, collar and cuffs were separately sewn.

b. for the plastic industry

Due to the simplicity of the products division of labor in the moulding process was not elaborate. Usually a single operator did the moulding of the whole ware which was usually simple (without many parts) and small (1.5 - 8 ounces a piece). Other workers would do the trimming and assembly, which were also quite simple.²² The division of labor was a more significant consideration in the reprocessing of materials. There was no

one standardized process and each operator had his own method. But the products were standardized i.e. the same quality of plastic materials were produced for use by the moulder manufacturer.

3. quality control

Each entrepreneur in the production process chain had independent operation and management methods. Quality control of each intermediate product or process was exercised by each entrepreneur internally. For work done in the factory quality control would be exercised through supervision and inspection. Entrepreneurs could not afford to invest in on-the-job training for the semi-skilled operations (e.g. sewing). Skill had to be acquired through instructions by friends or relatives. Work done outside the factory would have its quality controlled through inspection and a prior demonstration of skill and proficiency.

Entrepreneurs were subject to quality demands by entrepreneurs on the next link of the production chain. Such controls were exercised through the price system, volume of order, rejection of products etc. The final quality control was in the hands of the buyers who were interested only in the final product.

4. process coordination

a. internal coordination at each entrepreneur

This depended on the complexity of the production process. For the manufacturer with more elaborate production process

(e.g. the chief manufacturer in the shirt and plastic industry) internal process coordination usually followed a crude "critical path" method²³ with significant pre-planning. However, plans were subject to drastic revisions due to the fluctuating nature of demands. Last minute rush was not at all uncommon.

b. external coordination among entrepreneurs

This was a major concern for all entrepreneurs. This would determine the quality, quantity and timing of production at each link. Normally this was a linear process working towards the final product. But the market could not reflect adequately the working of the process. Competition in price was always distorted by human and cultural factors inherited from the pre-industrialization era (e.g. personal relationship²⁴).

Timing seemed to be most important factor in process coordination. Given the fluctuation in demand and the linear segmentation of production among firms and individuals delays at any link of the production chain would result in delays in the final delivery. Timing was the essence of process coordination (given some basic quality control), the production process and input consideration had to be tailored to it.

C. labor requirements

Given the socio-economic conditions of Hong Kong in the early 50's and the demographic and personal characteristics of the refugees and the local population the most manipulable factor for flexibility in production was labor.²⁵ Flexibility in production could be more readily achieved by maintaining a flexible supply of labor with the proper skill mix (as opposed to, say, supply of capital). High unemployment made it possible for entrepreneurs to establish wage relationship best suited to their purpose of flexibility. The degree of division of labor and standardization depended on technology as well as the industrial capability of the workers. Neither of these was well developed in Hong Kong in the early 50's.²⁶ Entrepreneurs had to exploit other qualities of labor, such as skills of craftsmanship, willingness to work under any circumstances etc. More stringent demands on workers (e.g. irregular shifts, special skills etc.) could also be exercised. Entrepreneurs could even shift some burden of capital investment and production space requirement onto the workers by having them work with their own machines and in their own homes. Urban and industrial experience of the population made it possible for some industrial discipline to be imposed,²⁷ especially in quality control and process coordination. However these must be balanced against the skill and education levels²⁸ of the workers and the speed, quality and quantity of production demanded of them.

The following is a description of the types of wage relationships and the quality and quantity of labor required by the industries.

1. types of labor in terms of wage and employment relationship
 - a. "permanent" employees²⁹

These would include the basic maintenance and administrative staff, and some skilled workmen (e.g. cutter and sample sewer in the shirt industry; mechanics and sample makers in the plastic industry). They were offered permanent employment because (i) their loyalty and dedication to the firm was important to the success of the business,³⁰ and (ii) competition for such personnel³¹ was keen among firms. They were often relatives or close friends of the employer and they might share some profits in the form of bonuses or gratuities.

They were employed on a month-by-month basis, and they often, though not always, lived at the factory premises.³² They received either a fixed monetary wage or a combination of monthly wage and piece-wage (at reduced rate) for products produced.

- b. "temporary" employees³³

These were employed on a day-to-day basis. No notice would be required for dismissal. They were operators of various kinds (e.g. sewers, ironers and packers etc. in the shirt industry; machine operators, trimmers and assemblers etc. in the plastic industry). They worked

in the factory, usually in shifts.³⁴ Piece-wage would be paid. Their income therefore depended on their proficiency if work was available. Notice for recruitment were posted at the door of the factory or in some public places.³⁵ Most of the recruitment came through personal references. Some demonstration of skill was usually required before employment was offered.

c. piece-wage laborers working outside the factory³⁶

These were semi-skilled operators to low skill laborers who did not work in the factory premises (e.g. sewers in the shirt industry; assemblers, plastic waste sorters and cleaners etc. in the plastic industry). They came to the factory³⁷ to collect materials and reprocessed them outside the factory premises --- in their own homes or in some public space they could find.³⁸ The wage was based on the quantity of products produced. The processed products would be delivered to the factory and would be inspected before accepted, and paid. They usually had friends or relatives working in the factory where they collected work. They often worked for different factories.

2. quality of labor

a. skills

As a general rule permanent employees were either skilled workers at key positions in the production process, or low-skill maintenance staff. Temporary and

piece-wage workers were mostly medium-skill to low-skill workers.

The definition of skill used here follow closely those used normatively by entrepreneurs. However there was general correlation of the skill levels with (i) the period of apprenticeship or learning required, (ii) the wage levels,³⁹ and (iii) the "prestige" accorded in the workplace.

The following is an illustration of the job content of the typical high-skill, medium-skill and low-skill jobs.

(i) high-skill - cutter in the shirt manufacturer:

His job was to cut (manually in the very early 50's and with power-driven scissors during the mid 50's) a stack of cloth into patterns that could be sewn into trunks, sleeves, collars, cuffs etc. of different sizes and styles of shirts. He was supposed to make the most efficient use of the cloth and should yield the least wastage. His period of apprenticeship ranged from 5 to 8 years. He was considered the most important person in the shirt factory and received the highest pay.

(ii) medium-skill - manual machine operator in the plastic manufacturer

His job consisted of setting and securing the mould, setting the correct temperature for moulding, putting the correct (approximately) quantity of

plastic grains into the hopper of the machine, operating the crank manually, opening the mould and releasing the moulded plastic ware or parts. His apprenticeship ranged from two weeks to 6 months depending on the complexity of the machine and his learning capacity.

(iii) low-skill - washer and sorter in the plastic waste reprocessing

His job consisted of making suitably diluted caustic soda solution, removing metal, fibre and other alien material from the plastic wastes, scrubbing the plastic in the solution, rinsing and letting the plastic to dry naturally (under the sun if possible), and sorting out the different colors and qualities into batches. No training was required. In fact many children were employed.

Most workers were medium-skill workers. Their apprentice period was two weeks to six months. Learning was not formal --- no theories were taught nor practical applications systematically demonstrated. Apprenticeship ceremonies could be quite formal but actual learning was restrict to helping and observing the master at work.

The following is a list of key personnels and their skill level.⁴⁰

shirt industry

chief manufacturer

administrative	mixed skill
maintenance	mixed skill
quality control	
inspector/	
dispatcher	high-skill
shop floor	
cutter	high-skill
sample sewer	high-skill
sewer	medium-skill
assembler	medium-skill
ironer	medium-skill
packer	med to low skill

sewer manufacturer

administrative	mixed skill
maintenance	mixed skill
quality control	
inspector/	
dispatcher	high-skill
shop floor	
sewer	medium-skill
assembler	medium-skill
ironer	medium-skill

plastic industry

chief manufacturer

administrative	mixed skill
maintenance	mixed skill
product design	
designer/	
operator	high-skill
quality control	
inspector/	
dispatcher	high-skill
technical staff	
machine repair	high-skill
shop floor	
machine opera.	medium-skill
assembler	med. to low skill
trimmer	low skill
packer	low skill

material reprocessor

administrative	mixed skill
maintenance	mixed skill
shop floor	
grinder/mixer	medium skill
washer/sorter	low skill

assembler

administrative	mixed skill
maintenance	mixed skill
shop floor	
paint./assem.	medium skill
parts assem.	med to low skill
packer	low skill

b. space, tool and machinery requirements of workers

Depending on the content of the job the piece-wage worker would be required to provide space, tools and machinery. This was because

- (i) entrepreneurs were not able to provide the capital,
- (ii) entrepreneurs wished to minimize cash outlays, and
- (iii) physical and technological constraints such as factory space available.

It was especially common for sewers to provide their sewing machines and for plastic machine operators their moulding machines. They also had to work in their own homes.

3. quantities of labor⁴¹

Their number varied from trade to trade (20%-80%). However firm to firm differences within the same sub-manufacturer group were not significant.

Again there was seasonal fluctuation. Such fluctuation affected first the piece-wage laborers, then the temporary employees and finally the permanent employees. At times of economic recession the permanent employees would be kept at reduced wages (underemployed)⁴². The piece-wage level would not normally drop significantly during bad times.⁴³ Piece-wage work would simply disappear.

types of workers in different trades⁴⁴

	shirt industry		plastic industry		
	chief manufac.	sewer manufac.	chief manufac.	material reprocs.	parts assembl.
permanent	30%	20%	30%	80%	20%
temporary	40	40	50	20	50
piece-wage	30	40	20	0	30
	100	100	100	100	100

skill mix of workers in different trades

high-skill	20%	10%	10%	20%	10%
medium-skill	60	80	60	50	50
low-skill	20	10	30	30	40
	100	100	100	100	100

Most workers were employed as temporary and piece-wage workers. Medium-skill and low-skill workers formed the majority of the working force. Most medium-skill workers were directly involved in production. It must be recognized that administrative and maintenance personnel had been included in the percentage distribution. They were either high-skill (administrators, accountants etc.) or low-skill (maintenance cress, cooks etc.).

D. generalizations of labor requirements

1. high temporary and piece-wage labor ratio
permanent labor

Because of high flexibility in production permanent employment was offered to only a few indispensable skilled workers (and some basic administrative and maintenance staff). Much of the productive force came from day-to-day employees who worked on the factory premises and piece-wage laborers who worked outside the factory.

The experience in Hong Kong in the early to mid 50's helps to demonstrate the need for certain quality of labor supply to cope with the stresses and strains normally associated with the birth of new industries. It is doubtful that given the favorable market opportunities the industries would have survived and grown if the flexibility and quality of the labor supply were not present.

2. medium skill requirement

Skill requirements for medium-skill workers which formed the bulk of the productive force were not stringent. Basic skills could normally be acquired through a short period (2 weeks to 6 months) of apprenticeship (given the demographic and personal characteristics).

3. production outside the factory space

Much of the work must be carried out outside the factory premises. The workers would often be required to contribute some tools or machinery for the work.

E. relevance of classification of industrial type in labor terms

The labor requirements of the shirt and plastic industry were similar to those of many other industries in the early to mid 50's and also to some industries of later periods. The following is a list of some of the more outstanding examples.⁴⁵

1. the fireworks industry since the early 50's
2. the rattan furniture industry in the early 50's
3. the knitting industry through out the 50's
4. some metal-ware industries manufacturing small size articles throughout the 50's and 60's
5. the underwear garment industry in the late 50's
6. the wig industry in the mid 60's

They all demonstrate the same labor requirements as describe in the earlier sections. A closer examination of their history of development and the evolution of their production processes will reveal parallel trends in market-orientations, material supply pattern, labor requirements and micro-urban locations.

SECTION 3: LOGIC OF LOCATION

In this section factors which affect location decision will be investigated individually.

The basic assumption is that given the production process entrepreneurs operated to optimize the cost and production and revenue from sale. Since individual entrepreneurs were incapable of providing their own favorable conditions for production they would locate where such conditions were available at the lowest cost. The following three aspects will therefore be investigated.

- a. Locational variation in the availability of factors.

This means locations with the presence of factors in appropriate quantity and quality for the smooth functioning of the production process as perceived by entrepreneurs.

- b. Variations in cost of or revenue from these factors at locations where they were comparably available.

- c. Substitutability of factors under critical situations.

The following location factors will be discussed.

- a. market

- b. input factors

- i. raw material

- ii. capital

- iii. land

- iv. transportation

- v. labor⁴⁶

- c. external economies of scale and agglomeration

A. market consideration.

Only external market and intermediate market would be considered. Internal markets were too small to have significant impacts.⁴⁷

1. external market

The price of products was the same for all locations of production. Transportation between the place of manufacture and the point of shipment would be legitimate concerns and would be considered under the heading of transportation as an input factor. It is sufficient to point out that intra-urban distance was too small to make significant impact on transport cost. Moreover transport cost was only marginal to the total production cost.

2. intermediate market

These included used-material reprocessors, manufacturers of parts etc. Their location must satisfy the needs of the user industries. They had to locate close to the user industries (and supplier industries) such that small scale transactions, and instant delivery which were vital to their operations could be possible. Their logic of location followed that of their users. Economies of agglomeration will be discussed under the appropriate heading.

B. raw material consideration

Hong Kong had few natural resources. Practically all raw materials were imported. But certain processing might be done in Hong Kong (e.g. cotton into threads then into cloths).

Material cost share in the production cost was about 40% for the shirt industry and 60% for the plastic industry.⁴⁸

For large factories which brought directly from supplier-importers or processors their major concern was to secure appropriate quantity at the right time from sources outside Hong Kong.

No micro-locational consideration would be involved.⁴⁹ Moreover transport cost was only marginal to the cost of the materials.

For smaller factories which bought small quantities from retailers locational relationship would sometimes be important. On the other hand retailers located close to them to survive.⁵⁰ Their locational relationship could not be understood in terms of transport cost which was marginal in any event. There was an agglomeration effect at play, which will be discussed under the appropriate heading.

C. capital consideration

1. cash outlay⁵¹

These could be credits from banks, or money lenders or from personal savings. Usually banks would accept the Letter of Credential as "collateral evidence". Money lenders would be approached only for occasional urgent short-term needs. Such was not common practice. Many refugee entrepreneurs had ready cash in the form of gold, foreign currency or other valuables which they brought in from China. Capital and entrepreneurship often came together.

Hong Kong was a city-state and the financial and banking institutions operated evenly across the city. There was no locational differential in interest rates or other credit terms. However where money lenders were involved the significance of ethnicity,⁵² personal relationship became important. But there was no obvious locational preference of either the money lender nor the manufacturer borrower.

However there was one possible situation of locational discrimination. Creditors might decide to visit the premises before the transaction. If the set-up of the manufacturer was not found to be satisfactory the credit might be stopped. This applied particularly to factories located in squatter areas where there were often no addresses.⁵³ In view of the lack of infrastructure in squatter areas industrial types were very limited.⁵⁴ These were small scale

operators who would not normally deal with banks or other institutions directly (and by the same reason they were primarily sub-manufacturers who had no direct access to buyers or exporters). They would approach money lenders who would be prepared to overlook their lack of credential for a higher interest rate.⁵⁵ These cases were not common. Besides, such variations in credit availability and terms were not primarily a locational consideration but rather the overall credit qualification of the borrower. In other words entrepreneurs with similar credit qualifications but with different factory location would have the same credit difficulty.

2. credit on materials

In the early 50's materials (plastic grains, cloth etc.) could be obtained on credit for 60 days with final account to be settled at the end of the year (lunar year). Credit from material suppliers or intermediate producers depended heavily on personal relationships.⁵⁶ Similar "locational" discrimination as in the case of cash credit was applicable to material credit, though with much greater leniency. In effect there was hardly any locational variance in credit on materials.

D. land consideration

There were two major considerations --- space and rent. They were interdependent.

1. availability of appropriate space, facilities and infrastructure

Factory floor space requirement varied from a few hundred square feet to a few thousand square feet. Spatial requirement was not an absolute standard determined by technology. In fact modern technology required much more space,⁵⁷ while the technologies actually adopted demanded very little space in comparison.

Capital outlay was deliberately kept to a minimum to allow easy entrance into and exit from the industries. Constructing one's own factory space with the proper facilities and infrastructure would be very expensive and beyond the means of most entrepreneurs. The first alternative was to convert existing residential space into factories. There were few legal complications. Most of the earlier leases for residential buildings did not restrict industrial usage. Besides the government bureaucracy was too busy with other problems brought by the sudden population expansion to intervene effectively into the industrial use of residential buildings, even if it wanted to do so.⁵⁸ Another option was to operate in "illegal" squatter areas. Here the entrepreneur encountered practically no legal opposition at all. The problem with operating in squatter areas was

the lack of proper facilities --- water, electricity, and infrastructure (roads, sewers etc.). Heavy rains, typhoons and the risk of fire made squatter areas much less attractive. Except for very small factories where water and electricity were not required in the production process, squatter sites were not favored.⁵⁹

A typical tenement floor was 600 sq.ft. and an apartment flat would be about the same area. These could be adapted easily to become factories. Such building types could be found throughout the urban centres especially in the older built-up areas.⁶⁰

However with the influx of refugees between 1945-1949 urban areas were already overcrowded.⁶¹ Factory space which required the whole floor or greater part of a floor would be difficult to find in the older urban residential districts. The pattern of urbanization was such that the areas of least resistance⁶² to factory location were the newer urban areas developed after 1945. The new structures were of reinforced concrete construction. These were more suitable to factory use than the timber structure (floor only) in older urban areas, in terms of floor loading, noise level and fire risk. Infrastructure in newer areas was better and less overloaded.⁶³ Moreover the older urban areas were already extremely overcrowded, making acquisition of whole floors (600 to 1,000 sq.ft.) for factory use quite impossible. Squatter areas lacked basic facilities and infrastructure for proper factory use. Entrepreneurs would consider the newer urban

areas developed after 1945 their first choice. (see map)

The invasion of factory space in residential districts began with the occupation of the ground floor. Mixed commercial-residential land-use had existed for a long time in Hong Kong. Few buildings in urban centres were strictly residential. Since the early 30's ground floors of tenement buildings in urban centres had been used for retail commerce. The residential portion occupied the upper floors. In the older districts some commercial use gave way to factory use. This was not a uniform process. But by and large commercial character for the district was retained. In the newer districts where commercial potential was not yet obvious industries moved in. As a result industrial-residential land-use became to characterize the newer districts.

Later when commercial potential became apparent in the newer districts commercial use competed with factory use for the ground floors. Since industries did not require direct horizontal access to streets as did commercial retail they began to move up the floors to exploit the cheaper rent.⁶⁴ Districts became commercial-industrial-residential. With the exception of a few large enterprises which operated in "single-purpose" factory buildings most of the medium to small factories operated in this fashion during the mid 50's.⁶⁵

2. cost of factory space⁶⁶

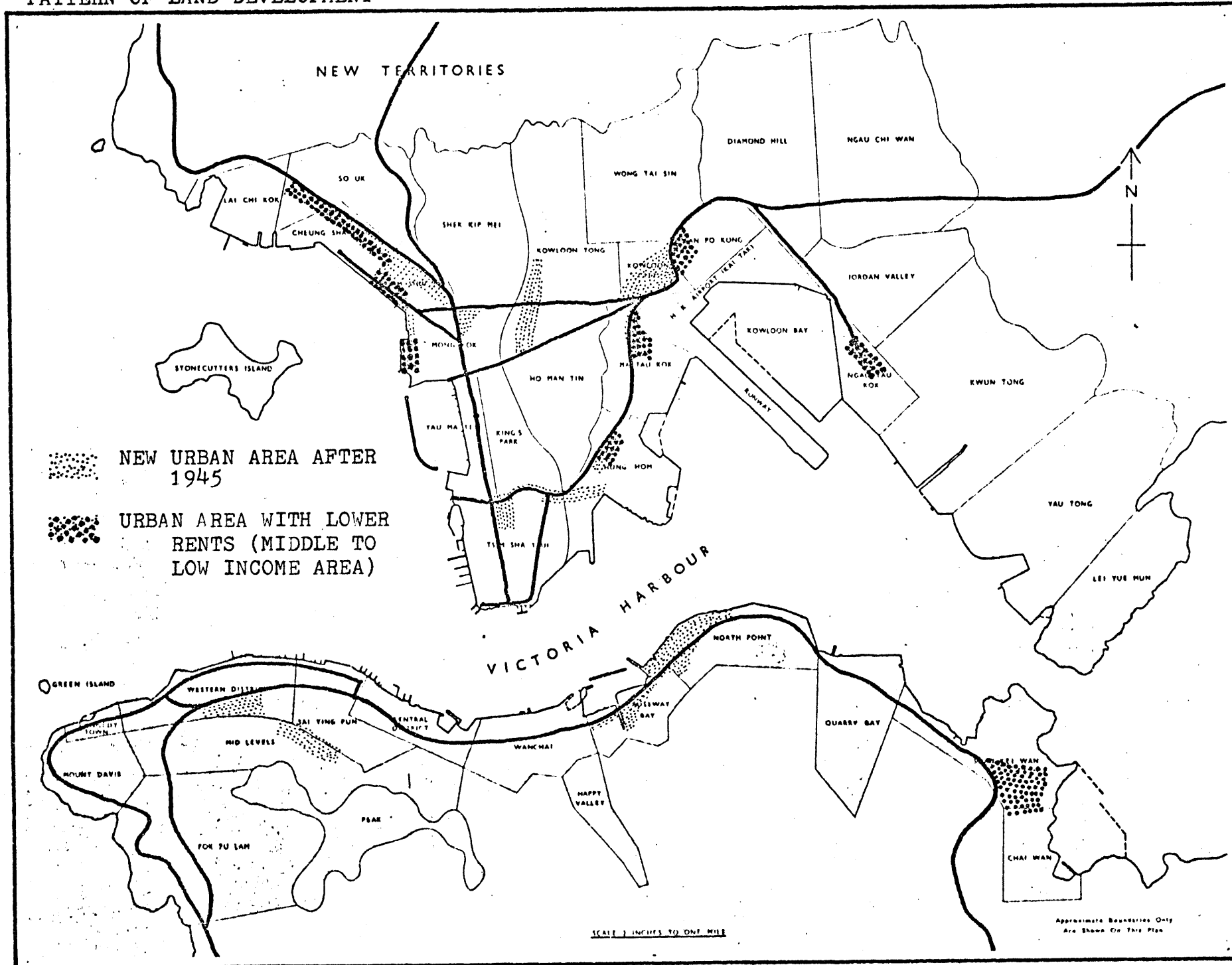
During this stage of industrial take-off industrial demand for land was still low compared with residential

demand. Suitable land for construction was still available. Locational fluctuation in the cost of factory space was more the result of the pattern of urbanization than that of the absolute demand for industrial space.

Factory space was nearly always rented on a month-to-month basis. Uni-functional factory buildings were not available. Tenements and apartments were rented floor by floor.

Price of space (for factory use or otherwise) in the newer urban areas varied between two extremes.⁶⁷ There were the high class residential developments⁶⁸ with space standards too large (thousands of sq.ft.) and too expensive for industrial use, even though there was no objection from "influential" residents of the area or from the government. Factory spaces in other newer urban areas developed for medium to low income residential consumption did not have wide locational fluctuation in prices. But this was true only in the early to mid 50's when the cost of land at the urban fringe where these developments were, was still low compared with the cost of construction.⁶⁹ Generally price fell as locations were farther away from existing urban centres.

PATTERN OF LAND DEVELOPMENT



E. transportation consideration

There are two types of transportation.

1. raw materials and finished products
2. personnel

There are two issues in transportation.

- a. availability of transportation (networks, vehicles etc.)
- b. cost

1. materials and products

a. availability of transportation

Raw materials and products were normally transported by trucks unless the quantity was very small, in which case taxis, bicycles, carts or carriers might be used; or the distance was very close, in which case bicycles, carts or carriers would be used. All these different modes of transportation would be possible in the urban areas where there were motor roads.

In the early 50's motor roads had already over the whole metropolitan area. (see map) In the squatter areas carts, bicycles and carriers would have to be used because roads were too narrow and sometimes too steep for cars. In many instances goods were transported over the squatter areas on foot, bicycles or carts and were transferred at the edge of the squatter areas onto motor vehicles. The same road condition existed in the New Territories, except that the situation was aggravated

many times even when factories were located very close to main roads. No entrepreneurs would think of locating in the New Territories for this very reason.

As far as the transportation of materials and goods was concerned entrepreneurs wished to locate where there were motor roads. In Hong Kong this meant all urban areas with the exception of squatter areas.

b. cost

In the transportation of goods the delivery cost would include loading and unloading at either end and transportation in between destinations. Loading and unloading costs did not vary among urban locations.⁷⁰ The urban areas on either side of the harbor never extended more than a couple of miles from the shore-line. The largest single distance between the farthest corner in the metropolitan area did not exceed 5 miles. Transport cost between destinations (e.g. factory to dockyard, factory to warehouses, factory to factory) could always be covered in two hours even through the occasional traffic jams. Transport cost was, however, marginal to the total production cost.

Transportation by carts, bicycles, carriers would cost more considering the cost per unit weight transported. But the objection to such modes of transportation did not arise from their relative costs, which were still very low when compared to the production cost. They were objected to for reasons of inconveniences and tim⁷¹ when they had to be used.

2. personnel

a. availability of transportation

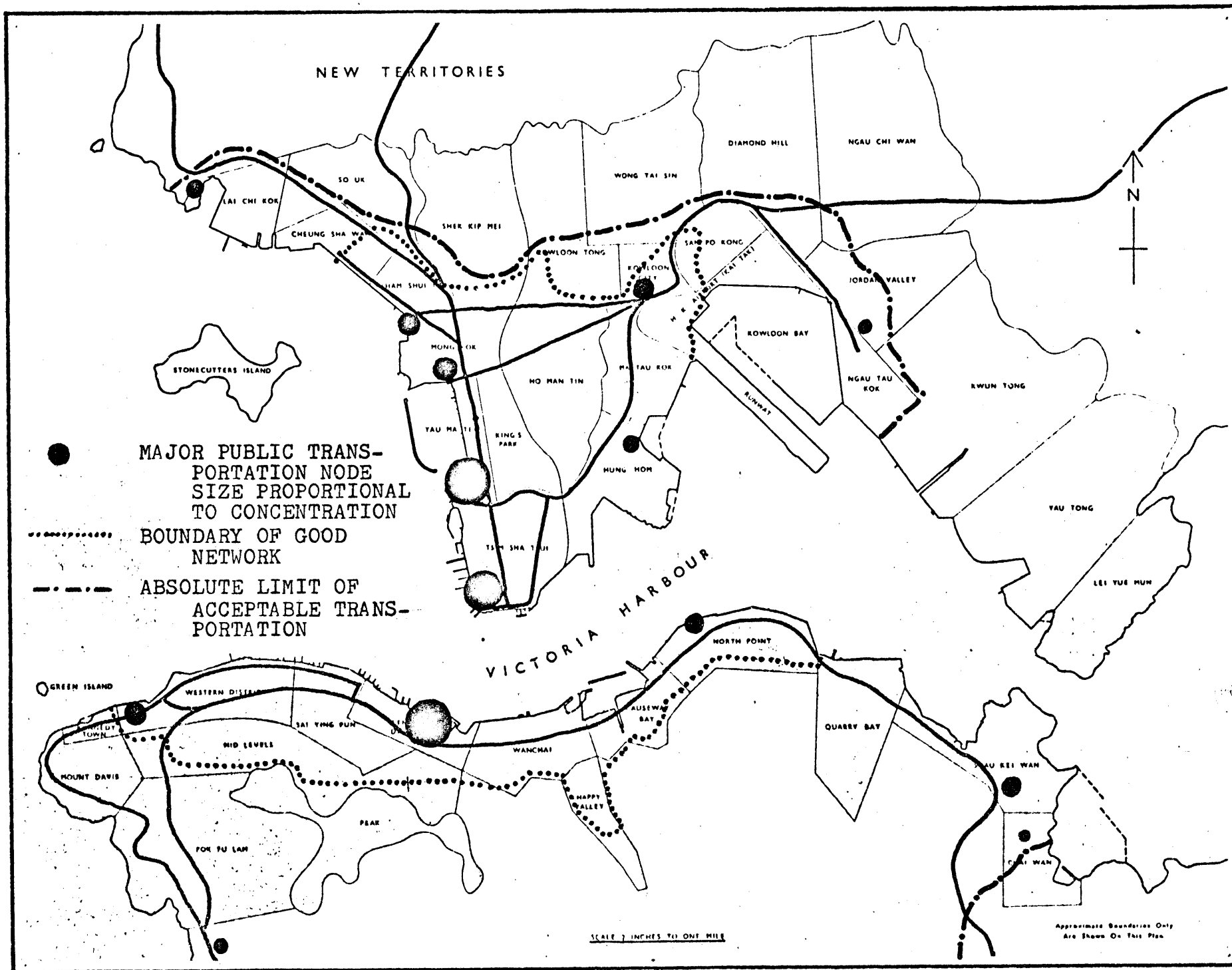
Public transportation served primarily the urban areas.. Service was dependable but the number of routes were very limited.⁷²

Service of public transportation to urban fringes was also drastically reduced. There were bus or tram routes to all major squatter concentrations at the urban fringe, but these routes were scheduled at long time intervals. The bus or tram terminals were often as far as $\frac{1}{2}$ hour walk from the major residential concentration (e.g. Chai Wan, Jordan Valley) making public transportation an extremely tedious and time consuming mode of travel.

b. cost

Fares for public transportation was not exceedingly high but could be too high for some low wage workers.⁷³

PATTERN OF TRANSPORTATION NETWORK IN THE EARLY TO MID 50'S



F. labor consideration

Entrepreneurs wished to locate where labor with the qualities described in section 2 would be available in sufficient quantities (measured by the inverse of the difficulty of recruitment) and at acceptable cost. Location implications of dinsinfa in labor requirements are discussed here.

1. availability

a. High temporary and piece-wage labor ratio
permanent labor

This required that temporary and piece-wage workers would be recruited easily.

Unemployment among refugees was much higher than among the local population.⁷⁴ They would accept any work available to them. This description was applicable initially to the unemployed male heads of households. But housewives and children in the refugee areas, where unemployment was high would also take up any temporary or piece-wage work available to them. Most of the refugee children were not attending school⁷⁵ because there were not enough schools for these new comers. And if children had no school housewives had to stay at home to look after them. This made piece-wage "put-out" work even more attractive to housewives. Also they had more economic need for temporary and piece-wage employment because of the high proportion of male heads of household created employable housewives and

children. Location mobility for these housewives and children was very low (especially when they had to work at home). There was a general tendency for factories demanding this quality of labor to be located near these sources.

b. skill-requirements

There was a mismatch of skill between many unemployed males and the skill requirements of available jobs. Sewing (not tailoring) was not a "traditional" occupation for males.. Girls were taught sewing since they were young.. Although the acquisition of sewing skill was not a very difficult task entrepreneurs would rather turn to the readily available sources---housewives, and young girls---than to wait for male workers to catch up. Moreover males were not eager to acquire the skill because sewing was not perceived as the only job opportunity. As the jobs in other industries became available to the unemployed male workers piece-wage sewing became practically an all-woman occupation.

Much the same story can be said of plastic trimming and assembly work and some plastic reprocessing, although children were employed in equally large numbers in these trades..

Their locational mobility was generally low (given the shape of public transportation and the fact that they had to carry bulky materials and products back and forth between factory and home). Factories had to locate very close to employ this labor.

Location consideration for permanent and skilled workers was less important. Permanent and skilled employment were largely dominated by male workers. Their number fluctuated only slightly with macro-economic condition (except in the case of drastic changes). Their location mobility was much higher than that of housewives and children and they often resided in factory premises. Their small number also helped to make location consideration on their behalf less important..

c. significant production outside the factory premise

This meant that space and capital (in the form of tools and machinery) had to be provided by the workers. There was no location variation in the ability of workers to provide tools and machinery. Space provision (for plastic reprocessing, moulding and shirt sewing sometimes) was a more serious problem.

The older built up areas were already extremely overcrowded. A dozen households would occupy one tenement floor. Entire families often lived in bed spaces, cubicles and cocklofts of less than 50 sq.ft. each (a standard double bed is 24 sq.ft.). It would be quite impossible (in terms of space) to operate machinery inside the building. Even the streets were occupied by street squatters. Another consideration was the construction of the buildings. These were multi-story structures with timber floors. Heavy and

noisy and vibrating machinery (sewing) or hazardous and fire-risky operations (plastic moulding) would not be tolerated by other residents.

Squatter areas were much more spacious.⁷⁶ But squatter areas had no infrastructure and road access. Operations requiring electricity and water (e.g. plastic moulding and cloth dyeing) would not be possible. But such operations were found at edges of squatter areas abutting urban area. Operations such as sewing, plastic assembling, material reprocessing could be accommodated.

Newer urban settlement with reinforced concrete structures could accommodate noisy and fire-risky operations. Public facilities and infrastructure were also available. Spatial standards were higher than those of older areas⁷⁷ but were not quite enough for the more spacious operations (e.g. plastic reprocessing).

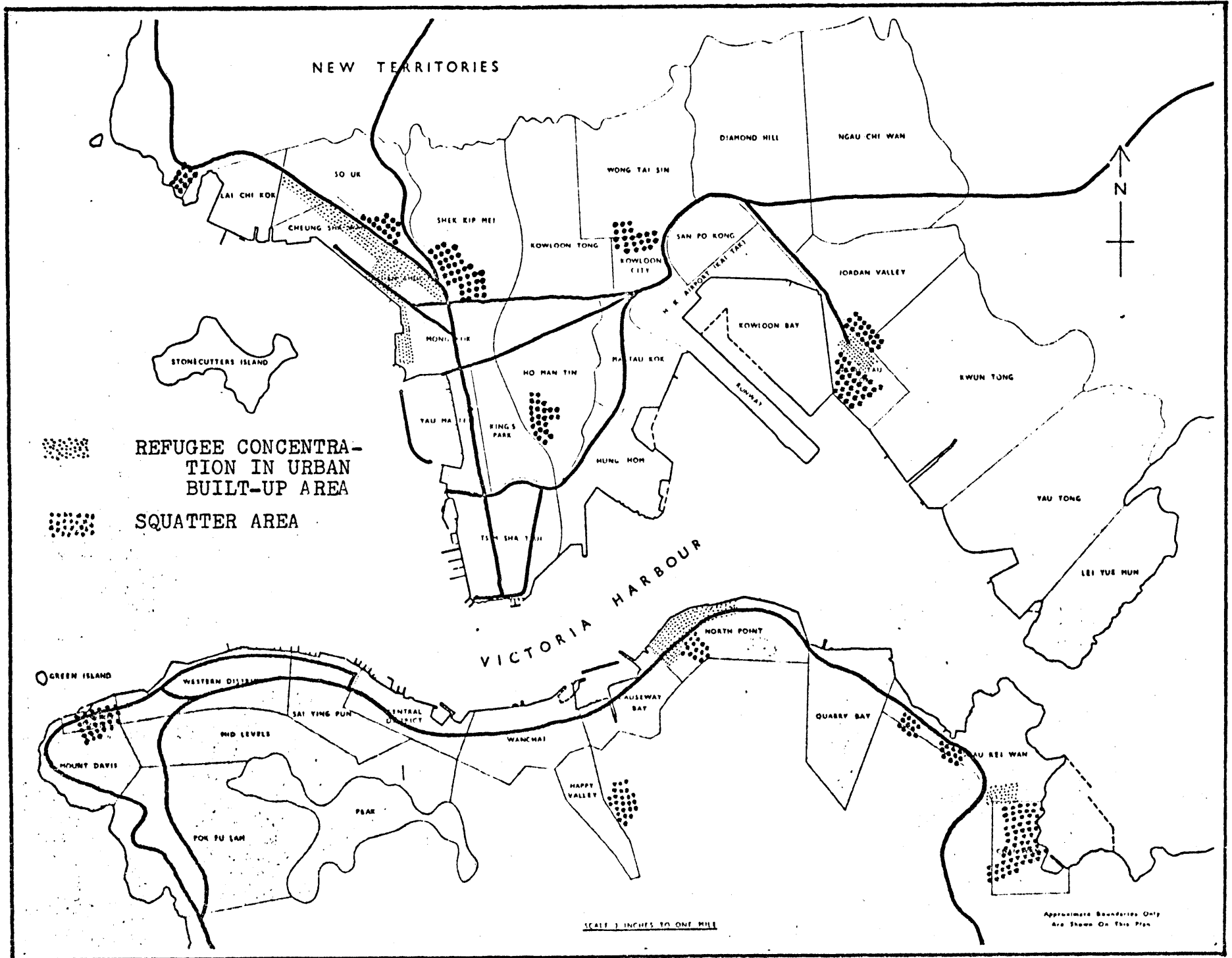
To conclude, labor considerations favored location with high concentration of (a) male workers with occupational skills, (b) ready-to-hire semi-skilled to low-skilled workers (housewives and children). Space for production outside the factory would be required. The newer(post-war) built-up areas and squatter areas with high refugee concentration would seem to be favorable locations.

There were physical limitations as to how far the factories could be located from their piece-wage labor source. Materials would have to be collected from the factories and finished delivered to the factories. These were often bulky (plastic parts and heavy (cloths). Public transportation was not suitable even when available and fares were high compared with wages.⁷⁸ Housewives with small children could not get away from the house too long. Since housewives usually shopped twice a day for food they would prefer to combine the pick-up and delivery with their shopping trips. This would limit the radius they could walk and the weight they could carry. Pick-up and delivery by the factories were not feasible even when entrepreneurs could invest on transport vehicles. Roads were bad in squatter areas, products had to be inspected and instructions had to be given verbally. All these required the workers to come to the factory themselves. Usually workers would not walk for more than an hour on a return trip (shopping included).⁷⁹ This would mean less than half a mile.

2. cost of labor

There was no location variation in wage scale of workers (for all three types). Difference in the wage scale and fringe benefits for permanent workers were results of individual negotiations. Piece-wages were equal for similar products. Sometimes in order to fulfil a sudden order entrepreneurs would raise the piece-wage. But such had nothing to do with location decision of factories.

PATTERN OF LABOR CONCENTRATION IN THE EARLY TO MID 50'S



G. external economies consideration

1. economies of scale

The types of industries and their production processes as described earlier did not require high fixed cost in production. The major cost was in material and labor which fluctuated directly with scale of production. Economies of scale were not an relevant consideration.

2. agglomeration effect

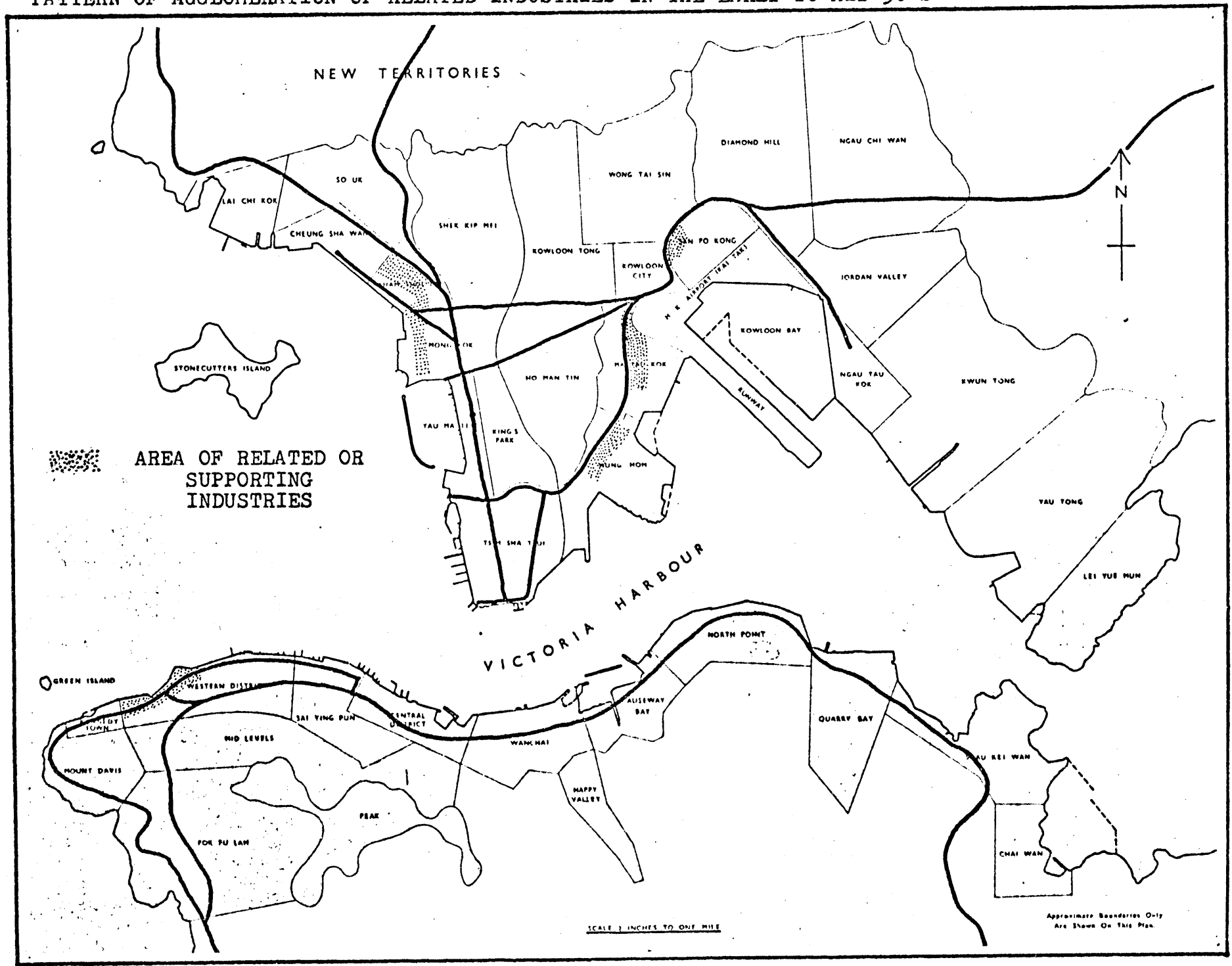
Agglomeration effect must be understood within the framework of process co-ordination. Certain support support industry prototypes capable of adapting to shirt and plastic manufacture existed before 1949 to (a) support entrepot trade activities e.g. printing, packaging, metal works etc., or (b) serve local consumers e.g. machine repairs, metal works, cloth processing etc. These industries were small operations and were dispersed in the newer urban areas.⁸⁰ The first shirt and plastic factories did not locate in these industrial-commercial-residential areas for the purpose of taking advantage⁸¹ of the possible external economies provided by these supporting industries. They located there because appropriate factories space at suitable price was available at these locations.

However, once they were located in these areas they they reinforced the locational viability of the supporting industries. Production process links began to be established. Other supporting industries were created (e.g. material supply and processing such as dyeing,

shrinking, printing, button-and-holes, label makers etc. for the shirt industry; material suppliers of various types, mould makers, machine fabrication and repairs etc. for plastic industry). Certain firms in the supporting industries were made better equipped (technologically and experience-wise) than others to service the shirt and plastic manufacturing industries. These then became external economies consideration for other manufacturers. The growth between the manufacturing industries and their supporting industries was therefore symbiotic.

Agglomeration effects were vital to the small manufacturers who did not have sufficient storage and production space, and who could not keep skilled maintenance personnel and maintain adequate raw material stock. They required small quantities of materials to be instantly obtainable from retailers or material processors, or "borrowable" from fellow manufacturers to keep production process from slacking at crucial moments. They needed instant repairs to the few machines they had. Their products had to be shipped away as soon as they were produced to relieve space for further production. Intermediate producers also depended on agglomeration of industries to make personnel contacts to users of their products, to solicit business and to design product specifications. They also needed instant access to raw materials and product delivery. Such agglomerations were therefore small and compact---usually within 15 minutes walking distance ($\frac{1}{2}$ mile).

PATTERN OF AGGLOMERATION OF RELATED INDUSTRIES IN THE EARLY TO MID 50'S



H. conclusion

1. Flexibility in production was the basic requirement for survival in the early 50's. Most factories were small. Capital investment was kept to the minimum because of unpredictable market future. Labor was found to be the most manipulable factor to achieve production flexibility. Labor was required to buffer the entrepreneurs against the fluctuating production level and to contribute space and capital for production. However the mobility of this type of labor required by the production process was extremely restricted. This limited the location options of factories to the large concentrations of urban unemployed.
2. Land consideration was only secondary because spatial and infrastructure requirements were flexible. Lack of urbanization policy had allowed land options to be extended to include practically all urban areas.
3. Agglomeration effects were an important factor because of the scale and mode of production.
4. Transport cost in an intra-urban context was not an important consideration because of short distances and few breaking points. Moreover transport cost was not significant in the total production cost. Transportation availability was a more important consideration in terms of mobility because of uneven development in transportation network and public transportation services.

SECTION 4: EMPIRICAL OBSERVATIONS

We have identified 4 major factors --- land, transportation, labor and agglomeration, which varied locationally in terms of their availability and cost. We have also identified the sets of locations where each of these factors was in its favorable conditions.

In this section these factors will be considered simultaneously with the one another. The following locations will be identified.

1. locations with favorable land, transportation, agglomeration and labor.
2. locations with unfavorable labor
3. locations with unfavorable transportation
4. locations with unfavorable land
5. locations with unfavorable agglomeration effect
6. locations with every factor unfavorable except labor

These sets of location conditions will be compared with the locations of the industries to test empirically if labor concern was the fundamental consideration in location.

A positive correlation of location set 1 with the pattern of industrial location is expected, since location set 1 represented the "best" possible combination of location factors.

A negative correlation of location set 2 is necessary to establish the indispensability of the labor factor as well as its non-substitutability.

Positive correlations of location sets 3,4 and 5 will reinforce the indispensability of the labor factor over the other factors. Their negative correlations will indicate that certain other factors are as indispensable as the labor factor.

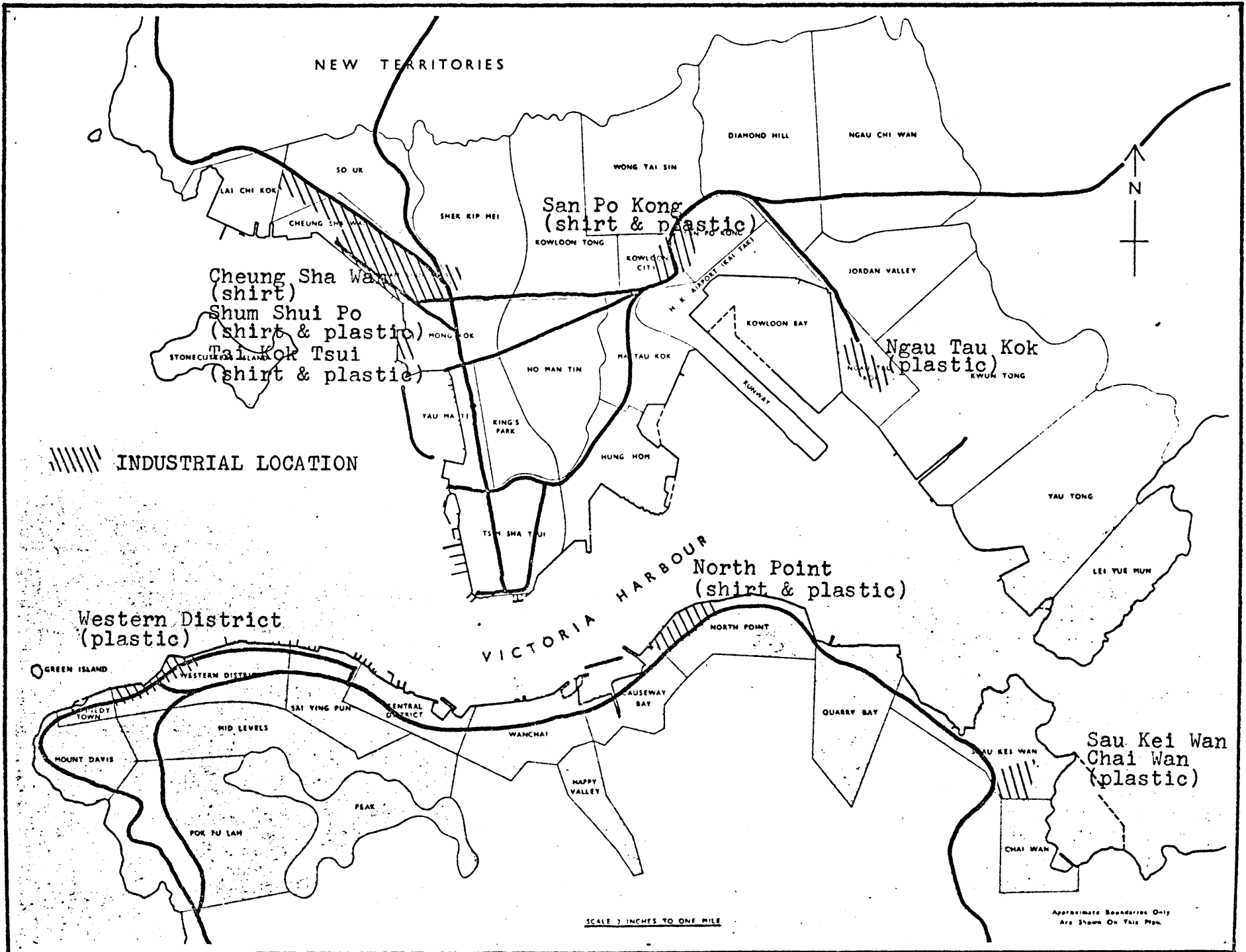
A positive correlation of location set 6 will demonstrate the sufficiency of the labor factor in industrial location consideration. This will be the strongest indication of the importance of the labor factor.

The following observations are made.

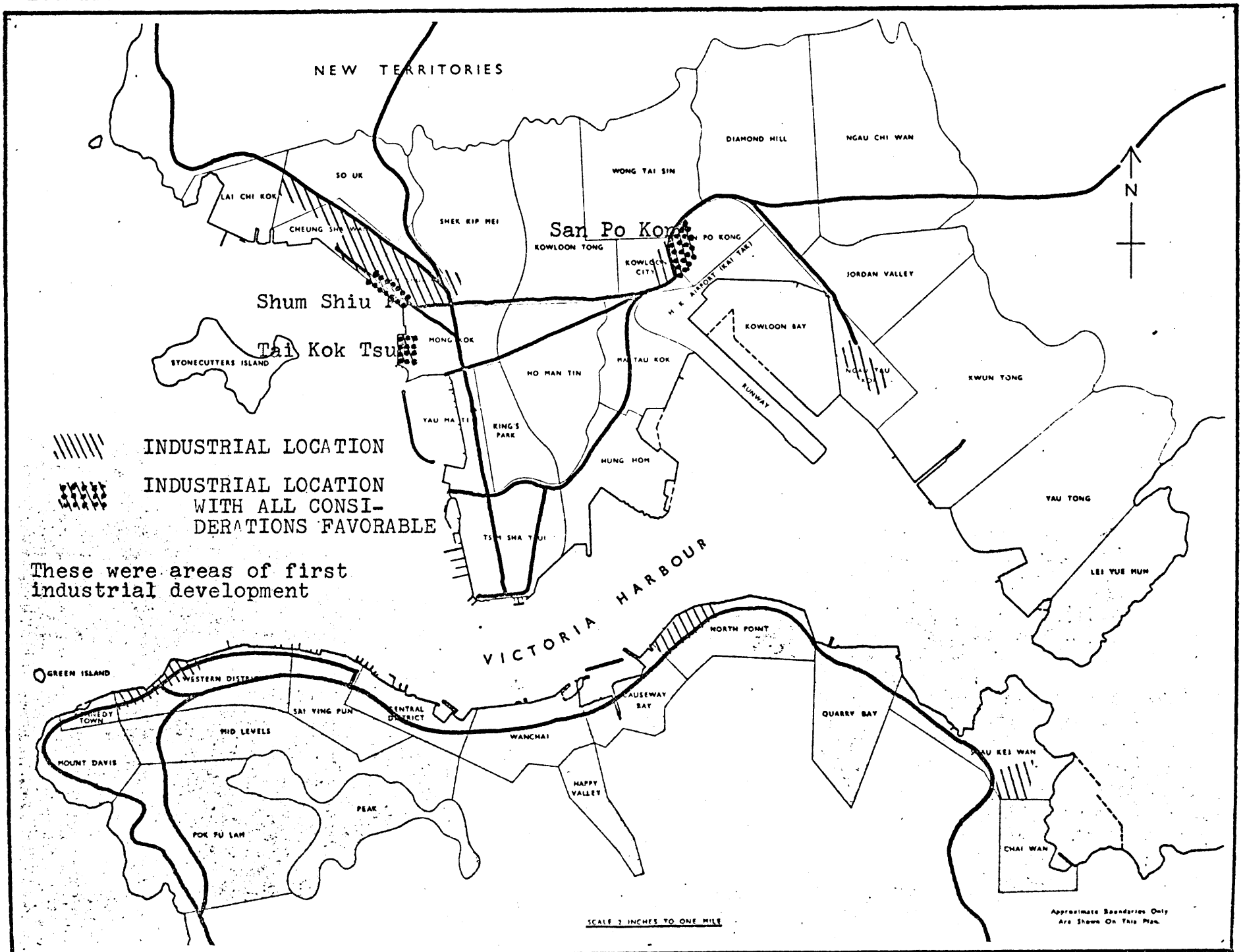
1. The majority of factories located in the new urban areas and at the urban fringes. This pattern coincided with the location of labor concentration (high unemployment) and cheap land. But transportation in these places were usually less efficient (but acceptable), especially for personnel. Agglomeration of supporting industries were not present in these newer areas. On the other hand many factories were found in the older urban areas where conditions for labor, transportation and agglomeration were usually favorable but factory space was much less suitable and expensive.
2. Factories were found to concentrate at locations where all the factors were in favorable conditions. In fact these areas --- Shum Shiu Po, Tai Kok Tsui and San Po Kong --- were the first industrial expansion areas after 1949.

3. No factories were found at locations where conditions of all factors except labor were favorable. Any area more than $\frac{1}{2}$ mile from concentrations of potential labor supply (squatters and refugee concentrations) was considered to have unfavorable labor condition.
4. Factories were found in areas with unfavorable transportation condition. These were small areas of squatters (e.g. Shek Kip Mei and San Po Kong) or temporary "resettlement" areas at the urban fringe (e.g. Ngau Tau Kok and Shau Kei Wan).
5. Factories were found in areas with unfavorable land condition. These were areas of higher rent or unsuitable space as in the case of older urban districts (e.g. Shum Shui Po, Kowloon City and the Western District). There were also new urban areas with higher rent (e.g. North Point). Industries were also present in squatter areas where infrastructure and amenity conditions were unfavorable.
6. Factories were found in areas with unfavorable agglomeration effects. These were the newer urban areas which extended from the old urban areas instead of growing out independently (e.g. Cheung Sha Wan, Ngau Tau Kok, North Point and Shau Kei Wan. They were usually close to large concentrations of refugees. It is interesting to note that these industrial areas developed at a second stage after those with all favorable conditions (as in 2).

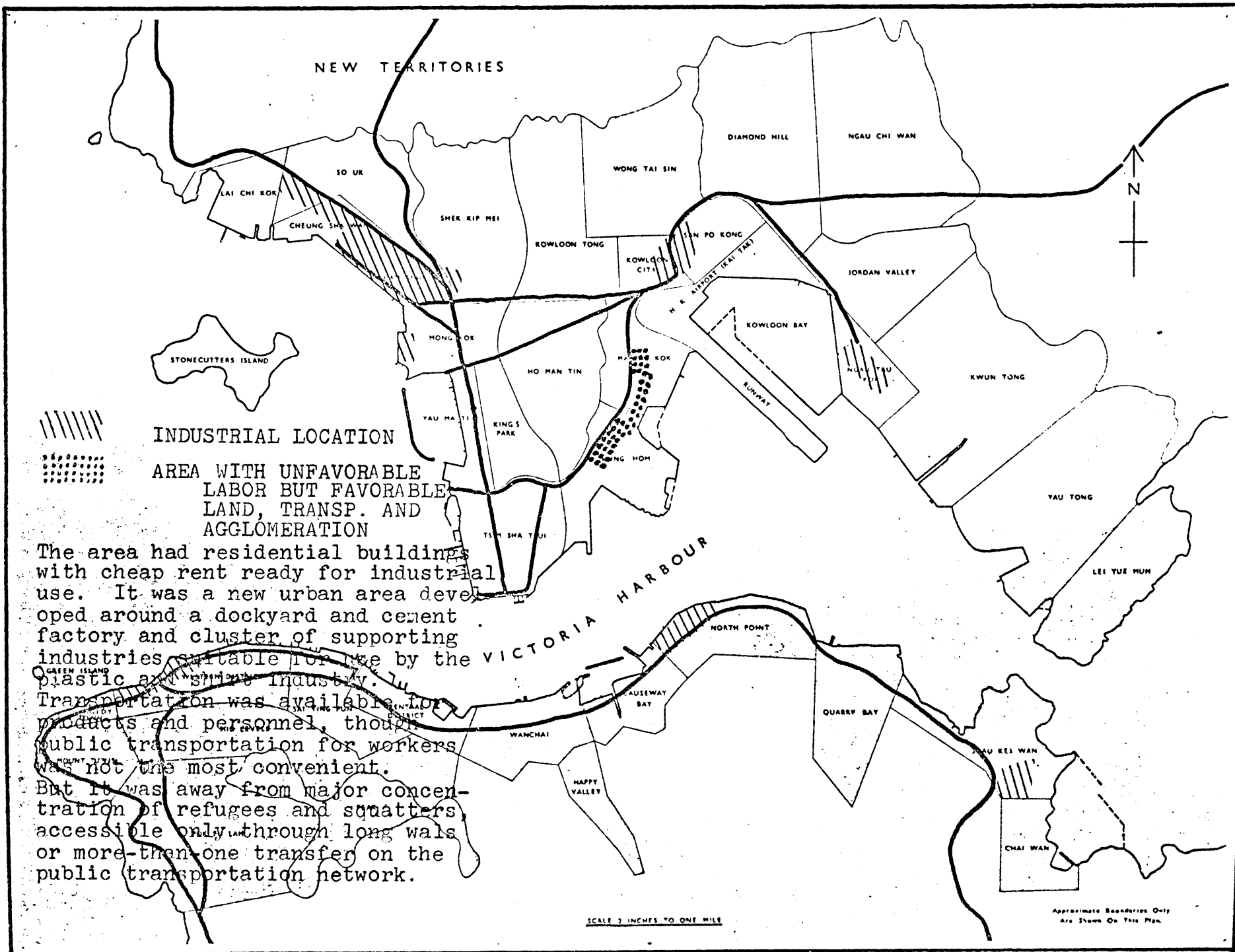
PATTERN OF INDUSTRIAL LOCATIONS IN THE EARLY TO MID 50'S



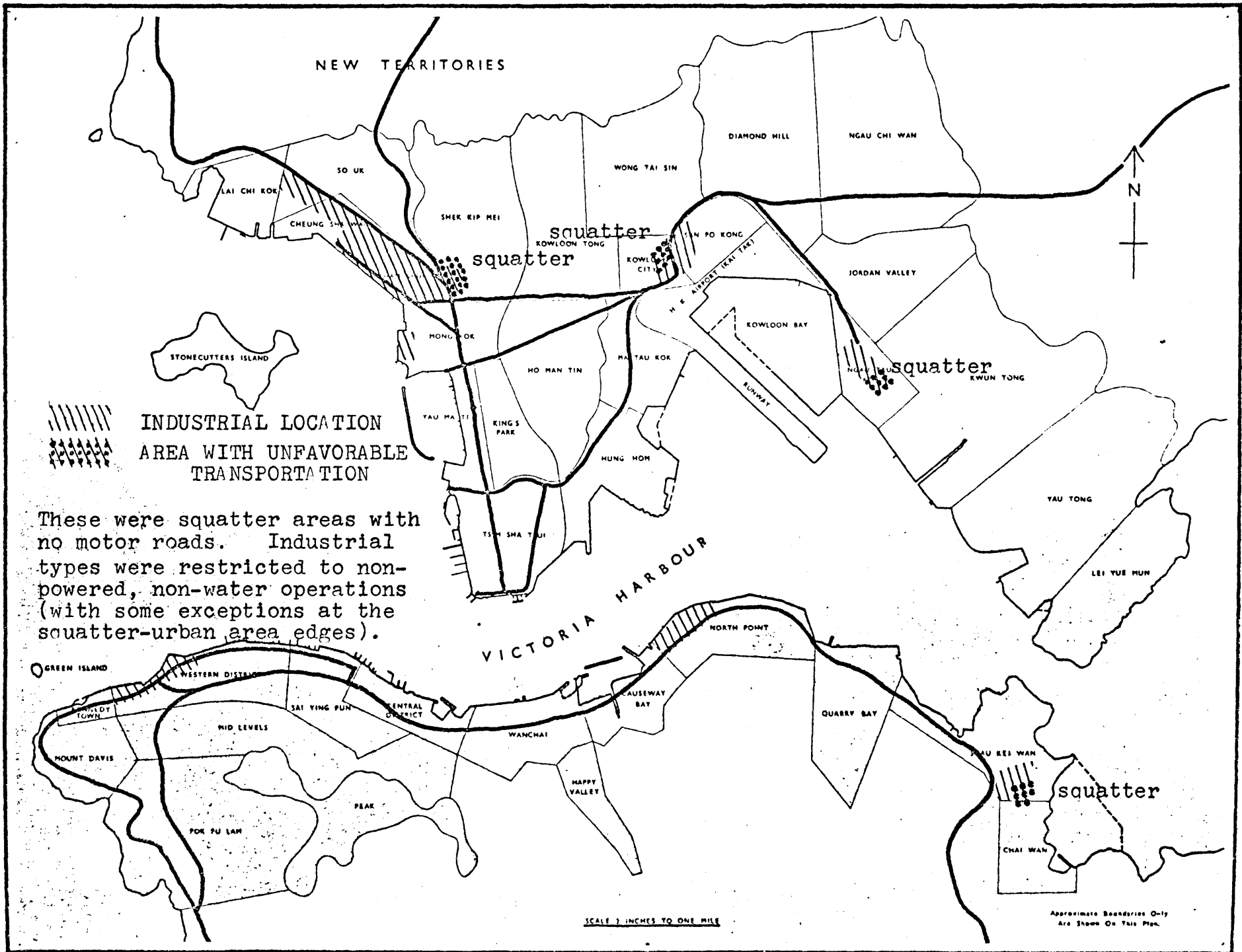
LOCATION SET WITH ALL CONSIDERATIONS FAVORABLE



LOCATION SET WITH UNFAVORABLE LABOR CONDITION ONLY

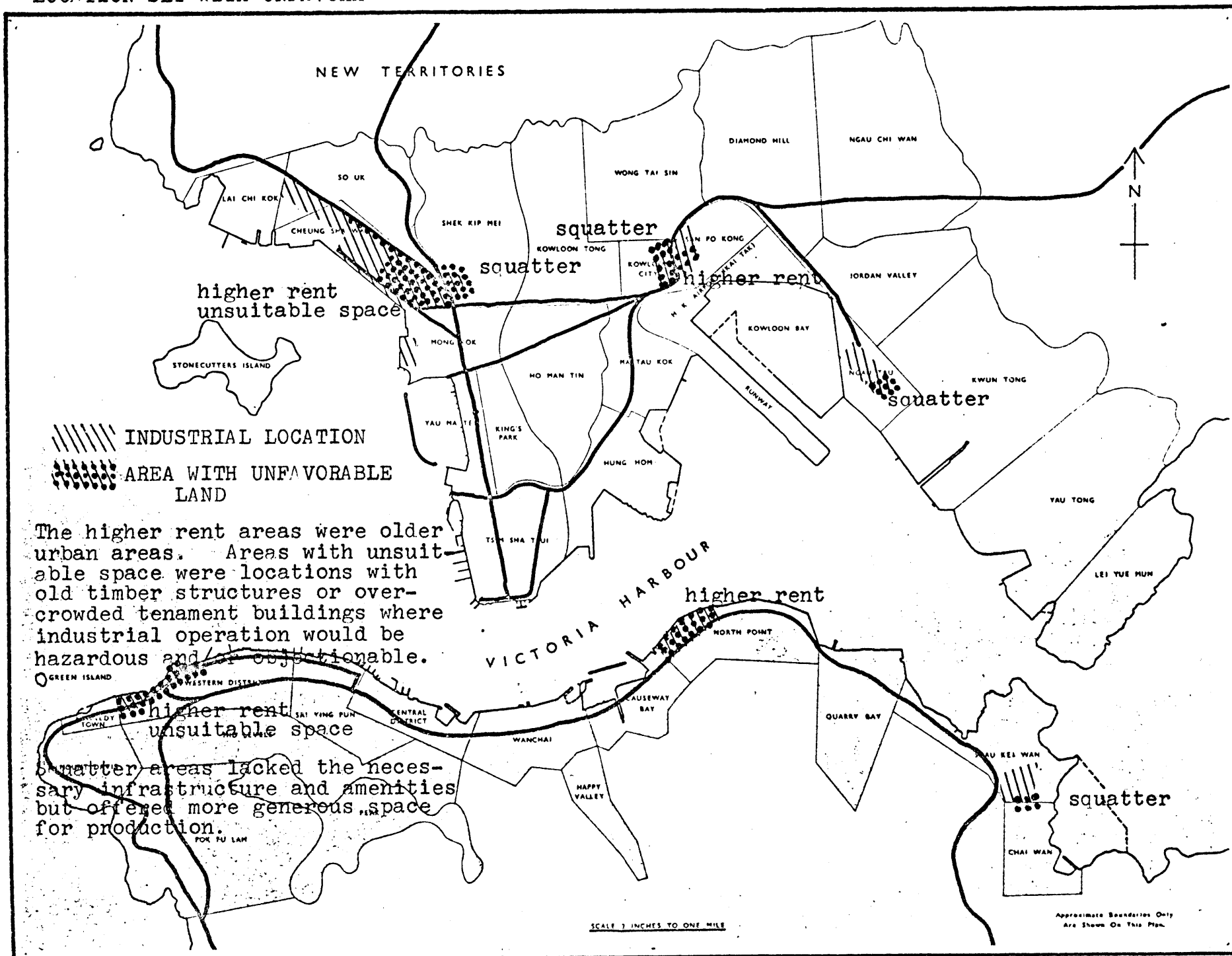


LOCATION SET WITH UNFAVORABLE TRANSPORTATION

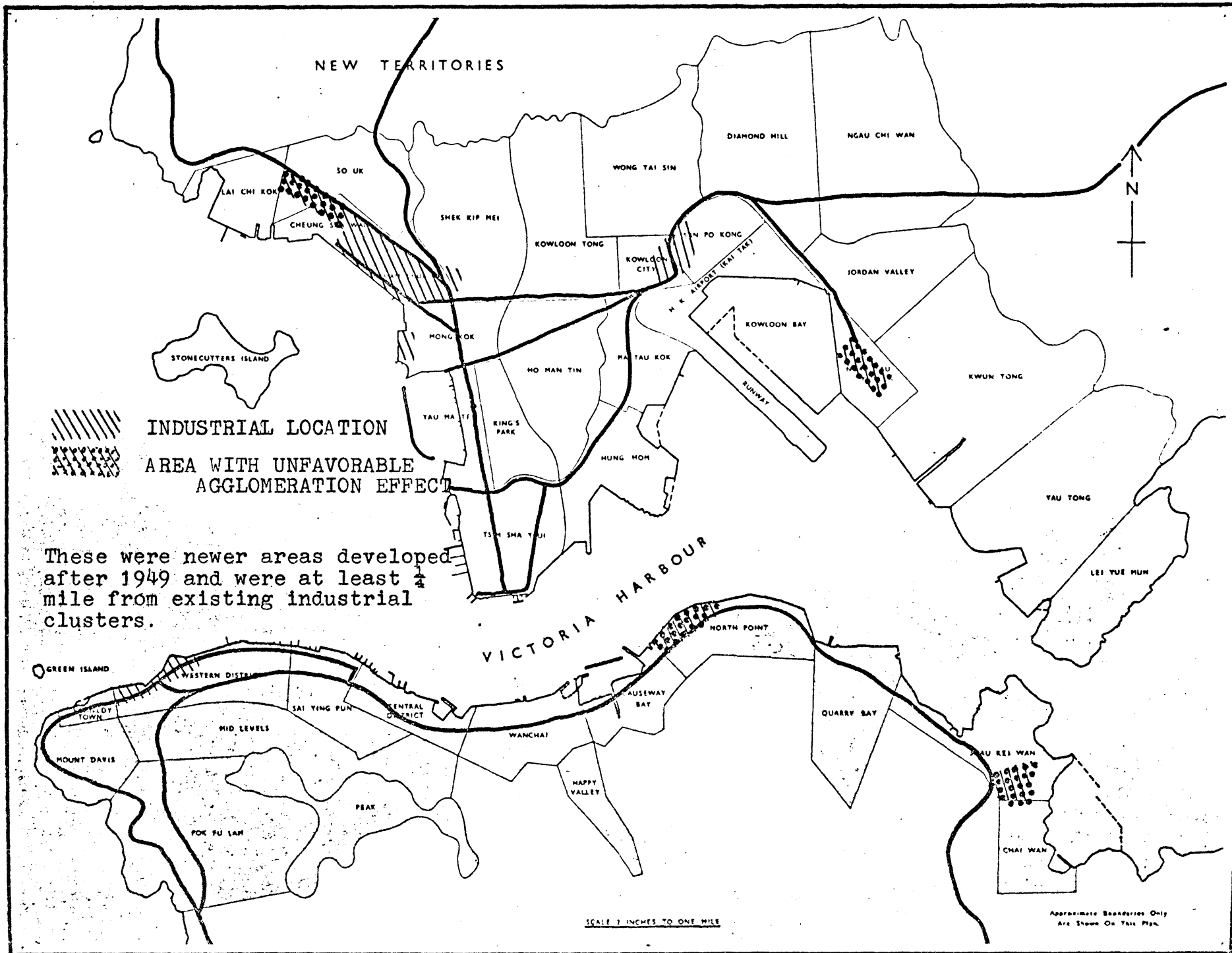


These were squatter areas with no motor roads. Industrial types were restricted to non-powered, non-water operations (with some exceptions at the squatter-urban area edges).

LOCATION SET WITH UNFAVORABLE LAND

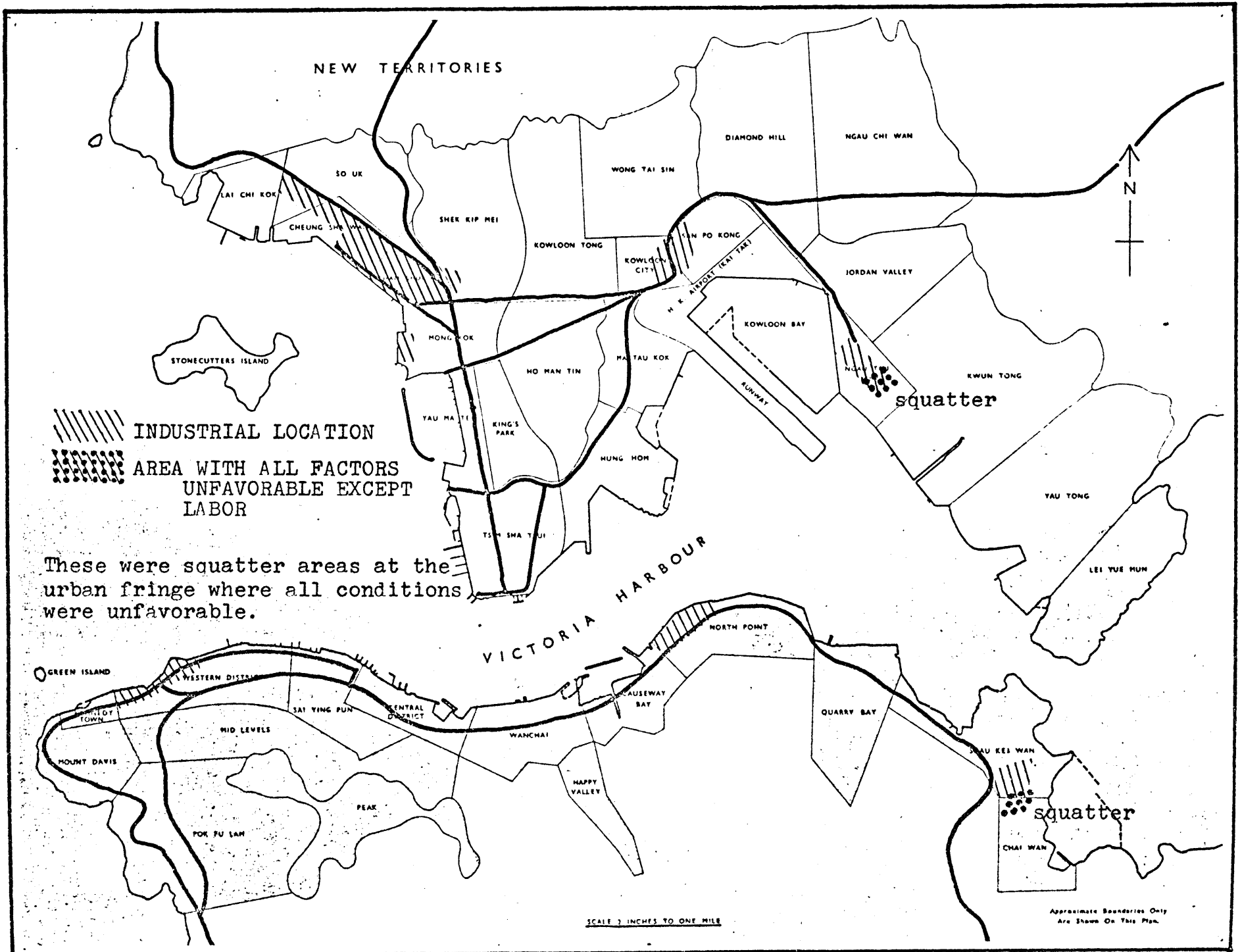


LOCATION SET WITH UNFAVORABLE AGGLOMERATION EFFECT



These were newer areas developed after 1949 and were at least 1/4 mile from existing industrial clusters.

LOCATION SET WITH ALL CONSIDERATIONS UNFAVORABLE EXCEPT LABOR



SECTION 5: CONCLUSION

The shirt and plastic industry in Hong Kong in the early to mid 50's were "labor-intensive" industries. In order to gain a foothold on the export market and in order to be competitive with other producing countries the production operation must be very flexible. The production process must be tailored to satisfy the fluctuating demands from foreign buyers. Labor input had to be flexible. The temporary worker to permanent worker ratio was high, skill requirement was moderate and production outside the factory premises was necessary.

The demographic and urbanization pattern had formed concentrations of unemployed semi-skilled to low-skilled refugees. These workers were prepared to work in any situation. But cultural and social norms and physical limitation had restricted the locational mobility of a large segment of this labor force (housewives and children). In order to tap this labor resource industries had to overcome the relative immobility of the labor force by locating close to it.

The following conclusions are drawn from the analysis of the logic of location and confirmed by empirical observations of the actual locations of the industries.

1. There was a strong tendency for the shirt and plastic industries of the early to mid 50's in Hong Kong to locate in areas where there were favorable labor conditions (large concentrations of refugees). This was true even when other input concerns were less

favorable. Their location affinity to labor can be explained by their peculiar labor requirements demanded by their mode of production.

2. The fact that unfavorable conditions of all other location factors (land, transportation and agglomeration) were tolerated (observations 4,5 and 6) and that no factory was found to locate in areas with unfavorable labor condition (observation 3) indicates that the labor consideration was more important than the other factors.
3. This above conclusion, when taken together with the observation 7 that industries located in areas where no factor was in satisfactory condition except that of labor will indicate that labor was not only the necessary condition for the operation of the industries but that under certain circumstances it might be the sufficient condition.
4. The rate at which the industries grew helped to accentuate the problem of location because areas with favorable conditions were quickly taken up leaving the late comers to the next best choices. Trade-offs among the various factors became necessary. The first expansion of the industries was located in areas where all conditions were favorable (observation 2). After these areas were taken up further expansion had to locate at less than optimum areas. The logic of location then became apparent.

5. The logic of location is not affected by the fact that the manufacturing industries were export-oriented.

Market orientation in traditional location theories is considered in terms of the delivery cost of the product (transport cost plus transfer cost). In a micro-urban context such consideration are no longer important.

Transport cost does not vary significantly among micro-urban locations, whether the market is external or internal. Moreover, in secondary manufacturing industries discussed in this research transport cost is likely to be only marginal to the total production cost. However it must be noted that perishability, weight and bulk and marketing pattern will sometimes require manufacturing location and shipment or retail location to be close to each other even in micro-urban context.

6. The fact that there was no locational variation in the availability and cost of raw materials does not weaken the logic of the location decision. It rather demonstrates that traditional location theories designed to explain locations of "heavy" industries with strong emphasis on transportation are not very useful in a micro-urban context and with regard to manufacturing industries where transport cost is only marginal to the cost of the raw materials.

7. The locational consideration of capital is also not relevant in a situation where credit terms and government

tax and subsidy structure do not vary in a micro-urban scale. However these conditions are not always true. Financial institutions and government bureaucracy do sometimes have locational preferences or discriminations even within a micro-urban context.

CHAPTER 4: INDUSTRIAL LOCATION IN HONG KONG
--- 2ND PERIOD

section 1: background

- A. the place
- B. the people
- C. industrial development

section 2: the industries

- A. the industries
- B. the production process
- C. labor requirements
- D. generalizations of labor requirements

section 3: logic of location

- A. market consideration
- B. raw material consideration
- C. capital consideration
- D. land consideration
- E. transportation consideration
- F. labor consideration
- G. external economies consideration
- H. conclusion

section 4: empirical observations

section 5: conclusion

This Chapter will examine the shirt and plastic industry in the late 60's in Hong Kong.

Section 1: background

This section deals with the changed physical, social and economic background with special emphasis on the pattern of urbanization, changes in the demographic and personal characteristic of population and the trend of industrial development.

Section 2: the industries

This section looks at the growth of the two industries with emphasis on the stability and predictability of the export market, systemization and mechanization of the production process and diversification within the industries. Their implications on labor requirements are examined.

Section 3: logic of location

This section investigates the logic of location in the changed physical, socio-economic environment, still adopting the perspective of the entrepreneur.

Section 4: empirical observations

This section looks at the pattern of location competition (not the existing pattern of factory location as in the previous Chapter) to identify the critical location factors.

Section 5: conclusion

This section draws conclusion on the relevance of the labor factor in this new physical-socio-economic environment.

SECTION 1: BACKGROUND

A. the place

By the late 60's the urban area in Hong Kong had expanded to 30 sq. miles as compared to 13 sq. miles in the early 50's. Fringe areas in the early 50's became centres as the urban area sprawled along arterial roads and as new towns came into being. The system of roads, drainage, water supply and electricity supply had been expanded dramatically. The total lengths of roads may not have increased much but the width, surface, drainage etc. of road and other infrastructure had been improved significantly. In fact practically $\frac{1}{2}$ of the total road surface had been reconstructed and improved.

In the early 50's only the northern side of Hong Kong island was densely populated. By late 60's the urban area had expanded around the island and industrial and residential clusters sprang up along the arterial ring road around the island.

The expansion of the urban area in Kowloon and New Kowloon was even more dramatic. Urban built-up areas at least doubled. Expansion ran along the coast line to the north and east. Most of the public housing construction and industrial development was in New Kowloon. The new industrial town of Kwun Tong¹ was completed by 1969.

Growth was equally spectacular in the New Territories. Self-sufficient new towns were built (Tsuen Wan accommodating about 600,000) or planned (Castle Peak for 1 million and

Shatin for $\frac{1}{2}$ million); These new towns were largely residential-industrial settlement with more than $\frac{1}{2}$ of the total housing stock public housing for low-income population.

B. the people

The total population had grown to nearly 4 million by 1968. The influx of refugees had stopped after 1954 except for a brief spell in 1958. Much of the growth had been natural growth.

There was a marked difference in the age and sex ratio² between the population of the early 50's and that of the late 60's. The population was much younger and there was a higher percentage of young working females. The children born after 1949 became young men and women. There was a significant improvement in the general level of education.³ Working children under 14 had practically disappeared because of child-labor laws and "compulsory" primary school education. But many children entered the labor force at the age of 14 after their primary school education. There were more girls than boys in this category because there was a traditional bias against girls for higher education. But the share of male workers was much higher in the category above 18 years because there was a high ratio of male entry and a high ratio of housewives withdrawal from the labor force.

Economic conditions of families improved significantly because the general economic situation of Hong Kong had

improved significantly because the general economic situation of Hong Kong had improved and because many children worked to support the family. Housewives would not have to work as in the earlier period. Occupation mobility had improved because of improved education.

Since the resettlement program began in 1954 1/3 of the total population had moved into accommodations provided by government or government-aided agencies by 1968.⁴ Private residential development was also substantial.⁵ Overcrowding in urban areas was still the major problem. There were still about 402,000 squatters in 1968, most of whom in the Kowloon and New Kowloon area.

C. industrial development⁶

By the late 60's Hong Kong had firmly established markets for different kinds of exports. Its earlier buyers were mainly the United Kingdom and the Southeast Asian countries, but by the late 60's markets in the U.S., Australia and Europe had been opened up. The major problem facing the entrepreneurs was restrictions imposed by foreign government --- through tariff, quota or voluntary restriction. To deal with this the government and the industrialists took active measure collectively to negotiate with foreign governments, to promote the manufactured goods of Hong Kong and to open up new markets.

Over the decade from 1959 to 1969 exports of domestic manufactures increased five-fold from HK\$2,282 million to HK\$10,518 constituting 80% of the total exports in the latter year. Industrial employment rose from 177,000 in 1959 to 528,000 in 1969.⁷ These were figures from registered or recorded establishments. The total would be close to double the figure.⁸ The share of the shirt and plastic industry in this growth was most significant. The clothing industry was ranked the highest in the export share and the plastic industry the third.

Workers unions were weak in spite of the dramatic growth of the industries. They were political organizations with affiliations to either the Chinese Nationalist or the Communist cause. Membership was not extensive or compulsory. Collective bargaining for wages and working conditions were not the major objectives of union activities.

SECTION 2: THE INDUSTRIES

A. the industries

The export market had now been well established for both industries. The internal market was also growing. Clothing⁹ (in general) production and exports had increased both absolutely and relatively. Comprising 34.8% of all domestic exports in 1959,¹⁰ they rose to 36.4% of a much larger total in 1969.¹¹ Plastic toys and dolls etc. rose to the third largest export following the declining textile yarns, fabrics and made-up articles. They made up 8.1% of the total. Plastic flowers was 3.5% and occupied the 5th place in export performance.

The important export market consideration for these industries (as opposed to say electronics and tourism) was foreign restriction.¹² Entrepreneurs united to deal with foreign market problems collectively and with help from the government.¹³

Most factories dealt directly with foreign buyers instead of through exporters. Seasonal fluctuations were more predictable. Factories could keep up a higher basic level of production even in the usually lean months because the volume of orders could be estimated more reliably in an established market. But there were smaller factories operating on the periphery doing surplus work for the larger ones. For these the requirement for flexibility was still a major consideration. There were also smaller factories catering for specific markets (internal or industrial-user market) or manufacturing special products (shirt collar stiffeners, simple utensils, beads etc).

1. the shirt industry

For the shirt industry the products were still for the middle to low price market (both external and internal). The products had not changed significantly (although the raw materials had¹⁴) but the production process had changed to increase the speed and volume of production. The manufacturing process was more elaborate and complicated. There was significant mechanization and systemization. Factories were much more heavily capitalized. The size of factories had generally increased. The typical firm had about 200 powered sewing machines compared with majority of the early 50's having less than 50 manual machines. Practically all operations would be carried out in the factory premises which ranged from 3,000 sq. ft. to well over 10,000 sq.ft. Much of the operation was standardized and required no craftsmanship (except for the designers and cutters).

Put-out work was reduced to a minimum. For smaller factories which required some putting-out work agents would often be used to contract out the work. These agents would deliver the materials and finished shirts. Very few individual workers would be required to come to the factories for put-out work. The agents had replaced the sewer-manufacturers of the early 50's.

2. the plastic industry

For the plastic industry the diversification in products and production processes was more significant than that of the shirt industry. High quality products of larger size and/or elaborate design were produced for the U.S. and European markets. Smaller or simpler products were made for markets in South-East Asia and East Africa. The internal market also demanded different qualities and types of products. Factories of different sizes and production processes were found¹⁵. There were factories employing less than 20 operators and using manually operated moulding machines. There were also the highly automated factories with sophisticated machines and employing over 500 workers. For the larger factories much of the operations were carried out in the factory premises. However much of the assembly work (if assembly was required) was put-out. Again agents were gradually replacing the earlier practice of individual workers coming to the factory to collect work. But the agent method was not as passive as in the shirt industry.

The chief employer in the industry was the plastic moulding manufacturer. Plastic raw material reprocessing was being phased out because there was a general decline in the international price of new raw materials.

B. the production process

Unlike their predecessors in the early 50's operating on the margin of the economy the shirt and plastic industries had become the pillars of the economy. Their combined share in the gross national product and in employment was more than any other industry.¹⁶

Export markets had been established. Volume of exports had increased dramatically and requirement for flexibility had been considerably reduced. The internal market was more predictable and production levels could be adjusted without drastic fluctuations. Factories had grown large in size and number.

The seemingly unlimited supply labor in the early 50's became dried up with the process of industrialization. By mid-60's the unemployment figure was reduced to 1.2%. Practically anyone who wanted a job could find one.¹⁷ New comers into the labor market were also different from their predecessors. These were young people with more formal education and less family responsibility (unmarried singles living with parents or young married couple with no children). They could afford to be more selective in jobs than could their parents.

On the other hand capital availability¹⁸ and technological advances¹⁹ had made substitution for labor possible. Whether such substitution would be profitable depended on the nature of the market and the mode of operation of each entrepreneur.

For the larger and more established factories the primary consideration in the design of production process was efficiency

in production and management using mechanized and systemized methods. For the smaller ones flexibility of production and minimization of sunk-in capital investment were still the major concern.

1. flexibility of production

Most manufacturers could deal directly with foreign buyers and higher predictability and control over the volume of production could be achieved. Hong Kong products were mainly for the middle and low price market externally or internally. This meant that demands were more stable over the short run. Although some seasonal fluctuations were always present their impact could be minimized.

The major market problems for the export manufacturer was foreign protectionism. But these were survival issues for the whole industry and not flexibility issues for the individual entrepreneurs.

For smaller factories on the periphery of the market and for factories producing from intermediate industrial-users flexibility of production was still a major issue. The sole reason for their survival was precisely their ability to act as buffer for the larger factories in case of fluctuation not anticipated.

2. division of labor and standardization

The process of standardization and division of labor was more complete in larger factories and in the shirt manufacturing industry.

For the shirt industry almost all operations (from designing to packaging) were carried out in the premises. No one single operator would do all the sewing. For the more systemized factories the manufacturing process would be divided into 24 stages (from preparation of cloths for cutting to label sticking). Moving assembly line technique was adopted. Powered sewing machines and special job machines (buttoning rimming and pressure etc.) were used. Operations were standardized and craftsmanship requirement reduced.

For the plastic industry the larger factories were automated and jobs were clearly defined and standardized. The smaller factories still followed similar process to those of their predecessors in the early 50's except that powered machines were used instead. Much of the assembly and trimming work was still put-out for the small as well as the large factories.

3. quality control

Because of the increased division of labor and standardization for most factories there was more need for systematic supervision and standardized training. Individual craftsmanship was not an important consideration except for the highly specialized key personnel (cutter, sample-sewer or mould-maker). The ordinary workers would only be required to perform simple operations e.g. in the shirt industry: button-hole opener, sleevesewer, sleeve and trunk joiner, label

sticker etc. ; and in the plastic industry: mould setter, temperature checker etc. Many factories had short training courses for basic operator training, that lasted 2 to 6 weeks. Supervision was an important tool used by almost all factories to ensure the quality of production. There was a growing middle-level management personnel (dispatcher, foreman, team leader etc.) not present in the earlier period.

4. process-coordinator

a. internal coordination at each entrepreneur

Internal process coordination became a very important consideration in systemization. Functions performed by individual workers were simple and standardized but pre-planning, scheduling, monitoring and feedback became the major task to ensure smooth production. There was a hierarchy of managers, sub-managers, workshop coordinators, inspectors etc. who maintained the smooth functioning of the production system.

b. external coordination among entrepreneurs

External process coordination declined in importance as more operation were carried out inside the. However smaller factories or intermediate producers which still depend on work from larger factories had to operate to fit in the overall production scheduling of the larger factories. The issues facing them were therefore similar to those of their predecessors in the earlier period.

C. labor requirements²⁰

Requirement for flexibility of production varied among factories. For the larger ones with more predictable production levels their concern was to mobilize to maintain and increase the level of production. For the smaller ones their concern was to be flexible enough to withstand fluctuation. But the changed quality of labor and its substitutability (by capital) made it difficult and undesirable for some entrepreneurs to manipulate the labor factor in production.

The location and occupation mobility of the new labor force made it impossible for individual entrepreneurs to have a dependable source of supply.²¹ They could no longer exploit the high unemployment situation.²² Unlike in the earlier period where entrepreneurs would not keep a large labor force on a permanent basis because of flexibility requirement, the workers in the late 60's would not demand permanent relationship with entrepreneurs because they would not lose to stay mobile in a near-full-employment labor market.²³

Their occupational skill did not necessarily improve over that of their predecessors but because of improved formal education in an industrial setting young workers were more prepared to adapt to technological innovation and observe industrial disciplines. On the other hand they were less willing to work beyond formal contractual obligations.

The following is a description of the types of wage relationships and the quality and quantity of labor required by the industries.

1. types of labor in terms of wage and employment relationship

a. "permanent" employees

Despite more predictable production levels entrepreneurs would not invest in permanent workers as they would in machinery and production systems. The following reasons were cited.

- i. Machinery were assets and permanent employees were not, yet both constitute sunk-in investment with varying degrees (mortgage for machinery and contractual obligation to permanent employees). It was therefore necessary to keep permanent employees to a minimum.
- ii. Machinery credits were easily available and terms were generally favorable. Foreign machine distributors were eager to give credit, probably to deep themselves in business with shrinking markets in the more advanced countries.
- iii. Machinery did not depreciate drastically because the machines were not yet sophisticated enough to render them quickly out-of-date or non-transferable.
- iv. Labor shunned permanent employment which they perceived as reducing their mobility. In fact many entrepreneurs had to improve fringe benefits (holidays, recreational facilities etc.) to attract workers.

v. If additional labor was needed in short notice it was better to pay them higher wages than to keep them through bad times.

As a result permanent employment was offered only to administrative maintenance and highly skilled personnel as in the early 50's. In addition there was a growing segment of management personnel. These, too, were offered permanent employment to secure their loyalty, skill and continuity. But unlike the earlier period the relationship between these workers and the entrepreneurs were much more formal and contractual. They were no longer relatives and friends of the entrepreneurs but were highly mobile sellers of skill.

b. "temporary" employees

This day-to-day basis employment became the most common practice by late 60's. Workers worked in factories in shifts. In the early 50's such workers were required to work a fixed number of hours or produce a minimum number of products during the day. If they came in late they would have make up for the lost time or production by staying up late. But in the late 60's scheduling of shifts was much more rigid and organised. If a worker came in late he would not be allowed to enter the factory and would lose a day's work. The highly "structured" working condition was necessary because of the high degree of internal process-coordination demanded by large-scale assembly line production

methods. Getting to the factory on time became a most important requirement of workers.²⁴ Workers would be paid by the time worked, and quantity of goods produced. Piece-wage was applicable for most workers.

Recruitment for temporary employees was a continuous process for individual factories because the turn-over rate was extremely high.²⁵ Recruitment notices were posted in public places, and/or published in newspapers (Hong Kong had about 50 daily newspaper), and/or shown in cinema screens. Personnel relationships through present employees were also used. Some demonstration of skill was required but since operations had become more standardized and simplified a short period (no more than 2 weeks) of on-the-job training was sufficient for any potential worker with the minimum formal education.

c. piece-wage laborers

There was still work to be put-out (e.g. some sewing and most of plastic assembly). But the importance of put-out work had been drastically reduced by systemization and mechanization. Many piece-wage workers would not be required to come to the factories themselves to collect work. Middlemen brought materials to them and brought back the products to the factories. These middlemen usually had transportation and had good working relationship with the factories. They had either worked in these factories before or had relatives or

friends working on the management level. Inspection was done in the factories and workers paid directly by the factories. Put-out workers usually worked for only a few factories. The middlemen received a commission from the factories which was proportional to the quantity of products they handled.

2. qualities of labor

a. skills

Skills were defined in much the same way as in the earlier period --- that there was general correlation of the skill levels with a/the period of apprenticeship, b/the wage level, and c/the "prestige" accorded in the workplace.

There was much less craftsmanship because works were standardized even in the smaller factories. Jobs were much more segmented. Industrial discipline was an important consideration.²⁶ Given the generally improved formal education level and the reduced emphasis on craftsmanship the period of training was reduced. The so-called semi-skilled jobs would require training of no more than two months.

The following is a list of key personnel in the industries and their skill levels.²⁸

shirt industry (chief manufacturer)

administrative	mixed skill
maintenance	mixed skill
product design	
designer	high-skill
sample sewer	high-skill
quality control	
inspector/ dispatcher	
materials	high-skill
products	high-skill
process coordination	
workshop mana.	high to med.skill
foreman	high to med.skill
technical staff	
repairs	high to med.skill
mech. & elec.	medium-skill
shop floor	
cutter	high-skill
sewer, joiner	
collar	high to med.skill
cuffs	high to med.skill
rims	high to med.skill
trunk	medium-skill
sleeves	medium-skill
pockets	medium-skill
button holer	medium-skill
button sewer	medium-skill
pressor	med. to low-skill
ironer	med. to low-skill
transport	medium-skill

plastic industry (chief manufacturer)

administrative	mixed skill
maintenance	mixed skill
product design	
designer	high-skill
draftsman	high to med.skill
mould	
design	high-skill
fabrication	high-skill
assembly	high to med.skill
quality control	
inspector/dispat.	
materials	high-skill
products	high-skill
process coordination	
workshop mana.	high to med.skill
foreman	high to med.skill
technical staff	
tool fab.& rep.	high to med.skill
mech. & elec.	medium-skill
shop floor	
mould machine	medium-skill
paint. & assem.	med. to low-skill
trim./pol./pack.	low-skill
transport	medium-skill

b. space, tools and machinery requirements of workers

Because of the high degree of internal process coordination and quality control required entrepreneurs would prefer to have all activities carried out in the factory premises. Even smaller factories would prefer to use mechanized production methods to increase efficiency. Entrepreneurs would normally provide the necessary machinery for work in the factory. Individual workers would find it too costly to invest on power-operated machines. Put-out work was restricted to operations where no machinery (e.g. plastic assembly) or only manual machines were required (e.g. sewing).

The rationale for put-out work was not to minimize capital outlay for machinery but to reduce space requirement of the factory premises.²⁷

3. quantities of labor²⁹

Seasonal fluctuation was reduced both in the aggregate and among factories.

The proportion of piece-wage labor had reduced significantly. But since the industries had grown at least five times the absolute demand for piece-wage worker was still large. The reduction was more significant in the shirt manufacturing where put-out sewing had declined drastically (30% down to 10%). In the plastic industry where moulding had always been done in factories and assembly work outside the factories the proportion of piece-wage had not fallen as significantly as that in the shirt industry (20% down to 10%).

types of workers in different trades:

	shirt industry chief manufacturer		plastic industry chief manufacturer	
	# workers	payroll	# workers	payroll
permanent	30%	40%	40%	50%
temporary	60	55	50	45
piece-wage	10	5	10	5
	100	100	100	100

skill mix of workers in different trades:

high-skill	20%	45%	20%	40%
medium-skill	50	40	50	40
low-skill	30	15	30	15
	100	100	100	100

The skill-mix had shifted slightly to the low-skilled category for the shirt industry. The products of the shirt industry had not changed very significantly. They were still catering for the middle and low price market. But standardization and segmentation had created some simple and low-skilled jobs.

On the other hand the improved sophistication of the products and production processes in the plastic industry required higher proportion of skilled workers in the designing, fabrication, management, planning and supervision categories. Machine operators performed jobs of similar skill requirements as their predecessors, but automation reduced their number. This shifted the skill-mix towards the higher skill category.

D. generalizations of labor requirements

1. high temporary and piece-wage labor ratio
permanent labor

This ratio was slightly lower than that of the early 50's, especially in the plastic industry. But the ratio was still very high. However the composition and meaning of the ratio had changed.

In the early 50's temporary and piece-wage labor were of equal share in the total employment pattern (except in plastic manufacturer and reprocessor where piece-wage labor had always been low). But in the late 60's temporary labor had largely replaced piece-wage labor. This was because of the shifting of most production activities back into the factories necessitated by mechanization and systemization. Fewer and fewer work were put-out.

Also the high ratio in the early 50's was primarily a reflection of the high flexibility required by the fluctuating market. It was the entrepreneurs who decided to keep the ratio high. In the late 60's the high ratio was the result of decisions of entrepreneurs who would rather invest in machinery and production systems to increase production efficiency and of desires of workers who wished to remain mobile in a near-full-employment labor market in search of better opportunities. The importance of the element of flexibility had reduced significantly.

The fact remains that the ratio was high and with the dramatic growth of the industries the absolute demand for the different types of labor supply was also high.

2. medium skill requirement

The skill-mix remained fairly stable with that of the shirt industry shifting slightly towards the low-skilled category and that of the plastic industry towards the skilled category.

But the spectrum of skills had increased with the adoption of more sophisticated machines and production systems. However this applied to workers in the technical or management spheres primarily. For workers in the ordinary production operation mechanization and systemization had reduced work to simple operations requiring little craftsmanship or occupational skill. Their education and experience in an industrializing society had made them more adaptable to routine work of this nature and to industrial discipline. The older workers either moved towards the higher skill technical jobs or remained in the smaller factories where their craftsman skill was still useful.

3. production outside the factory

The most significant difference between the two time periods was the reduction in the amount of put-out work. Most of the work was done in the factory with the notable exception of plastic assembly work where abundant space was required.

SECTION 3: LOGIC OF LOCATION OF LOCATION

The examination of the logic of location will follow the format of investigation in Chapter 3.

Although the industries had grown entrepreneurs were still incapable of providing their own favorable production conditions on an individual basis. Availability of favorable factor conditions would therefore be the first consideration in location choice. Cost variation would be considered subsequently. Substitutability under critical situations would also be considered.

The following location factors will be discussed.

- a. market
- b. input factors
 - i. raw material
 - ii. capital
 - iii. land
 - iv. transportation
 - v. labor
- c. external economies of scale and agglomeration

A. market consideration

Unlike the early 50's when external market was the only major consideration the late 60's saw the growth of internal markets and the decline of the intermediate market.

1. external market

It was still by far the chief market.³⁰ The price of product was the same for all locations of production. Although factories located much farther away from shipment point the farthest distance between points of manufacture and points of shipment was no more than 11 miles³¹ (compared with 5 miles in the early 50's). With improved transportation network this increased distance would not present significant transport cost differences. Besides, transport cost was only marginal to the total production cost. The problems of transportation will be further discussed under the appropriate heading.

2. intermediate market

This was becoming less important because most operations were performed inside a single factory. Used-material reprocessors³² and manufacturers of parts were gradually phased out by systemized production methods. This was particularly true of the shirt industry where practically all processing was done under the same roof. For the plastic industry there was still some assembly work to be done by sub-manufacturers.

However there were still a large number of factories doing surplus work for the bigger factories.³³ They were much less systemized and mechanized. Small scale transactions and instant deliveries were still vital. For these the economies of agglomeration would still be important.

3. internal market

This was a growing market for both the shirt and the plastic industry.³⁴ However products were sold through retail distributors. Some of them sold only the products of a single manufacturer but most sold products of different manufacturers or many different kinds of products (e.g. department stores). The location of retail and manufacture had the same relationship as that between point of shipment to external market and manufacture, except that instead of considering the distance between the factory and the warehouse the entrepreneur had to consider the distance between the factory and the retail outlet. Since all retail outlets (including their storage) were within the urban areas transport cost variation would not be an important consideration. The availability of proper transportation will be discussed under transportation consideration.

B. raw material consideration³⁵

There was little change in the supply pattern of raw materials. Practically all of them were imported. The same consideration as in the early 50's would be applied. There was no location significance except in terms of transportation availability which will be discussed under the appropriate heading.

C. capital consideration

1. cash outlay

The situation was similar to that of the early 50's except that as factories grew larger and markets more established banks were more ready to forward credit. Smaller factories could also approach the government sponsored "small business loan fund", though the cumbersome administrative procedure did not encourage application. On the whole there was little locational variation both in the availability of credit and cost of credit.

2. credits on materials

These were similar to those of the early 50's, that there was no location variation.

3. credit on machinery purchase

Unlike the early 50's when machines and tools were simple and crude, machinery used in the late 60's was much more sophisticated and specialized (for large as well as for small factories). Machines could now be bought by instalments (not available in the early 50's). Initial investment would not be too large though running cost would increase. The rapid expansion of the industries with an uncertain long-term future (foreign restrictionism) made it attractive for entrepreneurs to use modern machinery to increase their immediate efficiency and to avoid heavy initial investment or sunk-in capital.

This changed drastically the production process and made substitutability of capital for labor an attractive alternative. But there was no direct location variation in this respect. It's locational effect on labor will be discussed under the appropriate heading.

D. land consideration³⁶

1. availability of appropriate space, facilities and infrastructure

New factories were larger (upwards of 3,000 sq.ft.) and amenity requirements were more elaborate. The structural conditions and spatial quality of older residential areas were no longer suitable. Many built their own factories. But most bought or rented multi-story (5-15 stories high) flatted factory space from factory building developers.

Unlike the early 50's when there was virtual chaos in land-use control the late 60's saw legislations regulating land-use. New areas were developed according to strictly enforced land-use zoning regulations. Most industrial areas were also created (Kwun Tong and Tsuen Wan). But the industrial-commercial-residential areas of the early 50's still existed. They became the older mixed land-use urban areas by the late 60's.

Large factories would not find adequate space readily available in older urban areas. When land was available the cost would be high. Also improved systemization and mechanization made economies of scale outweigh economies of agglomeration associated with the older areas. Usually newer industrial areas farther away from urban centres could provide more space. The concerns in such a location were the availability of labor and the efficiency of the infrastructure and transportation systems. The

main trade-off was the substitution of more, and possibly cheaper, land for easier access of labor. Entrepreneurs of large factories often found it easier to improve the mobility of labor (to be discussed under labor consideration) than to modify their land requirements. Infrastructure in newer areas, especially in new towns³⁷, was often unreliable. Electricity supply was often cut short without prior notice and water pressure was often inadequate to reach higher floors. Transportation network efficiency was also lower in more distant areas (to be discussed under transportation consideration).

Smaller factories had more option as to the choice of land. Their spatial requirement was much less (still around 3,000 sq.ft.). They would be tolerated in older urban areas (including residential) as long as they did not present serious fire hazard or impose heavy structural loading, and as long as neighbors did not complain too much. Most of the smaller shirt factories could meet such requirements. But plastic factories with their inflammable materials had more of a problem. These factories could either locate in the older urban areas to exploit economies of agglomeration or they could locate farther away in the newer industrial areas to exploit the lower land price. However it must be noted that most of the smaller factories were older factories. They had already located the older areas or in areas that had grown old. Location consideration for new factories in the late 60's belonged mostly to larger factories.

2. cost of factory space

Land shortage was a very serious problem. Developable flat land in Hong Kong was very limited. Reclamation from the sea and levelling off hills were expensive operations.

Industrial land development was primarily the effort of the private sector. Between 1950-1970 industrial floor space had increased dramatically.³⁸ The cost of land had sky-rocketed³⁹ and so had the competition for land. Much of the older industrial areas had been redeveloped to higher density and larger space. But these did not include the older mixed-land use urban areas where industries first developed.

The cost of factory space fell as it was farther away from urban centres, measured along major artery roads.⁴⁰

There were large fluctuation in land prices among locations on Hong Kong island, the Kowloon area, the New Kowloon area and the New territories. Because Hong Kong island and Kowloon were ceded to the British the lease was much longer (from 75 years to 999 years). But land in New Kowloon and the New Territories was leased up to 1998 only. Therefore land on Hong Kong island and Kowloon was much more expensive.

Factories space was difficult to find because of the rapid industrial development. This undoubtedly pushed up the price of factory space. In many cases trade-offs between rent and other factors were not possible because land options were severely limited. Entrepreneurs had to be satisfied with any available land which could provide the minimum conditions for production.

E. transportation consideration

1. materials and products

The transportation network was much improved by late 60's. Trucks and vans had replaced the earlier diversified modes of transportation. Trucks could get anywhere except into squatter areas where there were no roads. The major problem was traffic congestion in the old urban areas. But since all shipment points were inside the old urban areas (along the harbor) this was a universal problem. However there was a serious objection to locating in the older urban areas regarding loading and unloading of goods. The older areas were not designed for industrial use. There were no service roads for industrial use. The main roads were already congested. This made loading and unloading a very inconvenient and time consuming operation. Trucks sometimes had to circle around the block stopping a few minutes at a time in front of the factory to avoid blocking up the traffic.

Aside from this the cost of transport was only marginal to the total production cost.

2. personnel

Transportatio of workers was a much more serious problem than that of transportation of goods and materials. Since most workers now worked in factories instead of at home they had to be transported if factories were far away from where they lived. The mobility of the workers and the

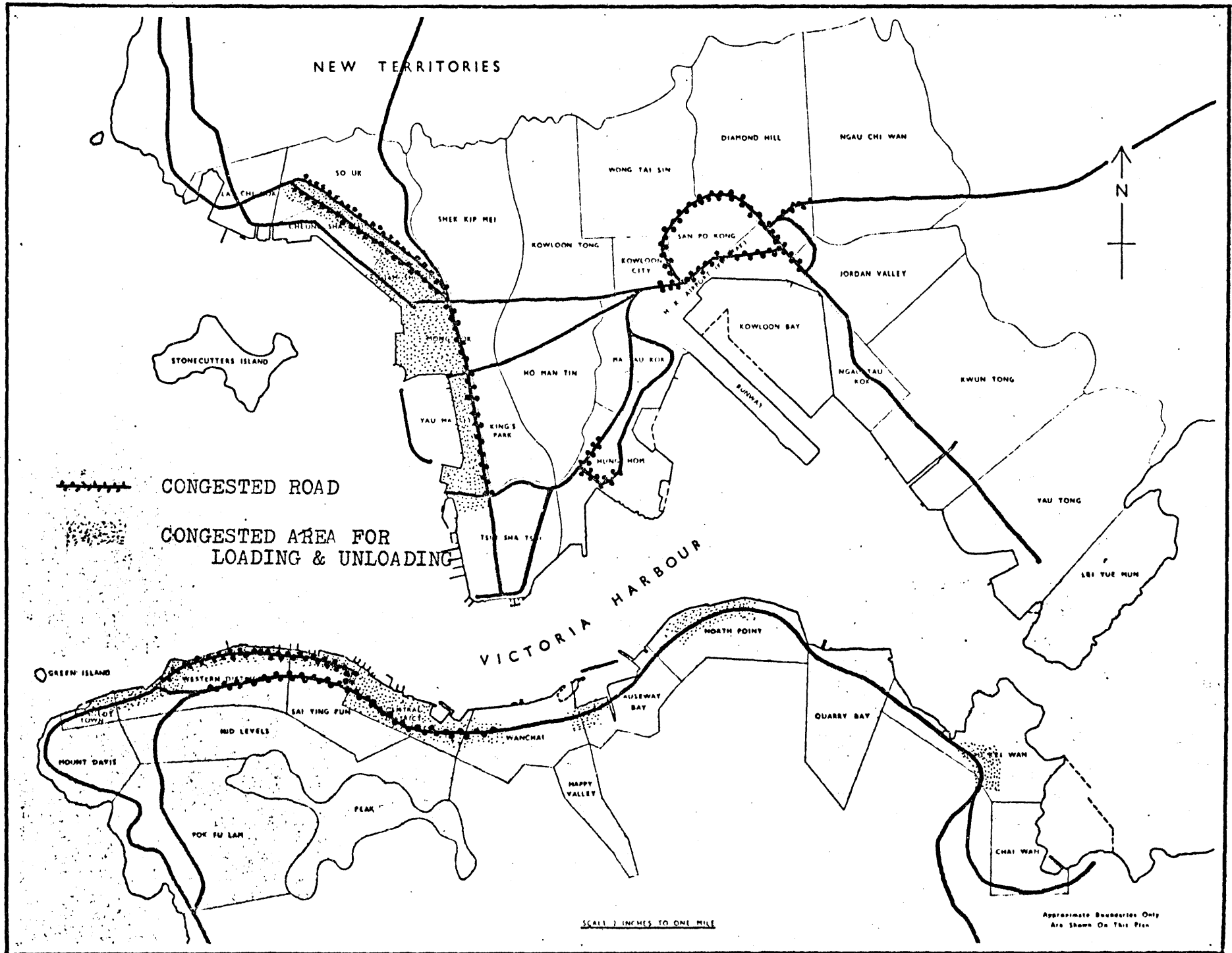
rigid shift schedule were the major factors here. With improved locational and occupational mobility of the workers factories could not depend on location for adequate supply of labor. On the other hand if factories were located far away from workers residence they would have to rely heavily on efficient transportation systems to move the workers to the factories.

Public transportation had improved significantly.⁴¹ Fares had not increased and were considered cheap compared with the wage level.⁴² But the volume of workers to be transported at peak hours was beyond the capability of the public transportation system (especially when expansion was restricted by fare control). Private transporters flourished. These ranged from taxis to mini-buses to large buses. Most factories had their own bus service for workers (the usual practice was for the factories to contract transportatio out to private bus owners). This became a standard working condition for many workers. In this way factories could afford to locate farther away from worker population concentrations. Transport cost was still marginal to production cost.

However entrepreneurs would not rely solely on transportation. They still preferred to locate near concentration of labor whenever possible (given available land at reasonable cost). Although they would not have all their labor coming from the nearby labor supply concentration they needed a basic reliable labor supply for the highly systemized production process to function properly.

Unlike the earlier entrepreneurs who could afford late comers or absentee workers as long as they would make up for the loss time or work, the entrepreneurs in the late 60's would find their production system disrupted if a large enough number of workers did not follow a rigid schedule. Transport vehicles might break down or run into traffic congestions. But if some basic level of workers would be guaranteed from nearby labor supply sources a more reliable work force could be counted upon. Another more important consideration was the competition for labor. For workers choosing between two identical factories at different distances away they would choose the one which they could walk to. This allow themselves more flexibility than following a rigid bus schedule everyday. In a near-full employment labor market this was an important labor-incentive consideration.

TRANSPORTATION CONSIDERATION IN THE LATE 60'S



F. labor consideration

Location implications of findings in labor requirements are discussed here.

1. availability

a. temporary and piece-wage labor ratio was still high.
permanent labor

But the ratio had quite different meaning from that of early 50's.⁴³ Significant socio-economic changes had occurred to affect the mobility of labor.

i. transportation had improved⁴⁴

New roads were built and existing roads improved. Public transportation had increased its efficiency but not its price. Private transportation was provided by entrepreneurs locating farther away from urban centres.

ii. demographic characteristics had changed in favor higher mobility⁴⁵

(a) Workers were younger. New families were smaller. They had less social and family responsibility than their parents.

(b) They were much better educated formally. They were much more accustomed to the rigid industrial disciplines. Given the standardized skill requirements of most jobs they had much higher occupational mobility.

iii. demand for labor was high⁴⁶

Industrial growth was phenomenal. Unemployment

was no longer a problem. There was a chronic shortage of labor. Workers had far more choice of occupations than their predecessors.

iv. unions were weak⁴⁷

They were small and membership limited. They could not exert control over the job market by imposing union membership requirements. They could not bargain effectively with entrepreneurs. This left the workers mobile within the labor market.

Unlike the early 50's there was no longer the large concentration of unemployed. Public housing projects in the late 60's representing concentrations of working population with similar labor quality were spread all over. The location of factories near concentrations of unemployed in the early 50's was a location strategy to compensate for the lack of mobility of the labor force. The location of factories near working population concentrations in the late 60's represented a different location logic. It was an attempt to compete for the highly mobile labor force by offering location inducement to workers. A location near concentrations of working population meant easier recruitment and more reliable labor supply. To compete for labor by raising wages was effective only in the short run because wage differentials would be levelled out quickly by competitors. But an advantage in location would always remain effective because such a location would always mean easier access to (for) labor.

b. skill requirement

With improved occupational mobility and increased mechanization and systemization there was no longer location consideration for special skill requirements of workers. The earlier consideration of housewife sewers or children plastic sorters and assemblers was no longer relevant. As long as a large concentration of labor population could be reached there was no special consideration for different kinds of skills. This applied not only to the lower level labor force but also to the management and supervisory level in the production process.

c. production outside the factory

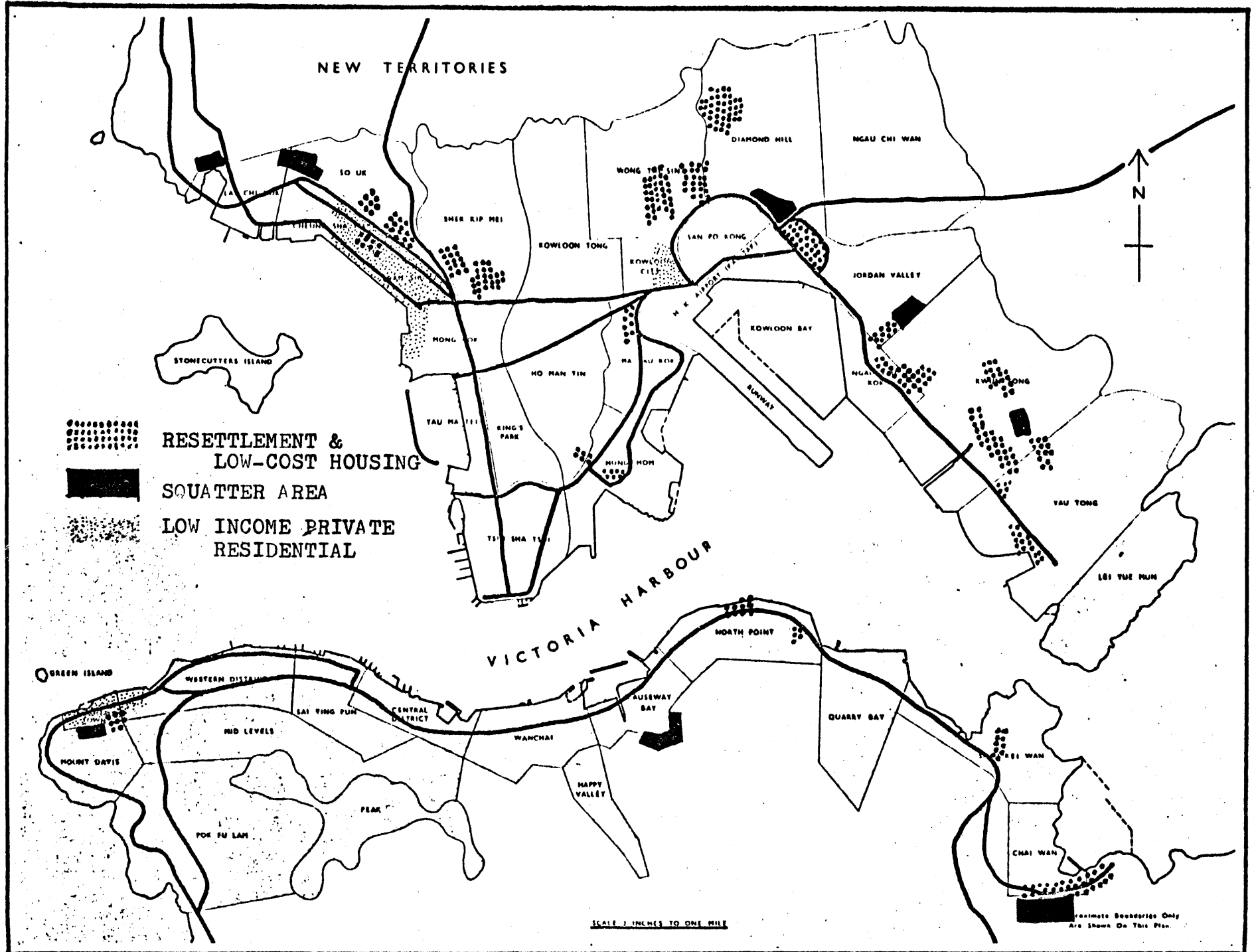
Put-out work for the shirt industry had been reduced significantly. For the plastic industry much of assembly work was still put-out. In many cases agents or middlemen were used. They provided vehicles for delivery and collection. This eliminated the dependence on location. Some individual workers would still come to factories to collect materials or deliver products. This applied only to a small number of factories located in the older areas.

2. cost of labor

There was little location variation in wages and fringe benefits for the same industry. New factories, regardless of their location, usually had

to raise wages or fringe benefits to attract labor because they had to compete in a near-full employment labor market. Since most of these factories were located at the fringe areas for land consideration⁴⁸ there seemed to be a general tendency for wages at the fringe areas to be a little higher. But such wage differentials would be quickly diffused throughout the industry.

PATTERN OF LABOR CONCENTRATION IN THE LATE 60'S



G. external economies consideration

1. economies of scale

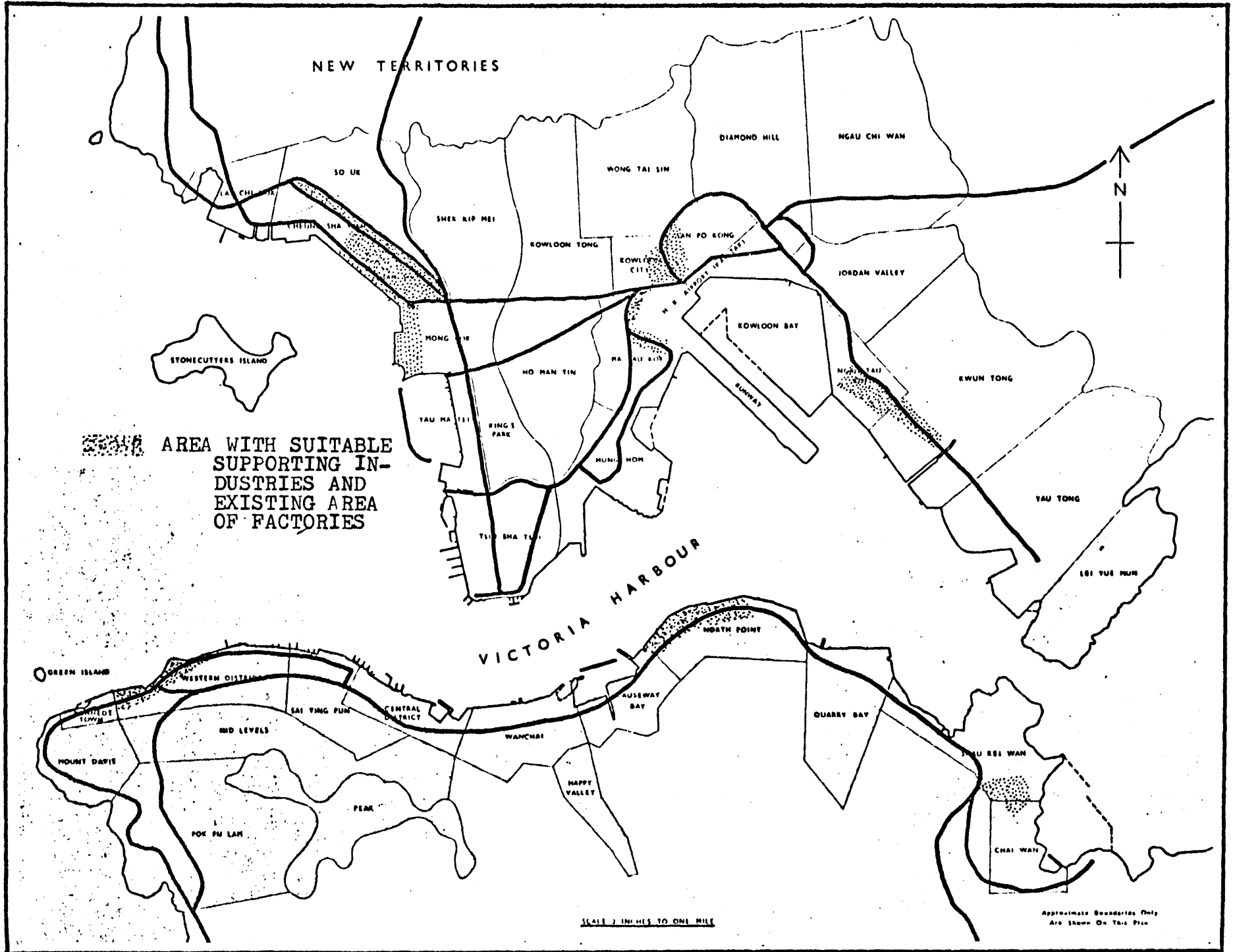
This became a more important consideration as factories became more mechanized and systemized. Factories grew bigger. This spatial aspect is considered under land consideration. Production process became more rigid. Skill and other quality requirement of labor is considered under labor consideration.

Economies of scale required factories to be located in fringe areas where land was more plentiful and cheaper. On the other hand locations near working population concentrations were favored for reason of ready labor. This often meant areas of higher land cost. For most large factories the consideration of (availability and cost) seemed to be more important.

2. agglomeration effect.

With systemization and consolidation of operations under the same roof larger factories placed much less importance on agglomeration effect. But smaller factories or factories of intermediate products still relied heavily on the closeness of other supporting or purchaser factories. External process coordination consideration was important for them. However most of these factories were older factories already located in areas with industrial agglomerations. New factories dependant on agglomeration effect had to pay higher land cost in order to locate in the older areas.

PATTERN OF INDUSTRIAL AGGLOMERATION IN THE LATE 60'S



H. conclusion

More stabilized demands from established export markets had reduced the significance of flexibility for labor input. Factories had grown larger. Production efficiency called for systemization and mechanization.

- a. Land had assumed an important position in location decision because of the rigidity of space and amenity requirements demanded by mechanization and systemization and the immobility of land and its physical attributes.
- b. On the other hand improved labor mobility made location consideration for labor a less important factor. Location near labor population concentration was considered primarily as "second sourcing" only.

But for smaller factories operating on the periphery of the industry or cater for fluctuating internal markets, or producing specific products for intermediate users labor flexibility was still a paramount concern. It is true that the proportion of smaller factories had reduced significantly but the absolute number of such factories had nevertheless increased with the general growth of the industries.⁵⁰ New entry into the industries for small entrepreneurs had become more difficult but opportunities were still available for spin-offs from larger factories. These smaller factories were important buffers for the larger ones. An analogy can be drawn between the individual piece-wage workers in the early 50's and the small peripheral

factories in the late 60's. They worked on different scales but served the same function for the industry as a whole. However not all small factories were surviving on the periphery of the industries. Many were pioneers in experiments in specific markets⁵¹ (internal as well as external), or specialized products (intermediate as well as final).⁵² It is therefore unrealistic to assume that they would be phased out by the larger factories catering for established markets.

Location logic can be classified into two categories.

1. large factories which were highly mechanized and systemized;
 - a. Land was the most important consideration (large space at low cost).
 - b. Transportation was important in moving goods and personnel.
 - c. Labor concentration was a preferred choice but not a vital one.
2. small factories which were partially mechanized and little mechanized:
 - a. Labor flexibility was vital but transportation had reduced the location restriction a good deal.
 - b. Agglomeration was an important consideration for process coordination.
 - c. Space requirement was much more flexible.

SECTION 4: EMPIRICAL OBSERVATIONS

The pattern of existing industrial location is not useful in the analysis of the location logic of the late 60's because this will include all factories and not just new factories where their location logic reflected the socio-economic situation of the time. A location demand pattern is used instead to represent the proper synthesis of the location logic.

Unlike the early 50's when land available for construction (residential or industries) was still not a major problem, availability of land in the late 60's became the most critical consideration. In the early 50's factories operated in mixed land-use areas or in modified residential buildings. The price of land indicated the pattern of urbanization rather than that of industrialization. Demand for industrial land was not a significant factor in the price of land. By the late 60's demand for industrial land had grown drastically and suitable land for development had dried up. Moreover industrial land-use was controlled. This restricted the competition of industrial land to industrial users and at the same time severely accentuated the shortage of industrial land. Price of industrial land was no longer distorted as a good indicator of the industrial demand for land.⁵³

However location variation in the sales price (rent) of factory space was a better indicator of the location demand of industries than land price itself. Land price could be distorted by institutional constraints. Land in the same location would

have the sales price per comparable factory space. But the price of land might vary. For example, different plots of land might have different permitted plot ratios. These regulated the volume of floor space constructable and would therefore affected the price of the land. A higher sales price (rent) per factory space would indicate a higher demand for a certain location. It is therefore useful to equate the sales price (rent) hierachy with the demand hierachy and compare this pattern of location demand with the conditions of location factors existing in these locations.

Three qualifications must be considered.

1. In the older areas locations of factories did not respond efficiently (in the economic sense) to rent levels. Analysis of the p-ttern of demand (the rent level) must be corrected to accommodate the following.
 - a. Rent level changed (uaually went up) after factories located in an area. The initial location of the factories (in the early 50's or later) might reflect an optimum combination of conditions of production factors and rent at the time. But such conditions changed, and so did the rent level.⁵⁴
 - b. The inertia of relocation to other areas with comparable conditions of production factors and lower rent might distort the demand pattern for a location.⁵⁵
 - c. Institutional restrictions might reduce the accessibility of an area to new factories, such as in the case of some mixed land-use areas where old factories were permitted to stay.⁵⁶

It is therefore important to distinguish between existing areas of factories concentration and areas of possible new factory locations. However, in many cases the areas of new factory location would include the older areas as well as the new areas.

2. In the new areas speculation by developers might distort the actual demand. This distortion would have mattered if there was location discrimination in speculation. But since speculation was a universal problem in all new development areas the rent hierarchy could still adequately reflect the hierarchy of location demand.
3. The development in Hong Kong and in Kowloon must be considered separately.
 - a. The developable areas in Hong Kong was much more severely restricted because of the rugged and steep topography. As a result the industrial areas on Hong Kong island were much smaller than those in Kowloon. In fact about 90% of all industrial development was in Kowloon and the New Territories.
 - b. Land value in Hong Kong and part of Kowloon was much higher for two reasons. Firstly the lease period was much longer on Hong Kong island because the island was ceded to the British. (Leases ran from 75 years to 999 years). Secondly, the development terms of the leases were much more flexible on Hong Kong island. The 999-year lease was nicknamed the

"unrestricted lease". Lease holders could follow any pattern of development as they wished without interference from zoning regulations (at least theoretically). Therefore many industrial land developers in Hong Kong island were more concerned with securing a long-term and flexible lease than the immediate industrial use of the development.

A SPECIAL CASE

North Point in Hong Kong was a very special case. It's high position on the demand hierarchy could have been distorted by the following factors.

1. It was an older area with heavy ethnic concentration (refugees from northern China). This group did not mix well with the local people or other refugees from other parts of China. Most entrepreneurs lived in the same area. It was one of the earliest industrial development area and it used to be labor concentration for the earlier small industries. There was great inertia against relocation. This pushed up the rent level.
2. Development in the area was restricted by topography. This was a universal problem on Hong Kong island but the situation at North Point was much worse. Also most of the later development was owner-occupier large factory type. This severely limited the amount of salable (rentable) factory space for small factories.
3. As North Point was close to the urban commercial centres on Hong Kong island and was on the path of the eastward expansion of the commercial core there was strong incentive for real estate speculation. This further pushed up the price of land.

With varying degrees such distortions were present in all industrial locations on Hong Kong island. It would therefore be more realistic to concentrate on development pattern on the Kowloon area while keeping notice of the peculiarities and irregularities of the pattern in Hong Kong.

We have identified 2 different sets of priorities of location considerations for 2 different types of factories. For the large factories the critical factors were land and transportation. For the smaller factories they were labor and agglomeration effects.

We have also constructed a hierarchy of location demands.

The conditions of the various factors of production will be examined for each location to test empirically the logic of location. In order to do this the following locations will be identified.

1. locations with unfavorable land (in terms of space suitable for the different factories, cost is incorporated into the demand pattern).
2. locations with unfavorable transportation (in terms of loading and unloading).
3. locations with unfavorable agglomeration effects.
4. locations with favorable labor condition.

(Locations with unfavorable labor condition would be difficult to map because of improved mobility of labor, increased efficiency of transportation and spread of labor concentrations through housing projects. However it is possible to map areas with definite labor advantage.)

In the observation Hong Kong and Kowloon will be considered separately because of the significant difference in land value due to lease conditions which is a non-industrial consideration. Demands of large and small factories will also be distinguished.

The following observations are made.

SMALL FACTORIES

1. Those locations with high demands were in the older mixed land-use areas (North Point and Western District in Hong Kong and Shum Shui Po and Tai Kok Tsui in Kowloon). Those with the lowest demands were in the new industrial areas (Kwun Tong).
2. Space conditions were suitable for all locations.
3. Transportation conditions (in terms of loading and unloading) varied. But all the areas with high demands (North Point and Western District in Hong Kong and Shum Shui Po and Tsi Kok Tsui in Kowloon) did not have favorable transportation conditions.
4. Agglomeration effects were favorable for all areas except the lowest demand area (Chai Wan in Hong Kong and Kwun Tong in Kowloon).
5. In the highest demand location in Hong Kong (North Point) labor conditions were not favorable in the sense that no large resettlement or low cost housing project were close by. On the other hand the other lower demand areas in Hong Kong had favorable labor conditions.

In Kowloon the highest demand area (Shum Shui Po and Tai Kok Tsui) also had the most favorable labor condition with resettlement, low-cost housing projects and concentration of private residential for low-income.

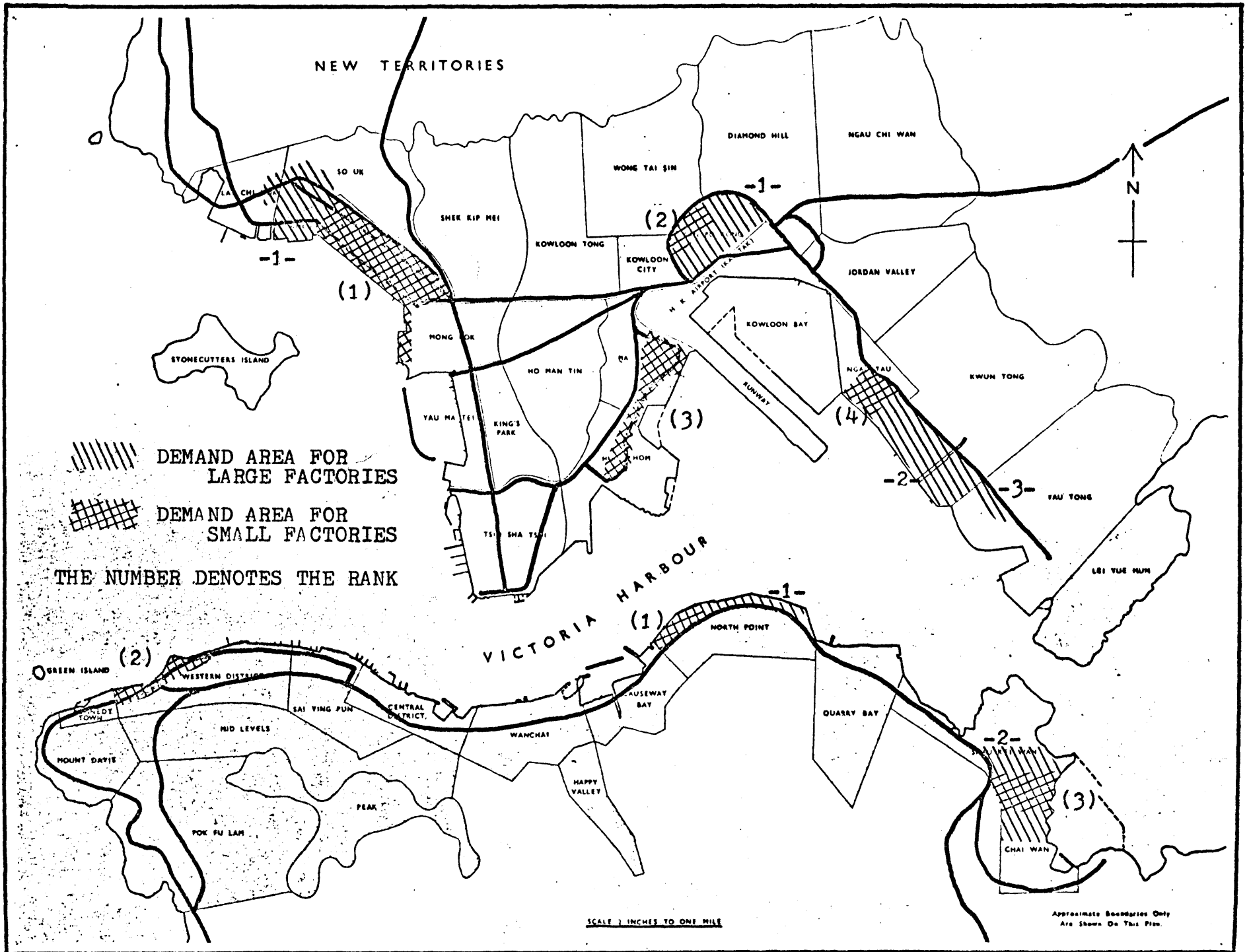
But in the low demand area of Hung Hom and Mau Tau Kok

in Kowloon labor conditions were not definitely favorable. This might be the reason for its low position on the demand hierarchy. Nevertheless they demonstrated the fact that although labor in the immediate area was important it was not as vital as it had been in the early 50's. (If one refers back to the early 50's one would discover that this area had all favorable conditions except for labor). It had not developed in the 50's. But the severe shortage of industrial land made this area acceptable in spite of its "comparative" lack of immediate labor. Its low position on the demand hierarchy may signify that labor was still of considerable importance.

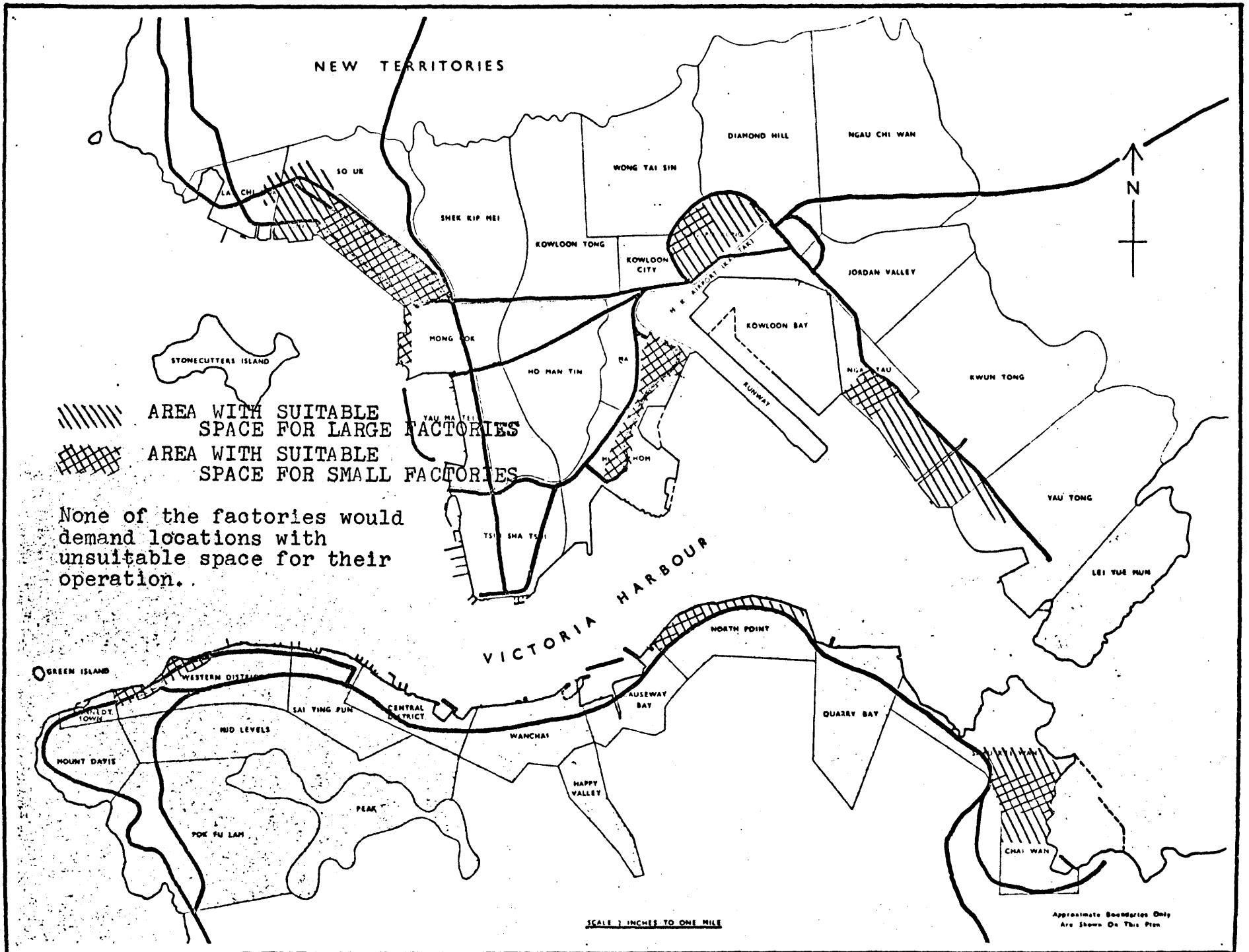
LARGE FACTORIES

1. Both in Hong Kong and in Kowloon the high demand areas were the older industrial areas.
2. Space conditions were suitable for all locations.
3. Transportation conditions were also favorable. This can be explained by the fact that these locations were all away from urban centres where loading and unloading would not be a problem. Areas designed for industrial use or any newer areas were considered acceptable in this respect.
4. Agglomeration effects were favorable in the high demand areas.
5. Labor conditions varied. The highest demand area in Hong Kong (North Point) did not have the most favorable labor conditions. But the high demand areas in Kowloon all had favorable labor conditions.

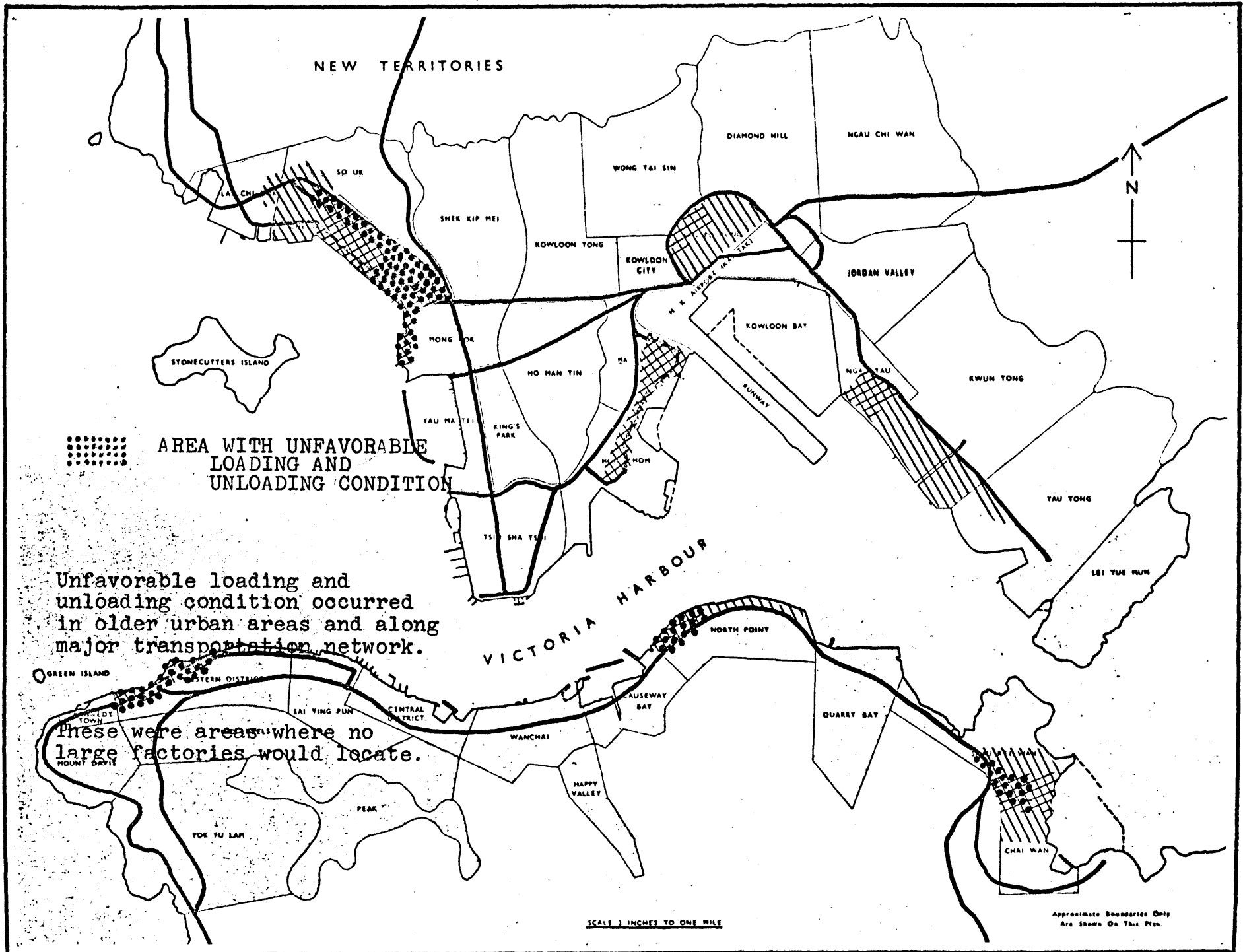
DEMAND HIERACHY FOR INDUSTRIAL LOCATIONS IN THE LATE 60'S



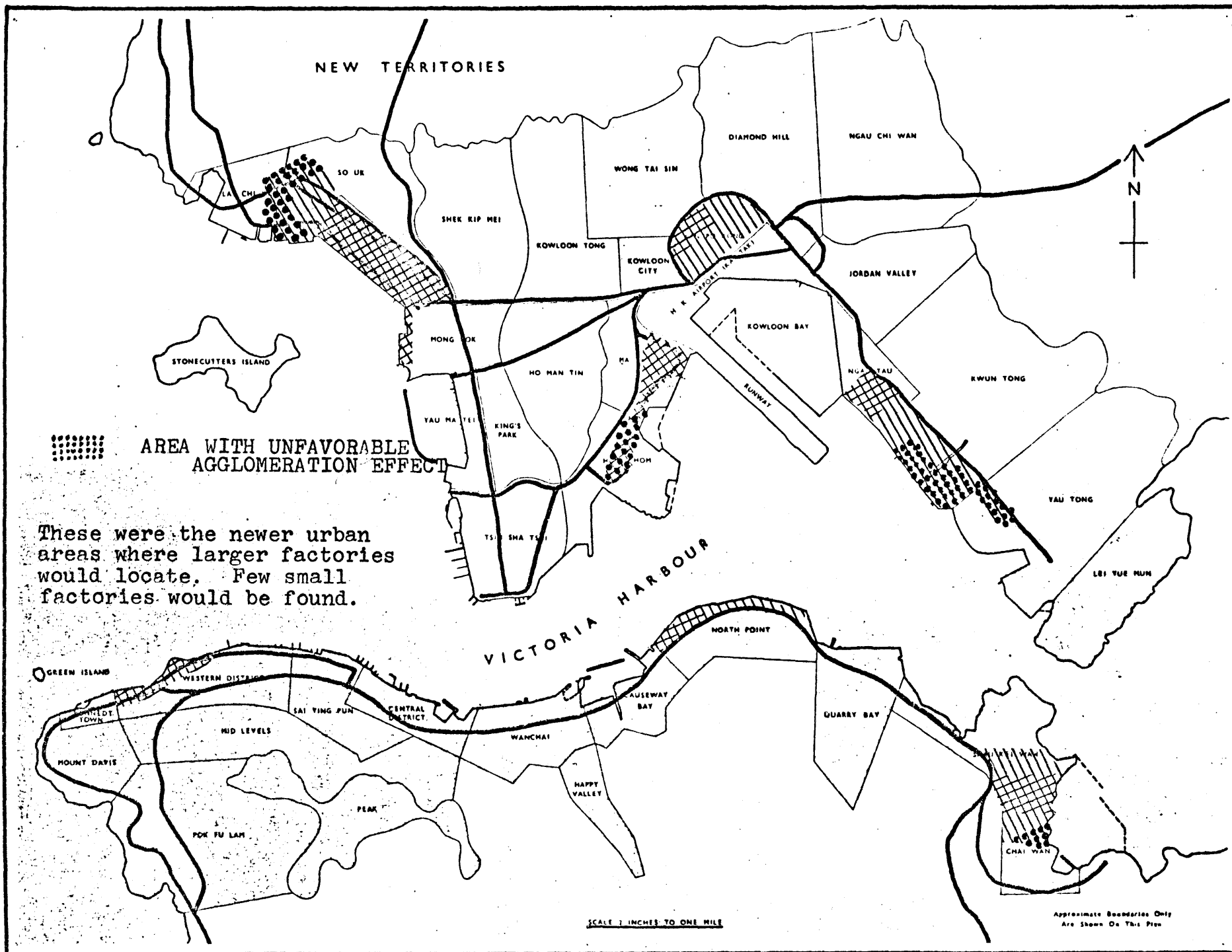
LOCATION SET WITH UNFAVORABLE SPACE (see p.168 for industrial demand hierachy)



LOCATION SET WITH UNFAVORABLE TRANSPORTATION (see p.168 for industrial demand hierachy)



LOCATION SET WITH UNFAVORABLE AGGLOMERATION EFFECT (see p.168 for industrial demand hierachy)

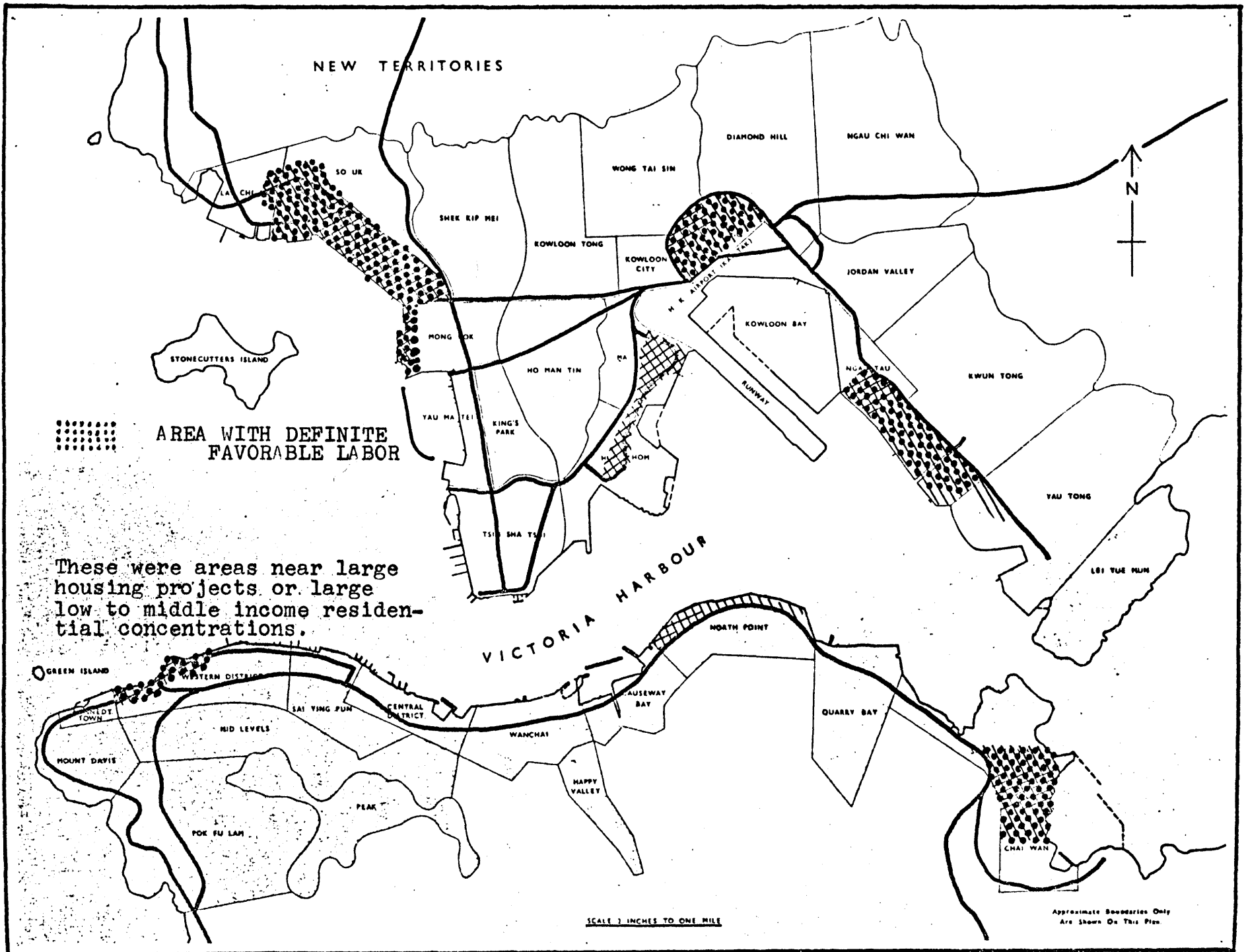


AREA WITH UNFAVORABLE AGGLOMERATION EFFECT

These were the newer urban areas where larger factories would locate. Few small factories would be found.

Approximate Boundaries Only Are Shown On This Plan

LOCATION SET WITH DEFINITE FAVORABLE LABOR CONSIDERATION (see p.168 for industrial demand hierachy)



These were areas near large housing projects or large low to middle income residential concentrations.

SECTION 5: CONCLUSION

By the late 60's the shirt and plastic industries had established export markets. The industries had grown and had diversified. There were the larger factories which were mechanized and systemized. There were the smaller factories which had mechanized but still retained flexibility in production.

Socio-economic conditions had changed. Labor became much more mobile. Capital investment in machinery became more readily available. Land shortage was a universal problem. Market was not.

The "pure" laissez-faire development conditions existing in the early 50's were no longer present. Government intervention in the supply and control of land, regulation of labor and massive housing of population distorted the otherwise "natural" development of industries and the subsequent logic of their location.

The most important factor to consider in the location pattern of industries in the late 60's was land. Given the growth of all industries at phenomenal speed the scarce urban land was taken up rapidly. Large factories which had little concern for agglomeration and ready labor could find it easier to move to new towns in the New Territories. But small factories had to find production space in the urban areas. They would have to take up any land available to them. This there-

fore created some confusion in the pattern of location.

However the logic on the whole was confirmed by empirical evidence --- that land (space) was the most important consideration for both large and small factories, that large factories would consider transportation important, that small factories would consider agglomeration effects important, and that labor requirements were relaxed for both the large and small factories.

1. For the larger factories the major factors seemed to be space availability and transportation consideration. There was a general tendency for factories to locate farther and farther from existing urban centres. Agglomeration effects and labor conditions were favorable for most locations with higher demand (except North Point in Hong Kong). This may indicate that even for the larger factories agglomeration and labor consideration still played an important part.
2. For the smaller factories the indication of the dependency on agglomeration effect was apparent. Transportation was obviously not the major concern. Although the evidence in all the larger industrial areas in Kowloon (Shum Shui Po, Tai Kok Tsui and San Po Kong) shows that locations with large and ready labor concentration were highly demanded, the situation on Hong Kong island was different. There could be a number of reasons.

CHAPTER 5: CONCLUSION

the Hong Kong experience
policy implications
housing policy as leverage in
manpower mobilization

THE HONG KONG EXPERIENCE

Cheap labor was the comparative advantage for industrial development in Hong Kong since the early 50's. This probably explains why labor-intensive manufacturing industries grew in Hong Kong, replacing those areas with more expensive labor costs. This research accepts the premise that these industries would necessarily exploit the labor quality in Hong Kong but tries to investigate how this exploitation if effected locationally in a micro-urban context.

The findings of this research demonstrate that location factors (including labor) are heterogenous in a micro-urban sense. They vary locationally in quality and/or in cost. Their qualities are dynamic and change with the process of urbanization and industrialization. And these are inter-related qualitatively and affect one another.

Labor locations in Hong Kong were results of the pattern of urbanization in general and that of housing in particular. Housing in this instance included not only the physical aspects of public housing projects (resettlement and low-cost) but the whole process of residential settlement guided or unguided by government action. In the early 50's urbanization policy was one of non-intervention except for law and order. Refugees "naturally" concentrated at the urban fringes where public land was available for squatting and public services were the closest possible. Industries came later. They needed the labor of the refugees. But the labor was immobile because of demographic

and personal characteristics and the pattern of urbanization. Factories therefore located close to labor concentrations. Later the whole socio-economic position and aspiration of the labor force changed. The pattern of urbanization and public housing also helped to increase the mobility and accessibility of the labor force. The location dependence on labor concentration was lessened.

The housing element was very strong in determining the pattern of labor concentration. But the impact of housing on industrial location cannot be examined outside the context of urbanization, industrialization and social development. The physical phenomenon of industrial location is only a physical manifestation of the underlying socio-economic logic where the physical pattern of urbanization and housing is but one of the many related factors.

The labor quality of a population concentration is meaningful only when the relationship between the labor force and the employer industry is established. A case in point is the housewife workers in the early 50's. If the industries did not use the labor quality of the housewife workers housewives would not have any labor value to the industries. But the labor quality of the housewife workers could be exploited only because the pattern of urbanization had on the one hand created population concentrations with this quality of labor and on the other had placed them in such a way that factory space was available close to them. If the refugees were scattered throughout the urban area or if no factory space was available near

refugee concentrations then labor would not have been tapped. This would mean that either the production process would have to be changed or more likely that the specific types of industries would not develop.

The finding of this research demonstrates that the location of labor was the chief determinant of the location of manufacturing industries at a certain stage of socio-economic development. But the more important finding is that the pattern of urbanization made it possible for industries to exploit the unique quality of the labor force. The pattern of urbanization therefore created working population concentrations that had matching labor quality required by the industries.

In the discussion of industrial location in labor terms it is irrelevant to speak of the simple, one-way causal relationships between urbanization (labor concentration), industrialization (labor requirement) and social development (labor quality). Growth of the manufacturing industries, the use of the particular labor quality and the concentration of the refugee population were distinct and inter-related phenomena. The development of the industries came about after a period of trial and error. The type of manufacturing industries that finally flourished represented a successful combination (unification) of these factors which had been present all the time but were latent. The location of the industries was only the physical manifestation of the underlying logic of the urbanization-industrialization-social development inter-relationship.

Later, the changes in the climate for industrialization (e.g. established markets, changed industrial frontiers, industrial diversification etc.), the pattern of urbanization (e.g. housing, transportation, institution control of land-use etc.), and social development (e.g. compulsory education, labor laws etc.) a new set of urbanization industrialization-social development relationship emerged. Again location of factories reflected physically the logic of this relationship.

It may also be recognized that this new relationship was not created independently of the old. It was the interaction between the different components of the old within a simultaneously and correspondingly evolving macro-physio-socio-economic environment that produced the new set of relationship.

POLICY IMPLICATIONS

1. In the process of socio-economic development certain elements in urbanization (population concentration, transportation, land-use pattern etc.), industrialization (types of industries, production processes, labor requirements etc.) and social development (education, demographic and personal characteristics etc.) are qualitatively and logically inter-related. Depending on the particular situation of the time any one of these elements can be crucial to the process of development. In the case of Hong Kong in the early 50's successful industrial take-off was created by entrepreneurs who could unify the appropriate elements in urbanization, industrialization and social conditions. The relative non-interference of the government helped to demonstrate even more clearly the "pure" logic of the urbanization-industrialization-social development inter-relationship.

This has important policy implications. Effects of policy actions are not restricted to the artificially and narrowly defined "area of policy concern". It is not stretching too far to hypothesize that if the urbanization policy of the early 50's in Hong Kong was to disperse the refugees the industrialization of Hong Kong would never have come about, at least not in the way it had.

Location of labor concentration is one of the many elements in the pattern of urbanization but it can be an important element in industrialization. It is therefore inappropriate to regard location of population as an issue in urbanization only, not when economic development depends upon it.

2. The location of population concentration became a much less important element in the location of manufacturing industries in the late 60's. This serves to demonstrate the dynamics of the urbanization-industrialization-social development inter-relationship.

Labor concentration helped the industries to develop. The development of the economy in general and of the industries in particular made it possible and necessary to change the pattern of urbanization and social development. This in turn changed the production priorities of the industries. For some production processes land and transportation became far more important consideration than labor concentration. But without the earlier production process the latter urbanization-industrialization-social development inter-relationship would not have come about.

In terms of policy implication this dynamics mean that leverages in economic development are always shifting. In the case of industrialization in Hong Kong the early importance of labor concentration had given way to land and transportation consideration.

The physical aspects of urbanization usually changes very slowly. A housing project or road takes long time to complete and once it is built it tends to stay permanently. In many instances this physical inertia in time and space serves to distort the logic of the urbanization-industrialization-social development inter-relationship. For example, it would be difficult to isolate the logical basis for the continual existence into the late 60's some of the "inefficient" factories with production methods and labor requirements similar to those of the early 50's. But the huge housing projects near older urban centres where these factories were normally located might serve to provide the industries with a dwindling yet substantial labor force to support a limited number of "inefficient" factories.

Planners can either anticipate or respond to changing relationships. But there are difficulties in both approaches. Anticipation requires clear insight into the trend of development and involves prior commitments that will not yield immediate payoffs. Responding to the existing condition is often equivalent planning by crisis. The lag between decision and implementation renders obsolete any physical strategy the moment it is applied.

If the inertia of physical aspects of urbanization is overwhelming it may be necessary to consider non-physical strategies. For example, housing projects

may be re-allocated and use of roads may be restricted. In Hong Kong many earlier housing projects at urban centres are undergoing a process of de-population. Of course this policy is not conceived to account for the new urbanization-industrialization-social development inter-relationship. Rather it is an effort to improve the spatial standards of housing. Some households are relocated elsewhere, the remaining are offered larger units combined from smaller ones. But such "housing" policy is bound to reduce the supply of labor to some "inefficient" factories located near these housing projects. This again, is an illustration of the inter-relatedness of the different policy concerns.

3. The development of an industry is not a homogeneous process in terms of labor requirements. The experience in Hong Kong shows that as the industries grew the types of products, the production processes and labor requirements became more and more diversified. Each branch in this diversification bore a special urbanization-industrialization-social development inter-relationship which was reflected physically in the location of factories.

In terms of policy implication this means that the severing of any link along the inter-relationship chain would affect the viability of the corresponding branch of industries. This gives leverages to weed out or to reinforce certain industrial operations. In order to

do this the the planner will have to identify the critical elements in the specific chain as well as the effect of action on other chains. There may be structural relationships among the different branches of the industries. The interactions among them are crucial and beyond the scope of this research. It is sufficient to point out that urbanization can sometimes be a useful leverage in industrial and manpower planning.

This research has demonstrated the inter-relatedness and dynamics of the process of urbanization, industrialization and social development. Housing for the urban poor can be an important policy element in urbanization consideration. But if housing policy should go beyond the mere provision of physical of the housing (urbanization) process. On the other hand economic planners concerned with manpower mobilization must not overlook the crucial relationship between the process of urbanization and industrialization.

HOUSING POLICY AS LEVERAGE IN MANPOWER MOBILIZATION

The housing process is an important element in the overall process of urbanization and socio-economic development. The housing process for an individual in this research refers to the whole process of "having" (finding, securing, improving and transferring etc.) one's shelter and shelter for one's own, and relating it to the socio-economic situation of the individual or individual household (or any other appropriate socio-economic unit).

The experience in Hong Kong has shown that housing can constitute important leverage in the mobilization of labor supply for the development of industries.

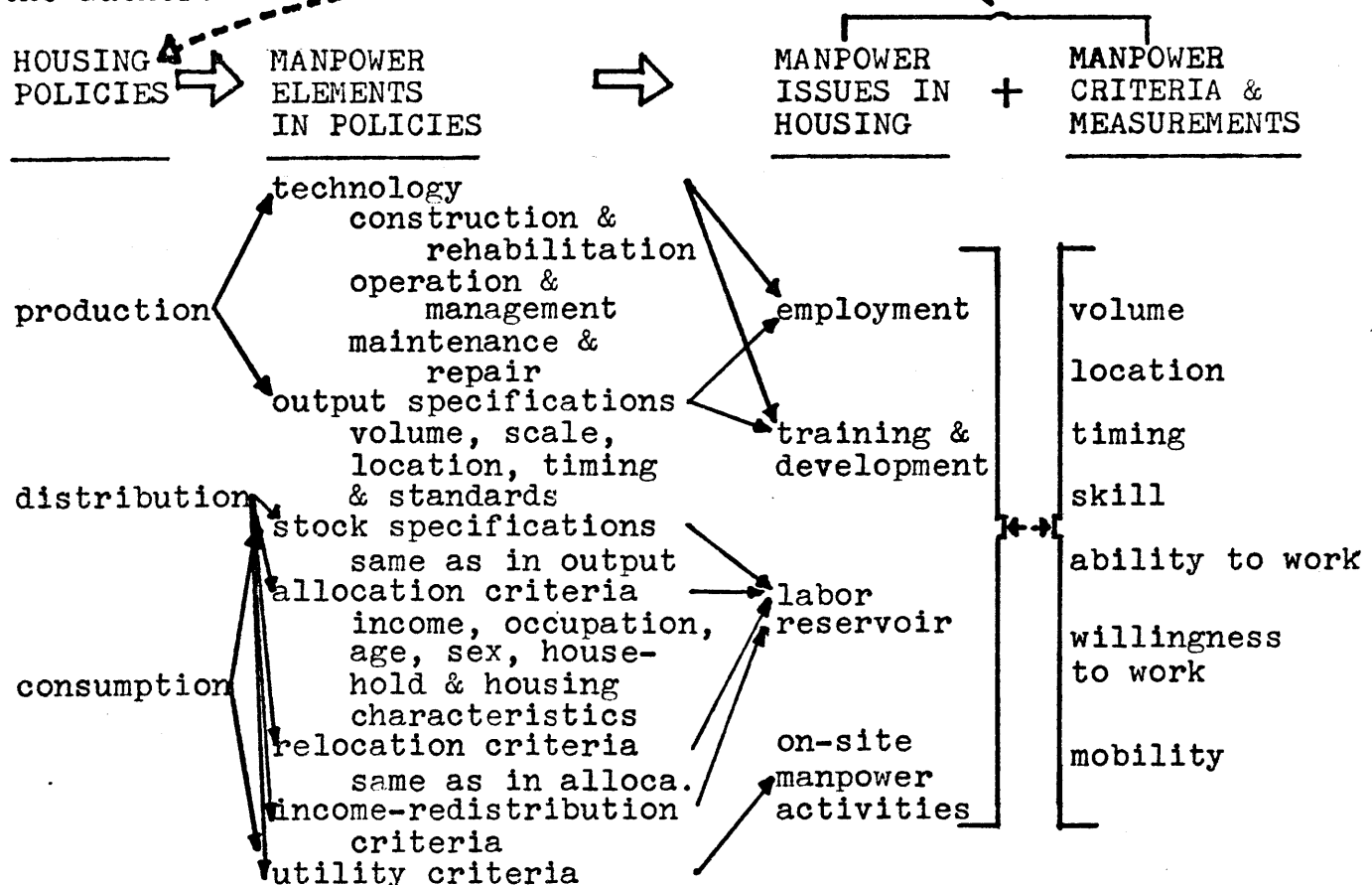
Housing policies may range from government construction, finance, and management of housing projects to tolerance of squatter areas; from rent control to mortgage subsidy; from building code enforcement to building material price control. primarily policies deal with either production or distribution or consumption of the housing stock (service).

- a. In the production of housing, which includes addition, elimination, preservation and modification of the housing stock (service) the volume, scale, location and timing of housing action (or non-action) affect the volume and location etc. of the labor supply.
- b. In the distribution of housing allocation and relocation policies (no policy) determine the demographic and

personal characteristics of the population, which in turn determine the labor quality of the housed --- skill level, ability to work and willingness to work.

- c. In consumption policies (or no policy) which govern the use of the housing stock (service) standards of housing may affect the possibility of using the housing for economic production purposes. Tenure, security of possession and ease of transfer etc. affect labor mobility of the housed.

The following is a schematic diagram showing the possible links between housing policy and manpower mobilization. Further researches into these links will constitute the major effort of the author.



APPENDICES

footnotes
tables and maps
bibliography

FOOTNOTES

CHAPTER 1

1. Shekeipmei was one of the squatter areas in the late 40's and the early 50's. Before the big fire on Christmas Eve, 1953 there were about 40,000 population in the area, mainly refugees. Two-story row housing was constructed to house those displaced by the big fire. Later these were replaced by six-story H-shaped resettlement blocks. By the end of the 50's the total population in the area was estimated to be 80,000 which included the squatter area still existed around the resettlement project. New land for construction of more resettlement buildings was obtained by levelling the adjacent hills and relocating the squatters. By the end of the 60's the total population was estimated to be 120,000.
2. Most of them were refugees from China. They came from urban areas (cities) in China, especially from Canton and Shanghai. Many of them were merchants, industrialists, professionals and government officials.
3. The normal work shift in factories was 8 a.m. to 8 p.m. However the shift hours were not normally strictly adhered to by the factory as well as by the workers themselves. But the loss work would have to be made up by staying longer in the factory than the normal shift.
4. Many of them had occupational skills already (such as sewing for housewives).
5. Practically all households had children or housewives working in economic productive activities (in factories, in construction sites, in shops and as hawkers etc.).
6. see "process coordination", Chapter 3, p.64-65.
7. see "the industries", Chapter 3, p.53-60.
8. Over 55% worked in their near vicinity (for a typical squatter/resettlement area). Golgar, O.J., Thesis (PhD), University of Hong Kong, 1969, p. 374.
Over 3/4 of the workers of a typical manufacturing factory came from the near vicinity (15 minutes' walk).--- Reported by entrepreneurs interviewed.
9. The growth process was measured by the increase in real income of the average individual workers and the average households in the labor concentration areas, and also the increase in the number of factory establishments and the number of workers employed.

CHAPTER 2

1. such as economic base theory, growth pole theory etc.
2. such as the central place theory, gravity model and shift and share model etc.
3. such as comparative advantage theory, minimum production and delivery cost theory and maximum market area theory etc.

4. Entrepreneurs are assumed to be "economically rational". They would seek to maximize profits within perceived constraints.
5. A. Weber: Theory of Location of Industries, Chicago, University of Chicago Press, 1929.
6. E. Hoover: The Location of Economic Activities, New York, McGraw-Hill, 1948.
7. It is further assumed that they do not vary over space.
8. In an endeavor to build a general 'pure theory' of location, one that is applicable in any economic or political system, Weber accepts only those influences that seem to have universal application irrespective of economic and political circumstances. Consequently, both local and central government activity are excluded from consideration. The cost of capital is disregarded because variations in interest rates are the result of institutional factors which vary between nations, for example, as between socialist and capitalist countries. Climate and entrepreneurship are discounted on the grounds that they affect too few industrial location to warrant their inclusion.
9. Transport costs are made up of two components, terminal costs and line and haul costs. The former include the cost of warehouses, docks, offices and maintenances, the latter include fuel and wages incurred by drivers and crew.
10. For more complex location problems, Weber would use the Varignon frame. Weights equivalent to the unit transport cost of each component are suspended by threads which run over rollers at the edge of the frame. The threads are tied together at their other end, representing the plant. Wherever this point representing the plant comes to rest, this is the equilibrium, and the point of least production cost. The Varignon frame is known as a mechanical or force table analogue model.
11. Pricing policy is the method by which transport costs on the delivery of goods is calculated. The assumption is that the delivered price of a commodity is the factory price plus the freight rate, which although not precisely proportionate to distance, nevertheless is heavily influenced by distance. This is not always the case. Hoover was aware of the existence of other, discriminatory, pricing policies, but paid them scant attention since he regarded them as exceptional.
12. Writing in 1924, Fetter investigates the size of market areas under varying assumptions. Since the success of a plant is directly related to the volume of its sales, each manufacturer evolves a strategy to undercut the price of his competitor's products, thereby increasing the size of his market area, and therefore profits. Many strategies are possible, but Fetter sees them all as variations in production and transport costs. Fetter, Frank A.: "The Economic Law of Market Areas", Quarterly Journal of Economics, 39, 1924, p.520-9.
13. A. Losch: The Economics of Location, New Haven, Yale University Press, 1954.

14. Weber's fundamental error, Losch argues, is to seek the lowest cost location. "This is as absurd as to consider the point of largest sales as the proper location. Only the search for the place of greatest profit is right."

A. Losch: The Economics of Location, New Haven, Yale University Press, 1954, p.29.
15. Schaffle in 1878 pointed out that industries are attracted to markets in direct proportion to the size of the markets, as measured, say, by their population, and in inverse proportion to the square of the distance between the market. This can be expressed by the formula: $M_{ij} = \frac{P_i P_j}{d^2}$ where i and j are the two markets, M_{ij} is the interaction between markets, P_i and P_j are the population of the two markets, and d is the distance between them. An extension of this model is the breaking point theory. This predicts the position of the market area boundary between towns of unequal size by the use of the formula: $M = d_{ij} / 1 + \sqrt{P_i/P_j}$ where M is the distance of the breaking point from the smaller town, d_{ij} is the distance between the towns, P_i is the population of the larger town and P_j is the population of the smaller town.
16. The reality of the Loschian landscape has been attacked by W. Isard on the grounds that concentration of population at the metropolis would result in a parallel concentration of market areas. The size of market area needed to generate sufficient demand to justify the production of a good is very much smaller in cities than in rural areas. Assuming the same size of plant, rural market areas are thus very much larger than those in cities, with the consequence that Losch's hexagons become grossly distorted. Isard also points out that the Loschian system does not take localized raw materials into account, and observes that rich and poor zones may also take the form of concentric rings round cities.
17. E.R. Rawstron: "Three Principles of Industrial Location", Transactions, Institute of British Geographers, 1958, p. 135-45.
18. D.M. Smith: "A theoretical Framework for Geographical Studies of Industrial Location", Economic Geography, 1966, p.95-113.
19. Rawstron believes that the examination of the structure of costs and their variation through space is a more realistic initial approach than principles based on weight-loss, weight-gain, or quantity of materials handled per worker. The plant will be more restricted in its choice of location when the cost of at least one of the components in the cost structure varies appreciably from place to place, if this variation forms a large proportion of total costs. Only those component parts of the cost structure that are likely to vary from place to place need be examined; these include labor, materials, marketing, land and capital. Power is considered with materials and transport with each component, where relevant.
20. Smith develops Rawstron's ideas on the existence of margins of profitability with the construction of what he calls a space cost curve. Demand and price are held constant while average costs vary from place to place. The average cost

curve is the space cost curve. Profits can be obtained when the space cost curve is below price. The model can easily accommodate change, whether this be in terms of price, costs, managerial skill or taxation.

21. A. Pred: Behavior and Location: Foundations for a Geographic and Dynamic Location Theory, Part I, Lund Studies in Geography, Series B, 1967.
22. To show how behavior may influence location, Pred constructs a behavioral matrix by developing D.M. Smith's space cost curve and margins of profitability.
23. There are exceptions, notably are the location factor studies, industrial type studies and area studies.
24. B.H. Stevens and A. Brackets: Industrial Location, a Review and Annotated Bibliography of Theoretical, Empirical and Case Studies, Regional Science Research Institute, Philadelphia, 1967.

CHAPTER 3

1. E. Hambro: The Problem of Chinese Refugees in Hong Kong, Report submitted to the United Nations High Commissioner for Refugees, Holland, A.W. Sijthoff-Leyden, 1955, p.18.
2. Op. cit., p.165.
55% of the male population was between 22-60 and 45% between 22-44.
3. Op. cit., p.167.
35% of the refugees belong to single person households as opposed to 5% of the local population.
4. Op. cit., p.151.
65% of the refugees were Cantonese as opposed to over 90% of the local population Cantonese.
5. Op. cit., p.47-48.
Unemployment was 38% among refugees.
6. Op. cit., p.176-179.
51% of the refugees had secondary or higher education as opposed to 18% of the local population.
7. The total export in 1953 was HK\$635 million (as opposed to HK\$4,427 million in 1964), and only 30% of that consisted of locally manufactured goods. The number of factory establishments and workers employed are as follows.
(Hong Kong Government: Hong Kong Annual Report, 1953)

<u>year</u>	<u>establishments</u>	<u>workers</u>
1948	1,266	63,873
1949	1,426	83,571
1950	1,752	91,986
1951	1,961	95,207
1952	2,088	98,126
1953	2,208	100,776

However the number of employment was often understated (as much as 55%), especially for piece-wage workers and children for the smaller factories in the earlier periods. (Dwyer, D.J.: The Small Industrial Unit in Hong Kong: Patterns and Policies, University of Hull, 1967, p.20-22)

8. The shirt industry was not classified separately from the rest of the garment industry. The classification was International Standard Industrial Classification (ISIC) 24: manufacturing of wearing apparel except footwear. The classification included shirts, women's dresses, pyjamas, rainwears, jackets and slacks and fashion industry. The shirt industry made up about $\frac{1}{2}$ the garment industry in the early 50's. The classification was later changed to ISIC 3220 in the late 60's.

<u>year</u>	<u>establishments</u>	<u>workers</u>
1951	44	420
1952	50	1,702
1953	60	2,421
1954	76	3,401
1955	99	4,261
1956	182	7,326
1957	198	9,627

1970 1,630 91,154

The chief manufacture was men's shirt, size 13.5-16. 80% of the manufactured goods were exported to the United Kingdom, Australia, Africa, Malaysia, Thailand and Burma. The total export in 1956 was HK\$60 million and it was the 4th largest export item (grand total of all manufactured goods for export was HK\$663 million in 1956).

9. The production of shirts was so insignificant that it did not appear on the official or semi-official statistics until 1954 as a separate item.

10. The plastic industry was classified as ISIC 39: manufacturing industries not elsewhere classified: plastic ware in the early to mid 50's. The classification was later changed to ISIC 3560: manufacturing of plastic products not elsewhere classified. The industry included plastic flowers, toys, utensils (cullinery, combs, soap box, stationery, hanger for clothes, cigarette box, tooth brush, glass frame clips, wall panels etc.) and products for other industrial users (tooth brush handle, flash light accessories, clock face, bottle stopper, syringe, lamp shade etc.).

<u>year</u>	<u>establishments</u>	<u>workers</u>
1951	9	131
1952	14	247
1953	17	310
1954	26	391
1955	43	844
1956	91	2,146
1957	114	3,272

1970 2,379 71,801

The growth rate of the industry was 60% annually. 90% of the manufactured goods were exported to Southeast Asia, Australia, Middle East, South Africa, South America, U.S. and England. The total export was HK\$7 million in 1954 amid a grand total of all export of HK\$628 million. The large to small factory ratio was 1 to 20.

11. Toys weighed usually 3-6 ounces, flowers 1.5-3 ounces.
12. The earlier materials were celluoid, cellulose acetate and polystyrene.
13. It accounted for about 1/4 the total employment in the industry with mainly women and children workers.
14. New plastic grains were sold at HK\$6-7 a pound. This made the reprocessing of waste profitable. In the late 60's to early 70's the price of new plastic dropped to HK\$0.6-0.7 a pound (before the Arab oil embargo) making the reprocessing industry extremely unprofitable.
15. Overseas connections had been well established during the entrepot era but the shirt the plastic industry were new industrial ventures. Besides there were severe competition from Japan for both the industries.
16. For the shirt industry most of the orders were under ten thousand dozens. For the plastic industry most of the orders were under HK\$100,000.
17. It was not uncommon for some factories to have no work during the lean months. In such cases surplus work would be solicited from other factories. Such would be very difficult during the lean months.
18. When a short-notice order was received it meant more than mobilizing sufficient labor force. Materials had to be purchased and machinery had to be ready. Often a notice of 4 months meant only 2 months of actual shop floor production with the other 2 months spent in waiting delivery of materials.
19. Total capital investment ranged from HK\$10,000 to HK\$100,000 for most factories. (initial investment only)
20. In the case of the shirt manufacturing industry shirts and underwears had already been produced for local consumption. In the case of the plastic industry metal workers and machine operators would be recruited from other metal-works industries. There were also the transportation, packaging, printing and publishing industries etc. which had existed to help the entrepot trade activities.
21. Non-adherence to contract delivery dates had been cited as the main complaints of buyers. The record of Hong Kong were generally regarded as the best among all countries exporting similar goods. This included Japan, and other European countries where the problem of unionized labor was cited to be responsible for many of the delays.
22. The collar was sewn by male workers and the rest of the whole shirt was manufactured by female workers. The ironing, buttoning, packing were done by female workers and children.
23. The moulding machine operators were male workers. Trimmers, assemblers and packers were female workers. The ratio between male and female workers was 1 to 4. This did not include administrative and maintenance staff.
24. Most medium size factories had some sort of crude flow chart to guide the production process. Frequently these were sketched out on blackboards and would be revised when needs arose.

24. Here ethnicity played an important part. This probably explains why many branches of the plastic industry tended to be dominated by one ethnic group (the Chiu Chau people).
25. This obviously depended on the willingness of the labor force to accept stringent employment terms made necessary by the tight labor market brought about by the sudden influx of refugees as well as the political and economic changes in China and the rest of the World.
26. The choice of technologies open to the entrepreneurs was limited by the condition for competition (comparative advantage of Hong Kong). As a matter of fact much higher technology was employed during the unsuccessful first attempt at industrial take-off.
27. Industrial discipline in the early to mid 50's evolved from the urban and commercial disciplines which most of the labor force was familiar with. Employment relationships were personal and reciprocal.
28. see "background", Chapter 3, p.48-49.
29. An employer would be required to serve at least one month notice for dismissal of a permanent employee. But more importantly permanent employment offered by an employer often meant the respect for the employee and its indispensability. Permanent employee status was considered attractive by many workers. During the period of high unemployment in the early to mid 50's a permanent job would give the much needed economic security.
30. For example, the cutter was responsible for minimizing the wastage on cloth. His care and ingenuity in cutting cloths would mean important savings to the entrepreneur.
31. Newly established factories would try to attract experienced and skilled workers. But the more serious competition came from the skill personnel themselves. Many of them would be tempted to set up their own business if given the opportunity. Establishing a personal and congenial relationship (one way was by offering permanent employment) with these personnel would reduce the risk of losing valuable staff.
32. This was a traditional Chinese business practice.
33. These employees would be dismissed without prior notice. Although in later periods three to seven days notice were required for dismissal. They came to the factory on a day-to-day basis. If there was no more work to be done they would be informed the day before. However informal communication systems were well developed so that workers would know way in advance when and where they would be needed.
34. The normal shift was 8 hours. There could be one, two or three shifts according to the demand. If workers came in late for one shift they would normally be allowed to stay later to make up for the loss time, but not if other workers from the next shift would come in to use the machinery. Many workers worked more than one shift at a stretch. One-and-a-half shift was the usual practice.

35. Recruitment notices would be put up at bus stops, street-lamp posts and street-facing walls of buildings.
36. These were workers who would be paid by the quantity of work done. For example, sewers in the shirt industry would be paid by the dozens of shirts or parts of shirt sewn, assemblers in the plastic industry would be paid by the dozens or twelves of dozens of plastic products assembled, and sorters in the plastic reprocessing industry would be paid by the weight in pound of plastic wastes sorted and washed.
37. This was much more frequent during high seasons. During low seasons few work would be put-out.
38. Space was more readily available in squatter areas where most of the structures were single story. The roofs would be used (e.g. for drying plastic wastes), and there were often small yards. Public open spaces were often used. These included large construction sites and recreation areas.
39. The wage levels were as follows.
skilled workmen-----HK\$6.00-\$8.50
semi-skilled workmen-----HK\$5.00-\$6.50
unskilled workmen-----HK\$3.50-\$4.00
These were the general daily wage levels according to skill. There was no separate statistics of wage levels for the plastic and shirt industry. But entrepreneurs and workers interviewed agreed that these were quite correct, with the exception that some unskilled workmen probably received as low as HK\$1.50 per day.
40. The skill-mix was confirmed by over 70% of the entrepreneurs interviewed. The detail breakdown might vary from firm to firm but the overall pattern remained similar among firms.
42. Permanent employees had fixed basic salery. During bad times they would receive a reduced salery. The reduction could range from 10% to 50%. If there was deep recession the workers would be dismissed without compensation. But the practice of multiple employment (even when available) was not common.
41. As a rule factories with better established market and larger output had more permanent employees. But the fluctuation was quite insignificant. The more significant variations occurred across different branches of the industries. Material reprocessor had many more permanent employees (these were usually small "cottage" industries with the whole family participating). Temporary employees formed the largest bulk in all other industries.
43. Fluctuation of piece-wage was more significant during good times than during bad ones. Entrepreneurs would raise wage level during boom seasons to attract workers. But such raise would very quickly be matched by other entrepreneurs.
44. These industrial branches were selected because together thy employed about 80% of the total work force of the industries. (the figures were confirmed by over 80% of the entrepreneurs interviewed) The composition of worker types and skill mix was obtained from entrepreneurs of small and medium factories.

The composition and mix could be different in larger factories. There would be a higher proportion of medium-skill temporary employees. The basic core of skilled permanent personnel would not increased very much proportionally. But put-out work for piece-wage workers would be reduced, especially for the shirt industry.

45. These industries might not have entirely similar labor requirements. For example, the rattan industry would not permit production outside the factory by individuals because of the bulk of the raw material and the finished product. However the types of wage relationship and skill would be similar.
46. Energy as an input factor is not considered because
 - a. energy for all industries was the same --- electricity from imported oil supplied by quasi-public power companies at equal rates, and
 - b. consumption of energy by the industries was not large compared with the grand total consumption.Locational variation in the availability of electricity is discussed under the heading of land consideration (as part of the infrastructure and amenity consideration).
47. For the shirt industry 95% of the products from large factories, 60%-70% from medium factories and 10%-20% from small factories were for export. This puts 80% of the total output for export. Similar situation occurred in the plastic industry. (Wah Kiu Yat Po: Hong Kong Year Book, Hong Kong, Wah Kiu Yat Po, 1956, p.A-70.)
48. The chief raw material for the shirt industry was cotton cloths. Cotton bales came from the U.S. to spinning and weaving mills in Hong Kong to be turned into cloths. Cloths were also imported from Southeast Asia, East and West Africa, Japan and Italy. Artificial fibre such as polyester and Decron came later.

The chief raw materials for the plastic industry were celluloid, cellulose acetate, polystyrene, phenol formaldehyde, urea formaldehyde, polyethene, nylon and polyvinylchloride. They came initially from England (ICI) and the U.S.(Dow). Later raw materials came also from Italy, West Germany and Japan. Plastic waste came mainly from England and West Germany.
49. Any consideration of transportation between the warehouse and the factory would be the same as that between point of production and point of shipment in the case of export market consideration.
50. It might also be true that small factories located near retailers to take advantage of convenient purchase of small quantities of materials.
51. for renting factory space, meeting payroll, maintenance and operating costs and transport costs (raw materials usually on credit)
52. Most money lenders were not institutionalized. Their money lending activity was side-line business. They usually lent money only to those whom they knew or to those referred to by people they knew. As a result ethnicity played a very important part.

53. Some squatter areas had been surveyed by the government and addresses were given. But many squatter areas, especially new ones, had no addresses designations. There were also new additions to existing squatters making the situation even more confusing.
54. Most squatters had no motor roads, no electricity and water supply and no centralized sewage disposal.
55. The loans were usually of small amount. The interest rates were usually 1.5 to 3 times the bank lending rates.
56. Ethnicity also played an important part here. See footnote 24, Chapter 3.
57. Although the factory space to volume of output ratio was smaller for larger factories when only shop floor space was considered. But if all space requirements were taken into consideration (administration, storage etc.) the smaller factories seemed to be using less space for the same volume of output. This might probably due to the use of space-saving technology, multiple use of space, and high tolerance of overcrowdedness.
58. There were some government control over the industrial use of residential buildings, especially by the Fire Department and the Urban Services Department (Sanitation). But codes were obsolete and were not strictly and uniformly enforced.
59. Along the edges of squatter areas, which abutted existing urban areas, electricity and water supply could be obtained, legally or illegally, more easily by branching from existing facilities and amenities in the urban areas. Distance to motor roads was also reduced.
60. Residential building plans were governed by building codes which were interpreted by developers to obtain the maximum permitted building volume. As a result building shapes and volumes were similar for most buildings in urban areas.
61. The average density for low and medium income areas was about 500 persons per acre. But in the more crowded areas such as Shum Shui Po in Kowloon and the Western District in Hong Kong the density could exceed 1000 persons per acre.
62. There was no severe legal problem to factory location in residential areas. Significant difficulty was encountered in getting large enough space (a whole floor) in the older areas for efficient factory operation because of the pattern of multiple sub-tenancy (sub-letting).
63. Infrastructures in the older areas were not designed to anticipate the massive immigration and the industrial take-off. They were built before the 2nd World War. The worst problems occurred in sewage disposal. But problems of traffic congestion was soon to dominate.
64. The magnitude of rent differential between the upper floors and the ground floors in the same urban area was 1.5 to 2.
65. For rent consideration no distinction is made between the different floors occupied by the factories in the same location. The general rent level of either the upper or the ground floors will be taken, depending on the prevalence of use of those floors in a location.

66. Rent accounted for some 5% to 20% of the total production cost. Since it was a fixed cost the higher the production level and lower the proportion of rent in the total production cost.
67. Rents for the low to middle income residential areas ranged from \$0.20 to \$0.30 per sq.ft. per month (i.e. \$120 to \$180 a month for a flat of 600 sq.ft.). Rents for the higher income areas were normally above \$0.50 per sq.ft. per month, and the area per floor was usually larger (above 1,000 sq.ft.).
68. New high income areas were also along the urban fringe. On Hong Kong island these were located at the mid-level of Victoria Peak above the lower income areas along the harbor front and in the Happy Valley area. In Kowloon the new high income areas were developed in Kowloon Tong. See map on p.85.
69. In the early to mid 50's the cost of construction and the cost of land for a multi-story residential building (say 6 stories) were roughly the same in the low to middle income areas.
Land on Hong Kong island was leased for a much longer period (75 - 999 years) because the island was ceded to the British. Land in the New Kowloon area where most the newer development took place was lease for a much shorter period because the territory was leased from China with the expiration date set for 1998. This difference was vital to land cost. But in the early to mid 50's economic growth was just beginning, social demand for land was only marginally effective and the expiration date was still far away. As a result the cost of land did not vary drastically to reflect this different land lease terms.
70. Companies charged according to time-rent of truck. If delivery could be done in one morning (9 a.m.- 1 p.m.) or one afternoon (2 p.m.-6 p.m.) one shift would be charged. Seldom more than 1 shift was needed, unless there was unexpected delay at transfer points.
71. The weight and buld that could be carried by such modes of transportation were quite small.
72. For comparison of public transportation services between the early to mid 50's and the late 60's see footnote 41, Chapter 4.
73. Bus and tram fares in urban areas were \$0.10 to \$0.20 for one trip (adult fare) depending on the distance travelled. Each route was charged separately. The minimum transport cost ranged from \$0.20 to \$0.40. But the daily wage for some low-skill wrokers would be as low as \$1.50 (see footnote 39). Transport cost would be as high as 25% of income.
74. see footnote 5.
75. This distinction between the refugees and the local population was a temporary phenomenon. By 1954 the proportion of children attending school for the refugee group was similar to that of the local population group. But the absolute number of children not attending school was still great.

It was estimated that there were 175,000 children between the age of 5 to 14, who were not attending school, with the majority being girls. (E. Hambro: The Problems of Chinese Refugees in Hong Kong, Holland, A.W. Sijthoff-Leyden, 1955, p. 55)

76. The average spatial standard in squatter areas was about 28 sq.ft. per person as opposed to the less than 25 sq.ft per person in the urban built-up areas. (O.J. Golgar: An Environmental Study of Squatter and Resettlement Housing in Hong Kong, Thesis (PhD), University of Hong Kong, Hong Kong, 1968, p.348.) However the survey sample was a very limited one and should be treated with caution.
77. Higher spatial standards in private residential buildings could not be effectively enforced during times of severe housing shortage. In some newer urban areas overcrowdedness was as high as, if not higher than, that in the older urban areas.
78. see footnote 72.
79. This was usually combined with the shopping trip. The shopping itself was time consuming. The market place was extremely crowded and dirty. This made the carrying of bulky and heavy loads to and from the factory unwelcome.
80. see "land consideration" in the "logic of location", Chapter 3, p. 81-83.
81. Agglomeration effects were of course perceived by these first entrepreneurs. The availability of factory space for shirt and plastic manufacture could very well be the result of the supporting industries locating at these districts in the first place. But the evolution of land-use was of no significance to the small entrepreneurs in making location decisions.

CHAPTER 4

1. Total area was 296 acres(84 acres industry, 78 acres housing, 84 acres roads and 50 acres commercial, government use and open space). The total population estimated in 1970 was 380,000.
2. see charts.
(Hong Kong Government, Census and Statistics Department: Hong Kong Statistics 1947-1967, Hong Kong, Hong Kong Government Printer, 1969)
3.

<u>year</u>	<u>student population</u>	<u>total population</u>
1956	262,000	2,857,000
1969	1,130,000	4,039,700
4. By 1969 there were 23 housing sites with 1.1 million population as opposed to 133,000 by 1955.
5. Private residential flats grew at the average rate 10,000 flats a year between 1958 and 1968.
(Wah Kiu Yat Po, Hong Kong: Hong Kong Year Book 1970, Hong Kong, Wah Kiu Yat Po, p.53-54.)

6. Total export increased steadily and phenomenally over the past ten years.

<u>year</u>	<u>total export</u>
1960	HK\$2,867 mil.
1962	3,317
1964	4,427
1966	5,730
1968	8,428 (clothing was 36% of the total)

The total number of factories increased 12 times over the past 20 years (1,266 in 1949 to 14,440 in 1969).

7. Unemployment was practically non-existent. There was a severe shortage of industrial medium skilled workers. In 1968 the shortage for workers was 8,335 and in 1969 it jumped to 16,953 (a 50% increase).
(Wah Kiu Yat Po, Hong Kong: Hong Kong Year Book 1970, Hong Kong, Wah Kiu Yat Po, p.77)
8. see footnote 7, Chapter 3.
But it is likely that underestimation of the labor force was not as much in the later periods with improved government recording methods and increased factory sizes and more sophisticated factory management.
9. Shirt export was about 15% of total clothing export in 1969. HK\$463 million in a total of HK\$3,828 million.
10. Export total in 1959 was HK\$2,282 million.
11. Export total in 1969 was HK\$10,518 million (\$5,027 in 1965).
12. For example, in 1959 restriction of export on textile to Britain was extended to include garments. In the same year there was agreement with the United States for a waiver for the contracting parties to the General Agreement on Tariffs and Trade, which included the following.
- The exporting country enjoyed a right to administer its restraints within any ceiling agreed with the importing country.
 - Right to increase annual export by not less than 5%.
 - Right in some degree of latitude in exchanging one item of cotton goods for another.
13. Commissions were sent to promote products and to negotiate favorable trade terms. Liason and information offices were set up in foreign countries.
14. Cotton had been replaced by polyester and Decron etc. Much of the cloth processing was done in Hong Kong instead of elsewhere (dyeing, shrinking, printing, "sanforization" etc.).
15.

<u>size of factory</u>	<u>moulding operators</u> (3 shifts)	<u>trimmers</u> (1 shift)	<u>maintenance</u>
large	150 per shift	300-500	15
medium	60-70	100-150	10
small	15-20	20-30	5
- Many worked more than 1 shift (1½ shifts).
16.

<u>year</u>	<u>shirt export</u>	<u>plastic export</u>	<u>total export</u>
1968	HK\$389 mil.	HK\$974 mil.	HK\$7,460 mil.
1969	463	1,077	9,421

Shirt export included unknitted shirts only.
Plastic export included toys, dolls and flowers.

17. see footnote 7, Chapter 4.
18. Foreign capital came in large volumes because of
 - a. unstable political conditions in Southeast Asia (esp. Vietnam) in general,
 - b. unfavorable political conditions for overseas Chinese in Southeast Asia (esp. Indonesia, the Philippines, Thailand and Burma), and
 - c. international monetary situation making investment in Hong Kong attractive (stable economy).
19. This included technological advances in production methods as well as in transportation and management.
20. see footnote 8 and 10, Chapter 3.
21. This was a universal problem cited by entrepreneurs of all different types and sizes of factories. For the larger factories where a larger proportion of younger labor was employed the problem was labor turnover. For the smaller factories where there was still a high proportion of older workers (male and female) the difficulty was finding replacement when these workers withdrew from the labor market.
22. Unemployment was reduced to 1.2% by the mid 60's. The civil unrest in 1967-1968 had closed many factories and driven away investments. But by late 1969 the situation had revived.
23. In the early 50's employers would not offer permanent employment even when such was demanded by employees. By the late 60's employers were still reluctant to offer permanent employment but the attractiveness of permanent employment to the workers had also decreased because of low unemployment. Especially after the civil unrest of 1967-68 people considered the economic booms of the late 60's a transient phenomenon and the commitments of permanent employment "meaningless". Instead workers demanded the immediate gains of better working conditions and higher fringe benefits.
24. see "labor consideration" in the "logic of location", Chapter 4, p.152.
25. The high turnover rate was due to the high mobility of the labor force in general as well as the gradual withdrawal of the older and more "dependable" labor force from the market.
26. see "division of labor", "standardization" and "internal process coordination" in "the industries", Chapter 4, p. 124-126.
27. see "land consideration" in the "logic of location", Chapter 4, p. 143-145.
28. see footnote 40, Chapter 3.
29. see footnote 44, Chapter 3.

The difference in skill mix and employment pattern between large and small factories were not as significant here as in the early 50's. However distinctions seemed to occur among the different branches of diversification in market orientation and production methods within the same industry. Those with more stable external markets and more systemized production methods seemed to have more high skill personnel and less piece-work workers.

- 30. 75% of the shirt production and 80% of the plastic production was for export.
- 31. This was the distance between Tsuen Wan, the industrial town in the New Territories, and the port facilities in Tsim Sha Tsui.
- 32. Plastic raw materials had dropped from HK\$6-7 a pound to HK\$0.6-0.7 a pound.
- 33. It was estimated that during the high seasons about 30% of the work in the shirt industry was contracted out to sub-manufacturers.
- 34. Internal markets for shirts were booming in the late 60's. It was estimated that about 15% of the large factories and about 50% of the smaller factories were catering for internal markets of various kinds.
- 35. see footnote 47, Chapter 3.
- 36. The New Territories are not considered inspite of the new industrial towns of Tsuen Wan (largely completed), Castle Peak and Shatin (planned). The development in Aberdeen on the south side of Hong Kong island is also omitted. These new urban areas are very important in the consideration of urbanization and industrialization but their omission will not weaken the logic of land consideration in the location of factories in the late 60's because
 - a. the trade-offs between the cost of factory space and the availability of appropriate space and infrastructure were equally clear within the metropolitan area, without having to consider the New Territories and Aberdeen, and
 - b. their omission allows a clearer comparison of the logic of location between the two periods discussed in this research because the same metropolitan area was involved.
 It will help to consider the New Territories and Aberdeen as another metropolitan area.
- 37. These were new towns in the New Territories. They will not be included in this discussion for reasons stated in footnote 36.
- 38.
- 39. The cost of factory space ranged between HK\$1.00-\$1.20 per sq.ft. per month as compared with that between \$0.20-\$0.30 in the early to mid 50's.
- 40. This was primarily due to the differential cost in land. Price of land for comparable multi-story flatted factories was as follows.

Cheung Sha Wan	HK\$70 per sq.ft.
San Po Kong	60
Kwun Tong	50
Chai Wan (Hong Kong)	40-45

 (Wah Kiu Yat Po, Hong Kong: Hong Kong Year Book 1970, Hong Kong, Wah Kiu Yat Po, 1971)
- 41. The public transport route network in 1947 had a total mileage of 215 of which only 60 miles were in urban Hong Kong. This total had been more than doubled by 1956 and trebled by 1966. The share of the urban mileage in 1966 represented more than a third of the total, as compared with only slightly more than a quarter in 1947.

	<u>1956</u>	<u>1970</u>
Hong Kong		
bus		
passenger-trips	53 mil.	211 mil.
total mileage	7.4mil.	19.8mil.
# of bus in service	183	481
tram		
passenger-trips	141 mil.	154 mil.
total mileage	-	6 mil.
# of trams	120	178
Kowloon		
bus		
passenger-trips	100 mil.	618 mil.
total mileage	10 mil.	49.1mil.
# of bus in serv.	365	650

See also maps of network and public transportation service comparison. Map 1 and 2.

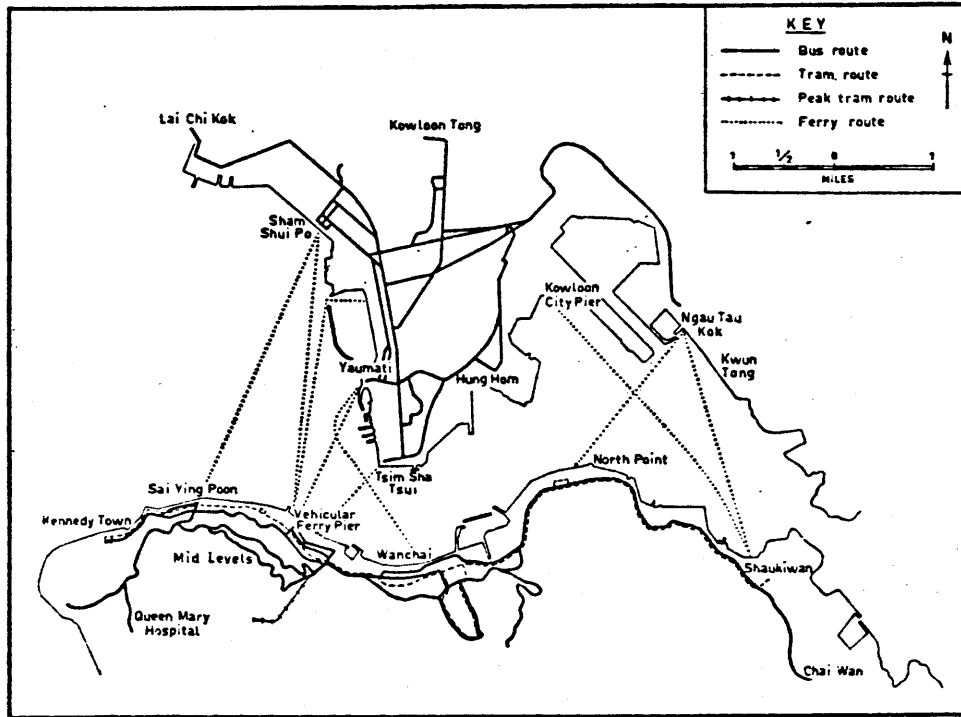
(Dwyer, D.J.: Asian Urbanization, A Hong Kong Casebook (An article by C.K. Leung: The Growth of Internal Public Transportation, p.147)) Hong Kong, Hong Kong University Press, 1971)

42. Fares in the late 60's were HK\$0.20 a trip within the metropolitan area (the same as in the early to mid 50's). But daily wages had increased many-fold --- HK\$14.8 for the garment (shirt) industry and \$13.2 for the plastic industry. (Hong Kong Government, Census and Statistics Department: Hong Kong Monthly Digest of Statistics, Feb. 1974, Hong Kong Government Printer, Hong Kong.)
43. see "labor requirement" in "the industries", Chapter 4, p. 135, and also footnote 23, Chapter 4.
44. see "transportation consideration" in "the logic of location", Chapter 4, p. 147-149.
45. see "the people" in "background", Chapter 4, p. 117.
46. see footnote 7, Chapter 4.
47. see "industrial development" in "background", Chapter 4, p.118-119.
48. see "land consideration" in the "logic of location", Chapter 4, p. 143-145.
49. This was a necessary price for survival even when transportation network and labor mobility had reduced the significance of urban centre locations.
50. It was estimated that about 1/3 of the factories were small i.e. having no more than 50 sewing machines or 20 plastic moulding machines.
51. For example, some small factories produced very low price shirts for low-income local consumers, some plastic manufacturere produced crude by heavy and durable plastic utensils for restaurant use or for people to bring to their relatives in China.
52. For example, plastic components were needed for other metal industries (e.g. flash light parts) and electronic industries (e.g. casings).
53. Residential use usually tended to bid up the price of land and industrial use of residential area usually tended to pull down the price of the area as a whole.

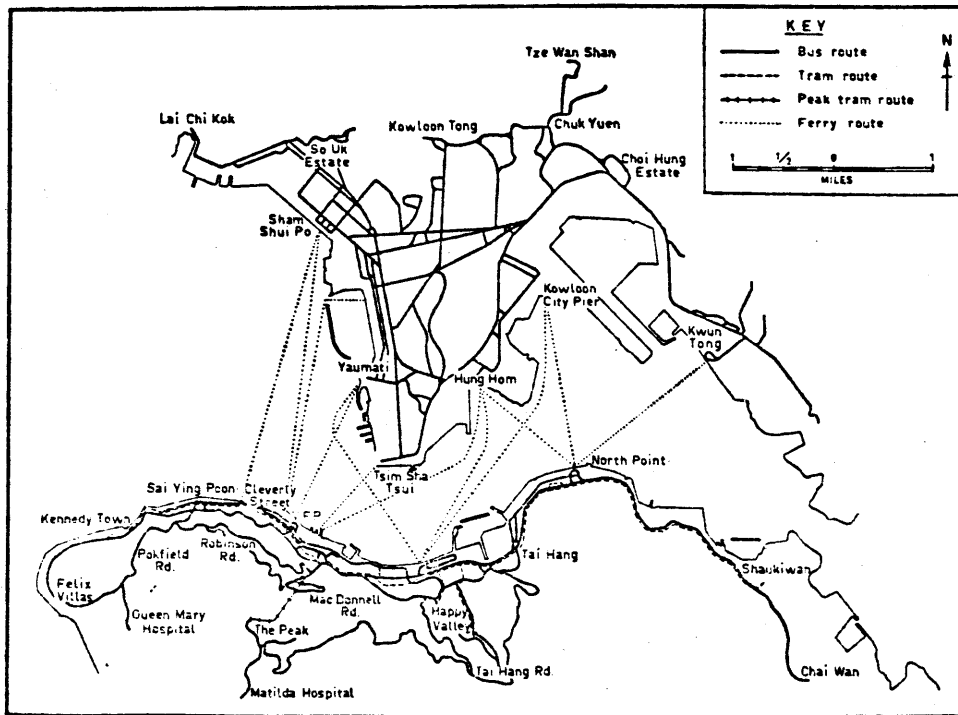
54. Cheung Sha Wan was primarily a residential-industrial area in the early to mid 50's. But when retails moved in after the area became densely residential the rent level moved up much faster (for all industrial, residential and commercial users) than other areas which had always been industrial only (e.g. San Po Kong).
55. Shum Shui Po had a higher rent level than many other areas with comparable land conditions. But since it was one of the earliest areas with industrial use many earlier factories would not move out, when they expanded, thus accentuating the scarcity of factory space in the area and raising the general rent level.
56. There were old pre-2nd World War buildings in the older urban areas, which had been used by industries. But new factories would not be permitted to start operation in those buildings. Thus the existing rent level in those areas would either understate or overstate the demand for such areas.

COMPARISON OF PUBLIC TRANSPORTATION I.

URBAN PUBLIC PASSENGER TRANSPORT SERVICE, 1956.



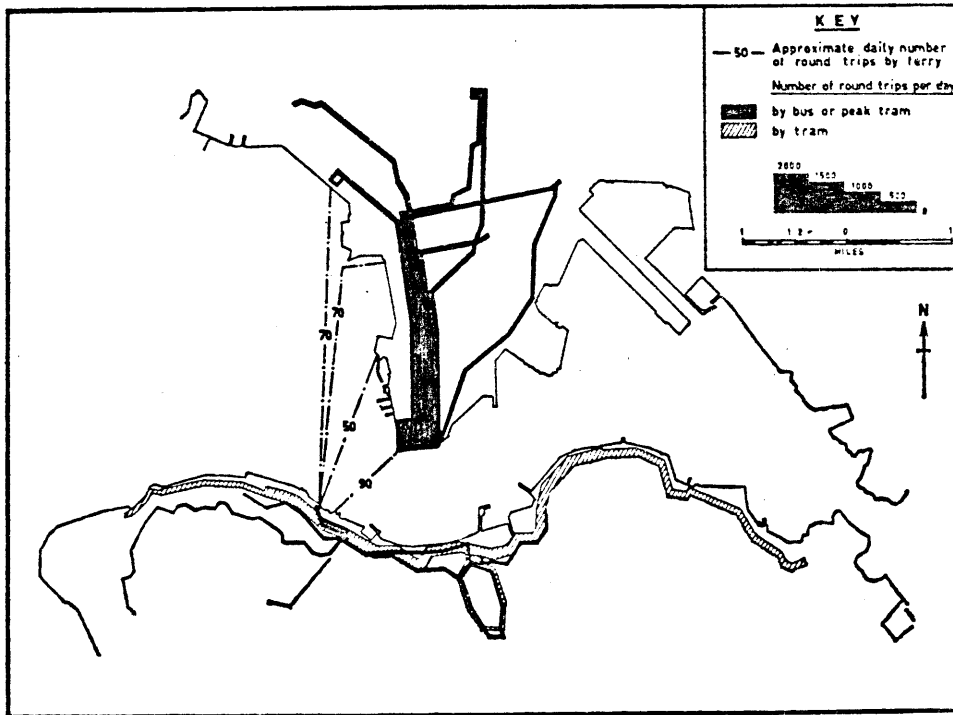
URBAN PUBLIC PASSENGER TRANSPORT SERVICE 1966



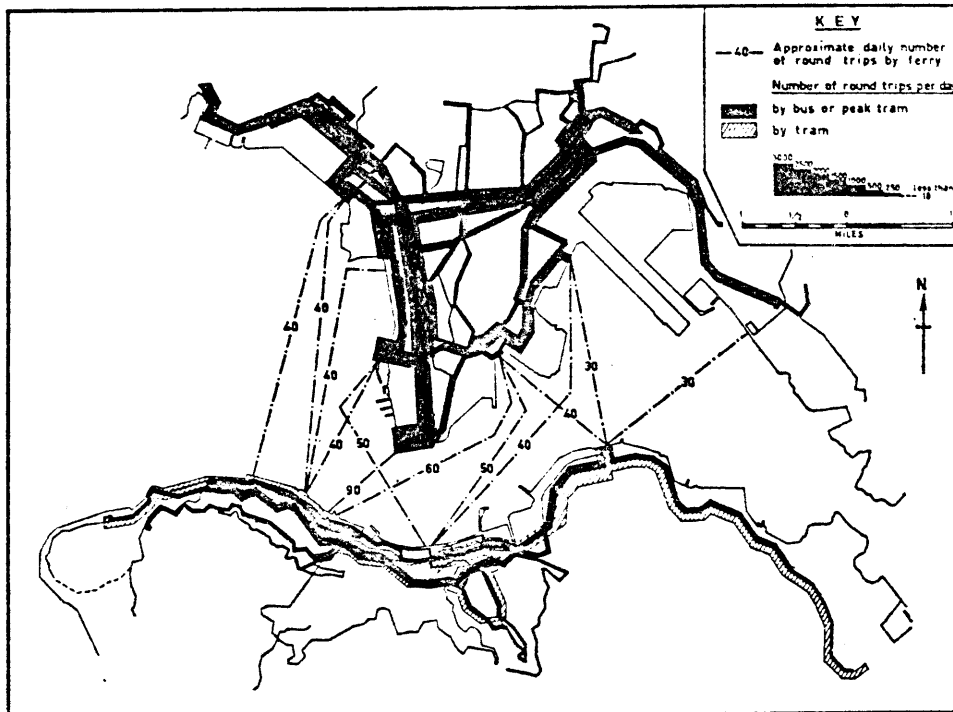
MAP FROM DWYER, D.J.: ASIAN URBANIZATION, A HONG KONG CASEBOOK [ARTICLE BY C.K. LEUNG: THE GROWTH OF INTERNAL PUBLIC TRANSPORT], UNIVERSITY OF HONG KONG PRESS, HONG KONG, 1971, P. 143 & 145.

COMPARISON OF PUBLIC TRANSPORTATION 2

FREQUENCY OF PUBLIC PASSENGER TRANSPORT SERVICES, 1947.



FREQUENCY OF PUBLIC PASSENGER TRANSPORT SERVICES, 1966.



MAP FROM DWYER D.J.: ASIAN URBANIZATION, A HONG KONG CASEBOOK [ARTICLE BY C.K. LEUNG: THE GROWTH OF INTERNAL PUBLIC TRANSPORT], UNIVERSITY OF HONG KONG PRESS, HONG KONG, 1971, P. 148, 149.

TABLE 1**DISTRIBUTION OF POPULATION ACCORDING TO PRESENT OCCUPATION IN HONG KONG***Percentages, June 1954^a*

Occupation in Hong Kong	Hong Kong- born ^b	Pre- war immi- grants	Post-war immigrants				Total
			Political	Politico- economic	Econo- mic	Unspe- cified	
1. Farmers	1.1	2.1	1.2	1.3	—	1.6
2. Fishermen	0.7	0.1	0.4	0.1	—	0.2
<i>Total, 1 and 2</i>	20.0	1.8	2.2	1.6	1.4	—	1.8
3. Coolies and amahs ^c . .	5.0	11.4	9.9	10.6	12.7	5.9	11.0
4. Cottage craftsmen . .	3.2	6.8	11.2	12.8	6.5	2.0	9.5
5. Industrial labourers ^c .	7.8	8.6	13.7	12.6	11.4	19.6	12.6
6. Independent craftsmen	3.3	4.5	2.0	2.0	3.8	3.9	2.7
7. Hawkers ^c	6.1	8.5	7.9	6.1	7.4	2.0	7.4
<i>Total, 3-7</i>	25.4	39.8	44.7	44.1	41.8	33.4	43.2
8. Clerks and shop assistants ^c	6.6	6.5	4.7	6.1	6.0	3.9	5.3
9. Business men ^c	2.1	2.2	1.2	2.0	2.0	3.9	1.6
10. Professionals and intellectuals	1.7	1.9	4.7	5.3	1.7	5.9	3.5
11. Army and police . . .	1.2	2.1	0.2	—	0.2	—	0.2
<i>Total, 8-11</i>	11.6	12.7	10.8	13.4	9.9	13.7	10.6
12. Others ^c	6.5	4.6	4.4	6.5	4.7	5.9	4.8
13. Unemployed	8.0	11.5	16.6	12.0	13.4	17.6	15.1
14. Housewives	28.5	29.6	21.3	22.4	28.8	29.4	24.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^a Source: *Sample Survey of Hong Kong's Population* carried out by the Mission. The figures relate to both sexes, excluding children and students.

^b Re-estimated distribution.

^c See notes under Table XXIX.

EXTRACTED FROM TABLE XXI, P. 170

HAMBRO, E.: THE PROBLEMS OF CHINESE REFUGEES IN HONG KONG

REPORT SUBMITTED TO THE U.N. HIGH COMMISSIONER FOR REFUGEES

HOLLAND, A.W. Sijthoff - Leyden, 1955.

TABLE 2

OCCUPATIONAL DOWN-GRADING OF CHINESE POST-WAR IMMIGRANTS IN HONG KONG

Percentages, June 1954^a

Occupation in Hong Kong Occupation on mainland of China	Political immigrants						Economic immigrants						Totals								
	Similar occupation	Related or equivalent occupation	Superior occupation	Sub-total	Inferior occupation	Unemployed	Total	Similar occupation	Related or equivalent occupation	Superior occupation	Sub-total	Inferior occupation	Unemployed	Total	Similar occupation	Related or equivalent occupation	Superior occupation	Sub-total	Inferior occupation	Unemployed	Total
Farmers	13.3	13.3	14.7	41.3	40.0	18.7	100	3.9	19.5	19.8	43.2	46.7	10.1	100	5.3	18.5	18.3	42.1	46.1	11.8	100
Fishermen	—	—	—	—	—	—	100	—	—	—	—	—	—	100	40.0	10.0	10.0	60.0	30.0	10.0	100
Coolies and amahs ^b	44.5	22.2	11.1	77.8	—	22.2	100	48.4	29.0	6.5	83.9	—	16.1	100	46.4	26.8	7.3	80.5	—	19.5	100
Cottage craftsmen	20.0	40.0	—	60.0	30.0	10.0	100	50.0	20.4	11.1	81.5	3.7	14.8	100	46.4	24.6	8.7	79.7	7.2	13.1	100
Industrial labourers ^b	47.2	13.9	19.4	80.5	11.1	8.4	100	46.2	12.5	10.0	68.7	10.0	21.3	100	44.3	12.8	14.3	71.4	12.8	15.8	100
Independent craftsmen	66.6	6.7	6.7	80.0	6.7	13.3	100	64.9	8.1	2.7	75.7	14.9	9.4	100	60.4	8.3	3.1	71.8	18.8	9.4	100
Hawkers ^b	44.8	3.4	6.9	55.1	17.3	27.6	100	32.1	9.5	4.8	46.4	36.9	16.7	100	35.0	7.5	5.0	47.5	32.5	20.0	100
Clerks and shop assistants ^b	9.2	24.7	9.9	43.8	31.5	24.7	100	27.1	16.8	6.4	50.3	21.3	28.4	100	16.3	22.4	8.3	47.0	28.1	24.9	100
Business men ^b	4.9	10.8	2.9	18.6	47.1	34.3	100	14.5	16.9	1.6	33.0	45.2	21.8	100	11.3	12.8	2.3	26.4	44.7	28.9	100
Professionals and intellectuals	23.3	6.6	—	29.9	46.7	23.4	100	25.3	23.6	—	49.4	28.1	22.5	100	24.9	10.3	—	35.2	42.5	22.3	100
Army and N.C.O.s	0.5	35.3	21.1	56.9	19.7	23.4	100	—	29.6	25.9	55.5	11.1	33.4	100	0.4	35.1	21.3	56.8	18.6	24.6	100
Police Officers ^b	1.2	29.6	4.9	35.7	44.5	19.8	100	—	10.0	10.0	20.0	50.0	30.0	100	1.0	27.8	5.2	34.0	45.4	20.6	100
Others ^b	0.2	6.3	5.1	11.6	61.7	26.7	100	—	9.1	9.1	18.2	72.7	9.1	100	0.2	6.6	5.1	11.9	63.0	25.1	100
Unemployed	11.1	22.2	3.7	37.0	23.2	39.8	100	21.9	19.8	2.1	43.8	30.2	26.0	100	18.7	20.0	3.0	41.7	26.4	31.9	100
	(59.5)	—	40.5	100.0	—	(59.5)	100	(51.7)	—	48.3	100.0	—	(51.7)	100	(53.4)	—	46.6	100.0	—	(53.4)	100
TOTAL 1 ^c	11.8	15.8	8.1	35.7	39.6	24.7	100	24.1	16.9	11.6	52.6	30.2	17.2	100	17.1	16.2	9.3	42.6	36.1	21.3	100
TOTAL 2 ^d	10.5	15.8	8.1	34.4	39.6	26.0	100	21.6	16.9	11.6	50.1	30.2	19.7	100	15.5	16.2	9.3	41.0	36.1	22.9	100

^a Source: Sample Survey of Hong Kong's Population carried out by the Mission. The figures relate to both sexes, excluding housewives, students and children.

^b See notes under Table XXIX.

^c Unemployed on the mainland in column "Similar occupation".

^d Unemployed on the mainland in column "Unemployed".

^e The totals include politico-economic immigrants and immigrants for unspecified reasons; the percentages for those groups have not been computed separately on account of the sample values being too small.

EXTRACTED FROM TABLE XXXIII

HAMBRO, E.: THE PROBLEMS OF CHINESE REFUGEES IN HONG KONG

REPORT SUBMITTED TO THE U.N. HIGH COMMISSIONER FOR REFUGEES

HOLLAND, A.W. Sijthoff-Leyden, 1955, p. 172.

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