THE FOREST INDUSTRY AS A DETERMINANT
OF SETTLEMENT IN BRITISH COLUMBIA:
THE CASE FOR INTEGRATION
THROUGH REGIONAL PLANNING

by

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APRIL, 1965
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Date **April, 1965.**
The forest industry is the most important economic activity in the Province of British Columbia, with half the families in the province depending directly or indirectly on the industry's $400 million annual payroll. Predictions of $1 billion worth of new capital investment materializing within the next five years provide a firm indication that the industry will retain this position of economic importance throughout the foreseeable future.

The growth of the forest industry has had a profound effect upon the settlement pattern of British Columbia, characterized principally by an extreme concentration of productive facilities, and hence of population, in the south-west of the province, and a thin diffusion of employment and population throughout the remainder. In this large hinterland the population is scattered throughout a myriad of camps, company towns and isolated settlements which are able to provide for their residents a minimum level of goods and services and a narrow range of opportunities for personal development and self-realization. Thus, for many thousands of workers and their families, employment in the forest industry involves denial of the opportunity to participate fully in the prosperous and variegated way of life which the industry has so materially assisted to create within the province.
The Provincial Government has, to some extent, indicated an awareness of this condition, for the two declared objectives of its forest policies are the assurance of a perpetual yield of timber, and the establishment of prosperous permanent communities. Policies to ensure the fulfillment of the first objective have been thoroughly prepared, and conscientiously and competently applied. Policies to ensure the fulfillment of the second objective, on the other hand, are still lacking.

The anticipated wave of new investment in the industry will produce significant changes in provincial settlement patterns, in the form of several new towns in hitherto undeveloped areas and of a re-structuring of communities in already established areas. If controlled by firm government policy, these changes could be directed toward the creation of a settlement pattern which would make available to the citizens of the province the highest level of goods, services and urban amenities which the province is capable of providing.

In order to achieve this objective the developmental activities of the forest industry would have to be coordinated with those of all other agencies, both public and private, which are engendering urbanization within the province. Such coordination could only be achieved by the creation of a framework for developmental planning
which would be province wide in scope, comprehensive enough to
embrace all developmental action, and capable of accounting for
regional variations. By establishing a Provincial Development
Department at Cabinet level, with the portfolio being held by the
Provincial Premier, a means would be provided for effectively
initiating and controlling development on a comprehensive province
wide basis. By establishing regional branch offices of the
Provincial Development Department a means would be provided for the
achievement of regional accountability. It would be the responsibility
of the Regional Development Offices to prepare regional development
plans for the areas under their jurisdiction. Coordination of activity
at the regional level would be assured through the establishment
of a Regional Inter-departmental Committee consisting of the
regional representatives of all government departments functioning
within the region.

By bringing the regional representative of the British Columbia
Forest Service into the Regional Inter-departmental Committee, and
by making all forestry development subject to the Regional Development
Plans, developments within the forest industry could be directed
and controlled so as to make the maximum possible contribution to
the realization of an optimum settlement pattern within each region.
ACKNOWLEDGEMENTS.

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Invaluable assistance was provided by many persons connected with the forest industry, in Government, Business and Labour who gave generously of their time. Space does not permit individual mention, but the interview section of the Bibliography includes a list of their names. Special thanks are extended to Mr. R.G. McKee, Deputy Minister of Forests, British Columbia Department of Lands, Forests and Water Resources, who took time out from a very busy schedule to accommodate the author.

Grateful appreciation is extended to my wife and sister, whose patience, encouragement and endless hours of typing made completion of this thesis possible.

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CHAPTER I

INTRODUCTION

The Province of British Columbia stands to-day on the threshold of a period of rapid economic expansion. Already firmly established as Canada's fastest growing province, with a population growth during the 1941-1961 census periods of 99%, compared with a national average of 58.5% and a figure of 67% for Alberta, its nearest rival, British Columbia faces in the immediate future an infusion of investment capital on such a scale as to indicate that this impressive pace of development can be expected to continue at least through the next decade.\(^1\) In addition, British Columbia boasts a per-capita income 17% higher than the national average, a level equalled only by the Province of Ontario.\(^2\)

Blessed with an abundance of natural resources, British Columbia owes most of its prosperity and growth to its primary or "extractive" industries. Even a most superficial examination of the provincial economy reveals that, of these, by far the most important is the forest industry. For example, the latest edition of the British Columbia Financial and Economic Review reveals that the forest


industry accounted for 46.3% of the selling value of all factory shipments from the major industries of the province during the 1962 fiscal year.\(^3\) Major General B.M. Hoffmeister, speaking before the recent convention of the British Columbia Truck Loggers' Association, expressed matters even more forcefully when he noted that 300,000 wage earners, or half the families in British Columbia, depend directly or indirectly on the industry's $400 million annual payroll.\(^4\)

Nor is this pre-eminence of comparatively recent origin. As far back as 1900 forestry overtook mining as the foremost economic activity in the province, and even the city of Vancouver, now a diversified cosmopolitan centre of nearly 400,000 people had its origins in 1867 at Hastings Sawmill on the south shore of Burrard Inlet.\(^5\)

Looking into the future, forestry appears likely to remain the province's most important industry. Roderick Haig-Brown, noted British Columbia naturalist and writer, comments that "so far as anyone can judge at the present time the prosperity of future generations of British Columbians will depend just as heavily upon the good conditions


of the forests as does that of the present generation". Dr. John Deutsch, in his first report as Chairman of the Economic Council of Canada, in analyzing future trends of Canadian development, states that "unlike most provinces, most new jobs in British Columbia will be provided through the expansion of primary industries, such as forestry and mining". Perhaps the most thought-provoking indicator of the future potential of forestry is contained in a recent column from the business page of the Vancouver Times, which reads in part as follows:

The industry, according to reports from Victoria, is growing so quickly that a provincial government survey conducted only months ago is already obsolete.

The earlier survey indicated pulp production would almost double by 1971 to 9.3 million tons.

Now, Ray Williston, Minister of Lands and Forests, admits the estimates were far too low. He predicts 20 new mills representing an investment of more than $1 billion being constructed in the next five years.

The potential consequences of such rapid development are enormous and far reaching, and in them many hopefully seek the answers to pressing economic problems. To a country beset with problems of recurring unemployment in the face of a rapidly expanding labour force it offers the prospect of thousands of new jobs. To a national


7News item in the Vancouver Times, January 12, 1965.

8Ibid., December 9, 1965.
economy plagued by a chronic deficit in its balance of payments, it opens the prospect of increased earnings in foreign markets. To governments becoming aware of increasing pressures for costly public services in the fields of education, health and welfare it suggests new sources of tax revenues. Doubtless these are all worthy ends in themselves, and it is quite understandable that British Columbians face the future in a general spirit of buoyant optimism.

However, development by its very nature implies change; rapid and massive development implies rapid and massive change. It seems appropriate then to suggest that any community or any society faced with the prospect of such change should pause on the threshold and ask, "What is this all about?"

To imply that this question has never been raised in British Columbia would be manifestly unjust and untrue. Graphic proof of this is recorded in the latest Transactions of the British Columbia Natural Resources Conference. This conference is an annual event conducted by an independent organization representing industry, the University of British Columbia and the Provincial and Federal Governments, and is concerned with "conservation, from the viewpoint of optimum utilization, of all the natural resources of British Columbia." The latest conference was organized under the theme "What should be the objectives of our resources development", a topic to which a wide

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Transactions of the Fifteenth British Columbia Natural Resources Conference (Vancouver: the Conference, 1964) Foreword.
variety of speakers, drawn from management, labour, education, the clergy, government, engineering, the diplomatic corps and medicine, addressed themselves. That this topic could draw and hold the attention of such a diverse group on the eve of such momentous economic development is in itself significant.

One theme is clearly discernible in all the papers contributed by these conference participants, and that is that the ultimate purpose of resource development is the service of man. For example, R.R. Purcell, Chief Engineer of the British Columbia Energy Board defines natural resource development as "the art of directing the sources of power and materials in nature for the use and convenience of man". The underlying purpose of the words "use and convenience" are elaborated upon by the Reverend R.M. Goodall, of Sixth Avenue United Church in New Westminster who notes that "the purpose of resource development can be simply stated as the wealth, health and happiness of mankind". Such definitions, though they are sufficiently commendable and non-controversial as to be almost universally acceptable to the citizens of British Columbia are unfortunately somewhat too vague to be of much assistance in preparing for the future.

In his book, The Living Land, itself a product of the British

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10 Ibid., p. 20.
11 Ibid., p. 30.
Columbia Natural Resources Conference, Haig-Brown notes the inadequacy of such expressions of objectives, and offers a more complete, and more eloquent manifesto. While acknowledging universal literacy, full employment, improved public health and long term security as desirable and essential objectives he adds that while these things may alleviate unhappiness, they do not reach very far into questions of positive happiness. Happiness, he contends, can only be achieved through "self-realization". The fact that "self-realization" is itself incapable of precise definition does not detract from its usefulness as a concept in formulating objectives for resource development.

Any definition of self-realization is almost as elusive as a definition of happiness. It is one thing for the introvert, quite another for the extrovert; it may be in the self-immolation of a martyr or in the self-aggrandizement of a Napoleon. It is more likely to be in things spiritual and mental than in things physical and material. The only rule for legislators and planners is that men must be left free to search for it, so long as their freedom does not impede the search of others. Beyond this the only aids they can be given are education and upbringing, and abundant scope for search when the time comes. If a society does not direct the use of its resources to these ends, it cannot be using or serving the key resource, its people, as it should.12

The opinions offered before the conference, coming as they do from such a wide cross-section of the community, may be regarded as at least a broad indication of general provincial goals for resource development. This being the case one might logically ask how close we are coming toward fulfillment of these goals. Goodall, in his

12Haig-Brown, op.cit., p.252.
If the goal of resource development is the wealth, health and happiness of the people, we may well query whether we are doing an adequate job of resource development in this province.

As far as wealth is concerned, no doubt people are as well off here as anywhere . . . .

The problem which nags at my mind however is this; why in this most favored of provinces is the health and happiness of the people in such jeopardy? British Columbia has the highest drug addiction rate in Canada, as well as the highest rate of alcohol consumption. More and more people are being treated for mental disturbance; the illegitimacy rate is going up and up, and the divorce rate is way above the national average.¹³

Similar observations are expressed by Haig-Brown.¹⁴

If indeed the development of our ultimate resource, the people, falls somewhat short of what we would like it to be, it is to those twin factors of human determinism, heredity and environment, that we must turn to seek for answers. In a society that finds repugnant the concept of selective breeding there is little that can be done about the factor of heredity and we must, perforce, confine our concern to environment if we seek to move closer to our goals.

The question which logically follows upon the acceptance of this statement is: "To what extent does our present approach to resource development support, or conflict with the creation of that environment which will best enable us to fulfill our goals?" At first, the con-

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¹³ Natural Resources Conference, op. cit., p. 31.

nection between resource development and environment may seem a tenuous one, but noted American author and planner, Catherine Bauer, comments: "Economic development invariably forces population redistribution which in turn means radical changes in the basic pattern and structure of man-made environment". The word "environment" itself is of such broad application as to encompass the entire range of circumstances, both physical and non-physical, in which man finds himself. However, as Catherine Bauer points out, it is in the man-made environment that changes are most immediately and most noticeably brought about when economic development proceeds.

Therefore if resource development is to serve the achievement of provincial goals it must be controlled and directed in such a way as to contribute to the creation of a physical environment consistent with those goals. The control and direction of the forces which shape man-made environment is the central concern of Community and Regional Planning. John Friedmann, Associate Professor of Regional Planning at the Massachusetts Institute of Technology states: "The major problem of planning is how to bring the physical environment in which man lives under the controlling influence of the public interest."

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Having in mind the importance of the forest industry in British Columbia, the importance of resource development upon man's environment, the importance of environment in the achievement of man's ultimate goals, and the role of community and regional planning in shaping man's environment, it becomes obvious that the development of the forest industry and community and regional planning are inseparable if the public interest is to be served.

In 1945 the Government of British Columbia radically altered its forest policies, replacing the previous "liquidation" approach with one based on sustained-yield. This involved drawing up and administering a complex, comprehensive long-range policy of forest management, having among its objectives "the maintenance of forest cover and growth, thus ensuring a perpetual supply of raw material for forest industries, with consequent stability of industrial communities and assurance of permanent payrolls". 17 This forest-management policy constitutes a commitment to a form of planning as is evidenced by the following quote from the Report of the Commissioner Relating to the Forest Resources of British Columbia: "Industries have been living on an expenditure of forest capital that has taken hundreds of years to accumulate at no cost to industry. The time has now come when we have to plan to live on forest interest and maintain our capital unimpaired". 18 The above two quotations extracted from the

18 Ibid.
founding document of the government's present forest policies indicate a recognition of: (a) the interrelationship between resource development and community growth, and (b) the need for planning in resource development. However, the obvious next step, that of integrating the planning of resource development with the planning of resource-based communities does not appear to have been taken, or indeed, to have been acknowledged to exist, by the government.

In order to examine the problem of how these two important elements can be brought together, the hypothesis is advanced that to ensure optimum planning and development in those areas of British Columbia where the forest industry is the dominant economic activity, the Provincial Government should integrate the principles of Forest Management, and Community and Regional Planning into a single comprehensive policy.

In the following study this hypothesis will be tested by first examining the evolution of the forest industry in British Columbia to achieve a comprehension of all the forces which have contributed toward giving it its present form. The study will then examine all the various types of communities for which the forest industry has been responsible, or upon which it has had an impact, with a view to determining to what extent they promote or frustrate the realization of Provincial goals associated with community life. Should it be found the forest based communities fall short of achieving their maximum contribution toward the fulfillment of these goals, policies will be
proposed by which future development of the forest industry may most effectively be channelled to make this contribution.
CHAPTER II

BACKGROUND TO FORESTRY IN BRITISH COLUMBIA

I. BASIC CHARACTERISTICS

Geographic Setting

British Columbia has an area of 234 million acres, of which 118 million or roughly 60%, are classified as forest land. This immense expanse of forest is by no means uniform in nature varying greatly in species and density in response to differences in topography and rainfall. The surface of the province consists of a series of parallel mountain ranges running in a northwest-southeast direction. The most westerly of these, the Coast Range intercepts the moisture laden winds of the Pacific, and the resultant heavy rainfall gives rise to dense, luxurient forests on its seaward slopes. On the eastward slope, and through much of the central area of the province, where precipitation is greatly reduced, the forests are thinner and the trees are smaller. On the western face of the Rocky Mountains, which form the boundary between British Columbia and Alberta, tree size and density increase somewhat as moisture is deposited from the prevailing west winds. However, the cold continental climate is an inhibiting factor which prevents the forest from achieving the luxuriant characteristics of the coast. Thus the summit of the Coast Range may be seen as a boundary dividing the forests of British Columbia into two distinct areas, generally described as the "Coast Forest District"
and the "Interior Forest District".

Species

The most valuable stands of timber in British Columbia are to be found in the coast forest. Here trees in virgin stands are closely spaced, with trunks six feet or more in diameter and rising to heights of one hundred feet to the lowest limb. On the southern two-thirds of Vancouver Island, and in a corresponding belt on the mainland, the principal species is Douglas fir, comprising up to 70 per cent of the stand. This tree, because of its excellent structural characteristics, has been the most sought-after of British Columbia species, and most of the prime areas have now been logged. Western hemlock makes up a larger proportion of the species mix at higher altitudes and more northerly latitudes, and industry is falling back more and more on this wood to supplement dwindling supplies of Douglas fir. The interior forests exhibit a greater variety of species, with Engelmann spruce, yellow pine, western larch and white spruce providing the major commercial cover. Balsam fir, a species used primarily in pulp manufacture, is found to varying degrees in both coast and interior forests. Cedar, valued because its weather resistant properties make it ideally suited for use as shingles, shakes and siding, is found extensively in the northern portions of the coast district, and in the dampest pockets of the interior.

Activities of the Forest Industry

The ingenuity of man has devised many uses for the trees of
the forest. The principal ones include sawn lumber, used in a wide variety of ways primarily for construction purposes; plywood; paper and plastics made from wood-pulp; and a number of composition boards made from wood-fibres combined with chemicals. The activities involved in bringing these materials to the service of man may involve many stages, but for purposes of general analysis it has become customary in the industry to think of them in terms of two broad categories, extraction and conversion. Extraction involves the felling of trees and their transfer to a central collection point, and is most commonly called "logging". Conversion is the processing of the tree into any of the products mentioned above, and it has thus become common practice in the industry to categorize pulp-mills, sawmills, plywood mills, et cetera as "conversion plants". The further transformation of wood products into specialty papers, furniture and other such consumer items is not regarded as a part of the forest industry but rather as one of the markets for its products. Consequently, the scope of this thesis is confined to the activities of logging and conversion.

II. HISTORICAL REVIEW

Chronological Growth

Pioneer Period (up to 1886). If one ignores the occasional cutting of ships spars by itinerant fur-traders and explorers, it
can be said that the British Columbia forest industry had its origins at Victoria in the early 1850's when four mills were built with the intention of exporting lumber to the booming gold-rush towns of California. These ventures failed within a year or two, and sawmilling was not established on a permanent basis until 1858 when a mill was built on Saanich Inlet to supply the local Victoria market, which was experiencing a gold-rush boom of its own as a result of the Barkerville discoveries. By 1865 growing timber markets in China, Australia, Chile and Hawaii led to the establishment of two sawmills on Burrard Inlet, the site of the present city of Vancouver. During the next twenty years other smaller mills were established on the inlet, as well as at New Westminster and Chemainus in order to participate in this flourishing trade. By 1888 the Provincial Timber Inspector reported twenty-five sawmills in operation or under construction, with an annual production of 35 million f.b.m. British Columbia was on its way to becoming one of the principal timber exporting areas of the world, and the forest industry had established itself in the vanguard of urbanization in the province.

The Period of Expansion (1886-1914). The completion of the Canadian Pacific Railway in 1886 brought about dramatic changes in

\[19\] W.A. Carrothers, in Lower, et. al., The North American Assault on the Canadian Forest (Toronto: Ryerson Press, 1938) p.27.

Note The abbreviation f.b.m. stands for "feet, board measure", a unit of volumetric measurement one foot square and one inch thick.
the forest industry, for the subsequent wave of prairie immigrants not only created a vast increase in the demand for its products, but forced a complete re-orientation of its marketing as well. The eastward shift in markets meant that for the first time it was economically feasible to exploit the timber resources of the interior. However, the dependence upon costly land transportation for getting logs from the stump to the mill meant that interior mills had to move quite frequently when timber-stands became exhausted. At the coast, on the other hand, the availability of cheap water transportation meant that mills could stay put, reaching further and further up the coast when nearby supplies became depleted. Thus, the expansion of this period, culminating in 1910 in 261 mills with a production of 1,620 million f.b.m., led to stability and growth in established coastal communities, but contributed little to the development of permanent settlement in the interior.

Between the Wars (1914-1945). The First World War brought an end to the prairie building boom, and a drastic decline in the British Columbia forest industry. Activity almost ceased in the interior, and the coast industry was forced to re-build the transoceanic markets which had been defaulted to the American North-West. After the war a

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combination of Imperial tariff preferences, a post-war surplus of shipping tonnage, and the opening of the Panama Canal provided the British Columbia industry with lucrative markets in the United Kingdom and on the eastern seaboard of the United States. So successful was the industry in acquiring new markets that by 1929 annual production had climbed to nearly 2,500 million f.b.m., with the coast district accounting for nearly all of it. In the stock market crash of 1929, and the depression which followed, many of the smaller operators were forced out of business, leading to a period of consolidation in the ownership of timberholdings. The industry recovered fairly quickly from the depression, primarily on the strength of the large market provided in Britain by the government-subsidized housing program. The war years of 1939 to 1945 saw another period of rapid expansion in which extensive activity was resumed in the interior, with the greatest rate of growth being experienced in the hitherto little-developed north-central area around Prince George.

The Pulp and Paper Industry. The first attempt to establish a pulp and paper industry in British Columbia was made at Alberni in 1896 when a rag-paper mill was established by English capital. However, the local supply of rags proved inadequate and the company failed within two years. In 1902, in an effort to encourage the development of a pulp and paper industry, the Provincial Government

21 Carrothers, op. cit., p. 312.
enacted legislation granting rights to pulpwood timber on a generous basis to companies agreeing to establish a mill. This led to much speculation in timber holdings, but produced little genuine development, and was repealed two years later. However, some of the companies formed at this time did succeed in getting mills underway, and the first pulp was produced in British Columbia at Swanson Bay in 1909. This was followed later the same year by a mill at Port Mellon. In 1912 mills were also established at Woodfibre, Powell River and Ocean Falls, and in 1918 another went into production at Port Alice. Two other firms, the Sidney Roofing and Paper Company of Victoria, and the New Westminster Paper Mill of New Westminster were established in 1918 and 1925 respectively. These were specialized firms purchasing pulp from the established mills and converting it to such products as roofing paper in the Sidney mill and tissue paper and napkins in the New Westminster one. All these mills, with the possible exception of the latter two, had a turbulent early history of managerial problems and technical difficulties, resulting in occasional periods of inactivity and frequent changes of ownership. However, except for the Swanson Bay Mill, which was abandoned in 1923, all remain active to this day, and provided the foundation for an industry which was to grow to a position of considerable importance in the British Columbia economy in the post-war era.

**The Post War Period (1945-1964).** In the post-war years the forest industry experienced another period of rapid growth, with
total annual cut rising from 3,096 million f.b.m. in 1945 to over 8,000 million f.b.m. in 1963.\textsuperscript{22} One of the most significant characteristics of this period was a shift in markets which saw the British share of export trade decline from a 1945 figure of 45 per cent to a 1950 figure of 8 per cent while the United States share rose from 26 per cent to 84 per cent.\textsuperscript{23} This market shift meant that once again the interior was able to participate in a period of growth, with its share of total production rising from 19 per cent in 1945 to 44.7 per cent in 1963.\textsuperscript{24} However, the coast and the interior each developed in an entirely different way during this period. At the coast a trend toward centralization of ownership which had begun during the depression continued at an accelerated pace for the following reasons:

1. Economic difficulties during the depression forced many of the smaller operators to sell to the more successful ones, who were anxious to expand and consolidate their timber holdings in the face of impending shortages. Newcomers after the war had to content themselves with less profitable and less accessible stands of timber.

2. The larger logs and more rugged terrain of the coast demanded


\textsuperscript{23}Lawrence, \textit{op. cit.}, p. 149.

\textsuperscript{24}B.C. Forest Service, \textit{op. cit.}, p.1.
heavier equipment than was required in the interior, necessitating initial capital investments beyond the reach of many entrepreneurs.

3. Once an operation reached a certain minimum size, it became possible to practise economies of scale through integrated utilization, making the smaller operations increasingly uneconomic.

By 1961, as a result of this process of consolidation, seven large firms accounted for over 95 per cent of the total allowable annual cut from tree farm licenses in the coast forest district. Development in the interior, on the other hand, became characterized by a large number of small independent operators, with no fewer than 2,435 sawmills being accounted for in 1959. During this period, growth in pulp and paper production kept pace with that of the industry as a whole. New mills were built at Port Alberni, Nanaimo, Prince Rupert, Crofton and Duncan Bay in the coast district, and the interior received its first mill at Castlegar on the Arrow Lakes in 1961, giving British Columbia a total of thirteen mills.

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25 For explanation of this term see page 42

26 For explanation of these terms see page 30

THE FOREST INDUSTRY AS A DETERMINANT OF SETTLEMENT IN BRITISH COLUMBIA: THE CASE FOR INTEGRATION THROUGH REGIONAL PLANNING

Masters Degree Thesis in Community & Regional Planning
University of British Columbia

J. F. Gilmour
April 1965
Technological Change

Pioneer Period (up to 1886). The highly mechanized forest operations of to-day bear little resemblance to their primitive predecessors of little more than a century ago. In its early days, the only form of power available to the forest industry was that provided by falling water, animals and man. Sawmills were located where streams emptied into sheltered coastal bays, providing them with a source of power and waterborne access for their log supply. Trees were felled by hand-tools, dragged to the water’s edge by multi-yoked teams of horses or oxen over skid-roads made of greased logs laid across the path of travel, and towed to the mill behind whaleboats rowed by crews of men. The only significant technological advance to emerge during this period was the introduction of steam power in the sawmills. This freed the mills from their dependence upon river-mouth locations, and made possible the establishment of the many mills built in the Burrard Inlet and New Westminster areas during the 1870’s and 1880’s.

The Age of Steam (1886-1940). With the growth of markets which accompanied the completion of the railroad, the logger sought more efficient means of getting his logs to the mill, and found his answer in the steam engine. Stationary engines, called “donkeys” were first used at the waterfront end of the skid-road to drag logs for distances of up to a mile by means of steel cables. These were
soon replaced by steel-wheeled engines on rails spiked to the skid-road, which dragged the logs behind them. About 1904 steel-wheeled flat-cars began to be used to carry the logs behind the engine, and the romantic age of railroad logging was ushered in.\textsuperscript{28} The next step in the evolution of logging occurred about 1915, when the "high-lead" technique was developed to bring the log from the stump to the rail-side. This involved the use of a steam donkey to drag or "yard" trees to the rail by means of a steel cable passed through a pulley on top of a tall spar tree. This had the advantage of raising the front end of the log clear of the ground as it was dragged along but proved to be an extremely devastating method which flattened all the immature growth and unwanted species in the process, leaving them to rot or burn. A further area of development during this period was that of the water-borne transport of logs. Primitive paddle-wheeled steamers began to appear in the late 1860's, and by the turn of the century purpose built steam-powered tugs of up to one hundred feet in length, with five hundred horsepower engines, were in common use. They towed logs either in flat booms of up to six acres in extent, or, where rough open water was encountered, in "Davis" rafts.\textsuperscript{29} These towing

\textsuperscript{28}R.B. Swanson, \textit{A History of Railroad Logging}, (Victoria: Queen's Printer, 1960) p.4.

\textsuperscript{29}"The Davis raft was an iceberg-like mass of logs. Logs were piled on a mat woven of cables and tied together with circumferential lashings. By staggering the butts of adjacent logs within the bundle some degree of longitudinal stiffness was obtained. . . . Many rafts were 500 to 800 feet in length, 50 to 80 feet wide, drew 20 to 40 feet of water, and rose 10 to 20 feet above the water surface." Hardwick, \textit{op. cit.}, p. 35.
techniques, combined with the sheltered waters of Georgia Straits, were a powerful factor in the development of areal concentration and community stability in the coast forest district. The age of steam lasted until about 1940, when the depletion of the lowlands and valley floors made it necessary to begin logging the hillsides which were beyond the reach of railways.

The Modern Era. The present-day forest industry employs a wide variety of techniques most of which are based on the diesel engine for power. Huge rubber tired trucks negotiate steep but well-engineered logging roads to bring logs down from the hillsides to the mill, booming-ground, or main-line railroad. Portable steel spars and other improved techniques reduce damage caused by high-lead yarding. In thinner stands, particularly in the interior, diesel crawler-tractors are sometimes used to pull logs out behind rubber-tired high lift arches. Portable diesel cranes are used to load logs on trucks and rail-cars, and dry-land log sorting with fork-lift trucks has appeared in some places to supersede the traditional method of sorting and storing in floating booming grounds. Huge self-dumping log-barges have made it possible for coast conversion plants to reach beyond large stretches of open water to tap more remote timber-stands. All of these factors have contributed to greater flexibility within the industry, making site-selection for future conversion plants less dependent upon proximity to timber stands, and more dependent on factors such as the economics of transportation; and proximity to
market facilities, power and water supply, and labour force.

**Forms of Tenure**

**Introduction.** At first glance the system of forest tenure prevailing in British Columbia presents a bewildering picture, with no fewer than nineteen distinct forms of tenure in force at the present time. However, if viewed chronologically in the light of policy revisions enacted by successive governments in response to changing provincial needs, a logical pattern begins to emerge. Basically tenurial changes have been the result of a gradual step-by-step process in which the government has become increasingly aware of the value of the forests, and the importance of developing them as a perpetual renewable resource. However, the replacement of one tenurial policy by another did not have the effect of obliterating the earlier form of tenure since the government continued to honor agreements made prior to the policy change. Commendable though this may have been in terms of equity or justice, it complicated matters considerably in that any new policy not only had to be an improvement upon the old in terms of the public interest, but also had to avoid, so far as possible, putting the holders of the new forms of tenure at a competitive disadvantage with those still able to operate under the old rules. As a result of this evolutionary process there now exist nineteen separate forms of tenure.

At the time of the first white settlement of what is now the
Province of British Columbia, all land was deemed to belong to the Crown, in the right of the Colonial Administration. With the entry of British Columbia into Confederation in 1871, this right passed to the Provincial Government. For these early administrations land was the only asset from which they could derive revenue, so it was sold, or made available through pre-emption, with little or no regard for the ultimate value of its resource potential. Land obtained in either of these ways was referred to as "Crown Grant Land", and was said to have been "permanently alienated".

By 1865 the Colonial Administration began to recognize that the trees of the forest were a potential asset in themselves separate and distinct from the land which grew them. With the Land Ordinance of that year there was introduced for the first time the principle of granting the right to cut timber on Crown Land without permanently alienating the land itself. This was not inspired by any conscious effort to promote the long-term public interest through retention of the freehold by the Crown, but was rather an effort to encourage the development of a forest industry at a time when very few inhabitants could afford to buy Crown land even at the prevailing low price of one dollar per acre. Nonetheless these "timber leases" as they were

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30° a proclamation of 1859 by the Governor of the Colony of British Columbia recited that 'unless otherwise specially announced at the time of the sale the conveyance of the land shall include all trees'..." from Sloan, op. cit., p. 19.
called were the first important step toward the development of current forest policy—"the retention by the Crown of title to forest land, and the granting of cutting rights thereon by various forms of license." All such rights to timber on Crown Land have come to be called "temporary alienations".

In addition to the permanent and temporary alienations, there is another category of forest land which cannot properly be described as tenure. These are lands retained by the Crown, and managed by the British Columbia Forest Service.

**Permanent Alienations.** As was noted above, early administrations permitted the outright sale of forest land. This practice was continued until 1896 when the Land Act was revised to prohibit the sale of "timber land", defined as land containing 8,000 f.b.m. per acre on the coast and 5,000 f.b.m. per acre in the interior. The revised Act had two fundamental weaknesses, however. Land surveys, up until 1912, were carried out solely by private surveyors, who were not foresters or lumbermen, and who often underestimated the amount of standing timber per acre. Furthermore, prime land bearing immature stands might not contain sufficient timber at the time of purchase to qualify as "timber land", yet might well do so in future years. As a result, a great deal of "timber land" continued to pass into private hands after 1896. The first problem, that of

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31Sloan, op. cit., p. 17.
improper surveys, was corrected in 1912 with the provision that the newly established Forest Service examine all applications for purchase. The second problem was not solved until 1947, when legislation was passed defining timber land as "land that in the opinion of the Minister (of Lands and Forests) will find its best economic use under forest crop." One source of permanent alienation still remains available to the forest industry, in the lands known as the "E. and N. Land Grant". This is an area of some 3,000 square miles of choice forest land on Vancouver Island, granted to the Esquimalt and Nanaimo Railway, now a Canadian Pacific Railway subsidiary, as part of the terms of Confederation. Because the grant pre-dates any Provincial forest legislation, land here may still be bought and logged free from all government regulations except taxation. Permanently alienated land accounts for approximately 6 per cent of the total area of productive forest land in the province, yet in 1963 yielded nearly 18 per cent of the total cut for that year. Clearly, though this form of tenure was officially discontinued in 1896, it still exerts a sizeable influence in British Columbia's forest economy.

Temporary Alienations. A total of twelve distinct forms of temporary alienation have evolved over the years. The earliest of

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32 Ibid., p. 20.

33 British Columbia Forest Service, op. cit., p. 83.
these, known as leases, date back to 1865, and were granted for renewable terms of twenty-one years to bona-fide operators of conversion plants. The leaseholder agreed to pay the government a royalty on all timber cut, at a rate determined at the time of the granting or renewing of the lease. Leases were of two kinds, "timber" and "pulp", with royalties on pulp leases being lower since they applied to timber of a quality or size which made it less valuable than saw-timber. The leasing system was finally discontinued in 1905, since it meant that timber was being sold for twenty-one years ahead at low prevailing rates, thus denying the government the opportunity of participating in the benefits to be derived from any increase in price. However, many leases remain in good standing to this day, and in 1963 accounted for two and one-half per cent of the total cut. \(^{34}\)

The policy of licensing began in 1884 and ran concurrently with the leasing policy until the termination of the latter in 1905. Licenses differed from leases in two fundamental ways: they were granted for a shorter term, originally four years but later reduced to one year, and they did not require their holder to be a conversion-plant operator. Licensing was introduced to further encourage the growth of the forest industry, and with it the growth of Provincial revenues, by enabling people of limited capital resources to cut logs and sell them on the open log market. In 1905, by making licenses

\(^{34}\)Ibid.
renewable for twenty-one year periods and by making them transferable among licensees, the government unleashed a flood of speculative acquisition of timber land in which 15,000 square miles of land were taken up, and thirteen million dollars of revenue were yielded to the treasury, in a period of seven years. However, under the licensing system, timber land reverted to the Crown when logged, so operators had no permanent interest in the land and no incentive to practise measures of conservation. "They were transients, consuming the forests as they went along." The shortcomings of this policy were finally noted in the 1945 Royal Commission into the Forest Resources of British Columbia, and licensing was discontinued in 1947. A number of licenses still remain in force, and in 1963 accounted for twelve and one-half per cent of the total cut.

"Timber Berths" were another form of temporary alienations. These were a form of license, granted by the Federal Government from timber lands held by them in the twenty mile wide belt of land each side of the Canadian Pacific Railway as part of the terms of Confederation. This "Railway Belt" was returned to provincial administration in 1930, and since then the timber berths have been subject to regulations similar to those governing licenses. Timber berths accounted for approximately two per cent of the 1963 cut.

"Timber Sales" are the most important single contributor to the total annual cut, accounting in 1963 for nearly fifty per cent.

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35 Sloan, op. cit., p. 39.
These are basically contracts let by the Provincial Forest Service for the cutting of timber on Crown Land, and are usually awarded through competitive bidding. The duration of the contract is written in to the conditions at the time of the sale, and may vary anywhere from one to ten years. The technique of the timber sale originated in 1912, and assumed its current prominent position in 1947 after the 1945 Royal Commission recommended their wide-spread adoption.

"Tree Farm Licenses", formerly called "Forest Management Licenses" are the second most important form of temporary alienation accounting in 1963 for fourteen per cent of the total cut. They were conceived in 1945 by the late Chief Justice Gordon McG. Sloan as a means of inducing the large private holders of timber rights to place their operations under a government supervised program of sustained yield.36 In most cases, large though these private holdings were, they were not of sufficient size to make it economically feasible for the operators to undertake procedures which involved reducing their annual cut to match the annual increment of growth while, at the same time, assuming such additional burdens as silviculture, reforestation and fire protection. The forest management license allocates to the licensee a sufficient area of adjacent Crown land to make his total holdings large enough to overcome this limitation. In return the licensee agrees to manage both his own land and the Crown land according to a government approved plan of sustained

36 For explanation of term see page 39
yield. Failure to live up to the agreement could lead to forfeiture of the license. Originally licenses were granted in perpetuity, but revised legislation now calls for renewal on a twenty-one year basis.

The newest form of tenure to have been created is the "Pulpwood Harvesting Area". These are large areas of Crown land upon which there exists sufficient pulpwood to support a pulpmill. This pulpwood is timber below the standard of utilization required for sawmilling purposes. Thus, within a pulpwood harvesting area there may exist simultaneously several "Timber Sales" as described above, with two completely independent sets of operators at work; one removing pulpwood, the other removing saw-timber. The Pulpwood Harvesting Area was designed to meet the special conditions prevailing in the interior, by making it possible for pulpmills to become established while preserving the existing pattern of small-scale operators in logging and sawmilling activities. This tenure as yet has made no contribution to the total annual cut since no mills based upon it have been completed. However, it is in this area of activity that there exists the greatest potential for expansion in the forest industry within the foreseeable future.

In addition to the alienations described above, there exist a number of minor types including "Hand Logger's Licenses", Farm Wood Lot Licenses", "Christmas Tree Permits" and "Salvage Permits". These account for little better than one per cent of the annual cut.
III. GOVERNMENTAL ORGANIZATION

Legislative Background

Introduction. The administration of the forest resources of British Columbia is the responsibility of the Provincial Department of Lands, Forests and Water Resources, acting under the authority of the "Forest Act", Chapter 153, Revised Statutes of British Columbia, 1960. The Act, in its present form, was drawn up in 1947, following the recommendations handed down the previous year in the report of the Sloan Royal Commission.

The Sloan Royal Commission. In 1945 the Provincial Government appointed the late Chief Justice Gordon McG. Sloan a one man Royal Commission to inquire into the Forest Resources of British Columbia. Public hearings were held in several British Columbia cities during 1946, at which submissions were presented by representatives of industry, government and labour, as well as by interested individuals. After evaluating all these submissions, Chief Justice Sloan recommended the adoption of policies having as their ultimate objectives the placing of the entire forest lands of British Columbia under a system of sustained yield which would treat the forests as a crop to be harvested at a rate not to exceed that at which it could be regenerated. It was as a result of the 1946 report that the "Tree Farm Licenses" and "Timber Sales" described above came to be adopted. A further recommendation of the report was that a second Royal Commission be held
in ten years time to evaluate the progress made during the intervening period. This was done, with Chief Justice Sloan again appointed to conduct the enquiry. The report handed down in 1956 basically approved of the measures implemented by the government, with recommendations being confined to ways of making them work more efficiently. It is noted that in the introduction to the 1956 report, there appears a list of thirteen specific matters to be inquired into, number six of which is "the utilization of the forest crop and its relationship to employment and social conditions". However the report itself contains no direct references to social conditions, an omission which typifies the traditional lack of co-ordination between community development and the forest industry which prevails to this day. Nonetheless, the Sloan Royal Commission Reports emerge as two of the most significant documents with respect to community development in British Columbia, since they ensured the perpetuation of the forest resource without which viable forest-based communities could not be established or maintained.

British Columbia Forest Service

Introduction. The branch of government responsible for administering forest policy is the British Columbia Forest Service, established in 1912. Of the Service, Sloan states, "The Forest Service is charged with the grave responsibility of administering the Policy of the Government and the relevant forestry laws relating to our most
important natural resource. It is a heavier administrative burden than that borne by any other department of government in the province.\footnote{37}

As a consequence of the long-continued policy of retaining ownership of the forest in the name of the Crown, the Forest Service is, in effect, "in business"; and in the largest business in the province, at that.

\textbf{Administrative Structure.} The senior administrative officer is the "Deputy Minister of Forests, and serving directly under him is the Chief Forester. In the past it has been a common practice to assign both these positions to one man, but the Sloan Commission noted that this was too big a burden to be borne by a single individual. Within the administrative structure there are two broad divisions, the central office administration in Victoria, and the field administration, operating from five divisional headquarters.

\textbf{Central Administration.} The central administration is divided into three branches which are further subdivided into a number of divisions, each charged with responsibility for administering one particular function within the overall administrative program. Briefly these may be summarized as follows:

1. \textit{Staff Branch}--serves directly under the Chief Forester.
   
   (a) Forest Council--responsible for all legal matters.
   
   (b) Accounting Division.

\footnote{37}{Sloan, \textit{op. cit.}, p. 544.}
(c) Personnel Division.
(d) Public Information Division.

2. Technical Planning Branch—serves under one of two Assistant Chief Foresters.
   (a) Surveys and Inventory Division.
   (b) Research Division.
   (c) Reforestation Division.
   (d) Working Plans Division—Schedules the harvesting of Crown Forests and approves scheduling of "Tree Farm License" harvesting.
   (e) Parks and Recreation Division.

3. Operations Branch—serves under the other Assistant Chief Forester.
   (a) Management Division—administers all harvesting after approval is obtained from "Working Plans Division".
   (b) Grazing Division—administers use of grazing land falling within Crown forests.
   (c) Engineering Division—designs and constructs roads, maintains all equipment.
   (d) Protection Division—in charge of fire prevention, detection and suppression.

Field Administration. Field Administration is divided into five forest districts which, in total, embrace the entire province. Each is under the supervision of a district forester and an assistant
district forester. The five forest districts are further subdivided into a large number of ranger districts under the administration of a forest ranger. Table I indicates the relative size of these forest districts.

TABLE I

FOREST DISTRICTS OF BRITISH COLUMBIA (1963)

<table>
<thead>
<tr>
<th>Name of District</th>
<th>Area Sq. Miles</th>
<th>Volume of Timber Removed-1963 (f.b.m.)</th>
<th>No. of Ranger Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancouver</td>
<td>34,406</td>
<td>4,246,691,460</td>
<td>26</td>
</tr>
<tr>
<td>Prince Rupert</td>
<td>108,053</td>
<td>1,035,009,162</td>
<td>14</td>
</tr>
<tr>
<td>Prince George</td>
<td>137,922</td>
<td>1,079,231,863</td>
<td>17</td>
</tr>
<tr>
<td>Kamloops</td>
<td>53,509</td>
<td>1,466,537,891</td>
<td>24</td>
</tr>
<tr>
<td>Nelson</td>
<td>30,687</td>
<td>848,361,446</td>
<td>22</td>
</tr>
</tbody>
</table>

Sources: Sloan Royal Commission Report (1956)  
B.C. Forest Service Annual Report (1963)

**Evaluation of Administrative Structure.** The structure of the Forest Service provides a two dimensional framework for administration with a strong central authority in Victoria responsible for making basic policy decisions, and a widespread field organization responsible for carrying out policy and for feeding back to the central authority a constant appraisal of the policy's effectiveness. Sloan noted that the administration could be improved by allowing the District Rangers more power in decision-making, and by having a greater number of smaller districts, ten being put forward as a tentative
THE FOREST INDUSTRY AS A DETERMINANT OF SETTLEMENT IN BRITISH COLUMBIA: THE CASE FOR INTEGRATION THROUGH REGIONAL PLANNING

J. F. GILMOUR

APRIL 1965
suggestion. This would make for speedier decision-making in managerial, as opposed to policy matters by people in the best position to judge the facts. With these suggestions the then Chief Forester agreed, citing manpower shortage as the only obstacle to implementation.

Classification of Crown Forest

Introduction. Approximately 110 million acres of forest land in British Columbia is held by the Crown. Of this, somewhat less than 20 million acres are still unsurveyed and inaccessible, while over 90 million acres, representing two-thirds of the total forest land in the province, are in productive use to varying degrees of intensity, under the management of the British Columbia Forest Service. This vast territory is divided into eighty-two areas known as "Public Sustained Yield Units" in which logging is carried out by private operators holding licenses obtained through the "timber-sale" form of tenure described previously. The forest Service is responsible for determining the allowable annual cut, awarding cutting licenses, constructing main access roads, and managing reforestation and fire protection, with the operators being responsible for building the branch roads linking their cutting areas to the main road.

38 Sloan, op. cit., p. 551.
**Geographical Characteristics.** Public Sustained Yield Units vary in size from 4,090,000 to 81,000 acres, with the average size being about 1,360,000 acres. In determining the boundaries for these units several factors were taken into consideration, including pre-existing patterns of logging operations, ranger district boundaries, and watersheds. Wherever possible, boundaries were arranged so that existing communities were at, or near, the centres of the units. Size was dictated mainly by the need to create units large enough to provide an annual cut sufficient to support established operators without exceeding the annual increment of growth. Public Sustained Yield Units are also the basic areal unit upon which Pulpwood Harvesting Areas are based. For example, Pulpwood Harvesting Area No.1 is made up of nine Public Sustained Yield Units around Prince George, and Area No.2 is made up of thirteen Units around Kamloops.

**Allocation of Licenses.** In the majority of cases, Public Sustained Yield Units were created long after the establishment of logging operations within the area concerned. Consequently the government had to try to respect the legitimate needs of these operators for an assured supply of timber sufficient to meet their annual costs of capital and labour. At the same time, however, it had to implement its policy of sustained yield by limiting the annual cut to match the annual increment of growth. The technique

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adopted was that of allocating to each operator an "assigned commitment" which was approximately equal to the volume he had been removing each year prior to the establishment of the Public Sustained Yield Unit. This meant that each unit had to be drawn up large enough that its annual increment of growth would at least equal the sum total of its assigned commitments. The operators, known as "established licensees" were allowed a new timber sale only when required to replace what had been cut under the previous sale. When a licensee is nearing the end of the term of his previous sale, he applies to the Forest Service to have an additional stand of timber made available. The stand is auctioned, and anyone can bid. However, if the Unit is fully committed, that is, if the sum total of "assigned commitments" equals the allowable annual cut, then bidding is by sealed tender and the applicant is given the right to meet the highest bid after the tenders are open. If he fails to do this he loses his assigned commitment, ceases to be an established licensee, and, to all intents and purposes, is out of business.

IV. PRINCIPLES OF FOREST MANAGEMENT

Sustained Yield

Sustained yield is the cornerstone of present government policy in British Columbia. Basically it involves balancing the annual forest cut accurately against the annual regrowth or "increment". However, this is by no means a simple matter. If community
and regional stability are sought as objectives then cut must balance regrowth not merely on a province-wide basis, but by locality and species as well. A vital first step in implementing a policy of sustained yield is the preparation of a complete inventory of all the standing stock of timber in the province, region by region, to determine volume, species mix, annual growth rate, et cetera. Since the standing stock of timber is constantly changing under the influence of growth, regeneration, logging, fire and insect ravage, and decay, a forest inventory becomes out of date very quickly. In response to this the province, in 1957, opened a "Continuous Forest Inventory", a large and complex document nearly five inches thick which is kept up to date through constant field work and revision.

Perhaps the most difficult, and most important decision to be made with respect to sustained yield is determining the optimum "rotation period", which means simply the age at which the timber crop is to be harvested. Obviously, if a tree grows rapidly for a hundred years, but only very slowly for the next two or three hundred years it is economically wiser to harvest a series of hundred year crops than to wait for the trees to mature. In fact, Haig-Brown points out that "immature forests have a growth rate nearly twenty-four times as fast as mature forests, and in mature forests the annual loss through decay is greater than the annual growth... timber on the verge of over-maturity and decadence is timber in very
poor storage". Optimum rotation time varies greatly with species, growing environment and the purpose to which the timber is to be put. Saw-timber and plywood from Coast Douglas Fir requires a rotation period of at least ninety years, hemlock for pulpwood purposes a period of about sixty years, and for some yellow pine-larch forests in the interior, a fifty-year cycle has been found suitable.

In the natural forest, species and age-classes tend to be mingled. Consequently, if "clear-cut" logging is employed, in which all trees in a given stand are removed at once, then much potential increment is lost through the wasteful destruction of immature growth. On the other hand if "selective" logging is employed, in which only the mature trees are removed, costs of operation are very much higher, and the inefficient mixture of age-classes is perpetuated as new growth takes root among the trees left standing. Generally it has been found that the "clear-cut" method is more advantageous in the long run, since, in addition to being a cheaper method of logging, it allows entire stands to be restocked by growth in a single age-class so that future operations can be "clear-cut" with virtually no waste. To quote Sloan, "It is a paradox that no irregularly stocked forest can be organized for sustained yield without sacrifice of immediate yield".

When a forest has been fully converted to sustained yield it

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40 Haig-Brown, op. cit., p. 63 and 75.
41 Sloan, op. cit., p. 231.
42 Ibid., p. 226.
is as different from the unregulated forests found in nature as is a modern dairy cow from the pre-historic animal first domesticated by man: a highly productive, highly specialized resource re-shaped by man to suit his own purposes. Haig-Brown notes that "if all the land were producing as it should (i.e. under sustained yield), if every forest area were accessible, and if all the different types of forest that make up the resource could be economically worked, the safe annual cut would be three billion cubic feet, approximately three times the present yield". However, most authorities agree that it will take at least a century to achieve these conditions.

Barring some as yet unknown technological revolution which might render wood products redundant, the government policy of sustained yield holds for British Columbia the promise of permanent forest communities instead of temporary camps and ghost towns, and the further promise of long-term economic growth and prosperity.

Utilization

As indicated previously the productivity of British Columbia's forests may be expected to increase by as much as threefold over the next century. However, the rapid expansion of the industry during the post-war years, from a 1944 annual cut of three billion f.b.m. to a 1963 figure of eight billion, plus the billion dollar, twenty-pulp-mill expansion predicted for the next five years, might seem

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43 Haig-Brown, op. cit., p. 73.
to indicate that consumption of the forest is going to outstrip the increased productivity to a dangerous degree. That this expansion can be accommodated without depleting the forest is explained by the term "utilization". Through most of its history the British Columbia forest industry has been primarily a saw-log industry concerned almost exclusively with producing lumber for construction purposes. As a result, timber considered unsuitable for sawmilling due to species, defects, or insufficient size was left in the woods to rot. Thus, as late as 1958 Haig-Brown was able to state that "one tree in five of a mature forest, and two trees in five of a young forest are lost".  

Utilization involves putting all available wood, including that which was formerly waste, to its best possible use. Modern utilization methods include selecting the very best logs as "peelers" for manufacture into plywood, using "average" logs for sawmilling into lumber, and converting undersized and defective logs into pulp-wood. In addition, the installation of chipping machines at sawmill sites has made it possible to convert sawmill residue into chips for sale to pulp-mills, instead of simply burning it. Some indication of what this can mean to the industry may be deduced from the statement of one large sawmill operator who formerly realized an $8,000 annual return from waste-slabs by selling them to the urban wood-fuel market and now claims to receive $200,000 per annum from the same volume of slabs by chipping them and selling them to the nearest

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Haig-Brown, op. cit., p. 65.
pulp mill. 45

In the coast forest industry, full utilization is practised by the large integrated companies who maintain logging operations, sawmills, plywood plants and pulp-mills all within one corporate structure. In the interior, on the other hand, the predominance of small sawmills and the absence of pulp-mills has meant that the annual cut is far from fully utilized. It is in the interior that most of the predicated future pulp expansion is to take place, and the result will be not ruinous over-consumption of the forest resource, but rather its more efficient utilization. Market linkages, as opposed to corporate linkages, will become established between the existing sawmills and the new pulp-mills to facilitate the exchange of materials.

Multiple Use

Resource uses frequently conflict with one another, making planning and co-operation necessary if these conflicts are to be resolved. In British Columbia, where forests cover such a large percentage of the total surface area, the potentialities for conflict between the forest industry and other resource-users are plentiful. To cope with these a number of priorities have been established in which forestry must give way to the requirements of other activities.

For example, seven million acres have been declared "protection forest", in which logging is restricted or prohibited for purposes of water-storage and erosion control. Mining is allowed priority over forest land, but only for very limited areas adjacent to the actual workings. Water-storage behind dams is granted priority, with the forthcoming projects on the Peace and Columbia Rivers expected to remove nearly a million acres from productive forest use.

The most controversial aspect of the concept of multiple use concerns access to the forest by the public for purposes of hunting, fishing and general recreation. Those in favour of public access point out that forest land can produce a hundred crops of wildlife or a hundred years of recreation while it is producing one crop of trees. Those opposed base their arguments on increased fire hazard, danger to the public from logging activities, and opportunities for vandalism to unsupervised idle logging machinery. The compromise solution applied throughout most of the province to-day is the closure of roads to the public only during working hours. Where roads are privately owned there is a further restriction that permits must be obtained from the owner before venturing on to the roads during evenings and weekends. In spite of these onerous restrictions logging roads have become vital parts of the provincial transportation system, providing in many cases the only means of overland access to the more remote settled areas.
V. CHAPTER SUMMARY

The geography of British Columbia has endowed the province with 118 million acres of coniferous forest covering sixty percent of its total area. Man began to exploit this forest for his own purposes about 1850, and from humble beginnings the British Columbia forest industry has grown to become the province's most important economic activity, cutting over eight billion board feet of timber in 1963 with a value of $850,000,000 and supporting, either directly or indirectly, over half the provincial labor force.

The growth of the forest industry has had a profound influence upon the settlement pattern of British Columbia. Throughout most of its development the industry has concentrated in the southwest corner of the province where dense forests and convenient water access have encouraged the establishment of conversion plants such as large saw-mills, pulp-mills and plywood plants.

Two major items of government policy have been of the utmost importance in shaping the present pattern of the industry, and in determining its course for the future. The first of these, enunciated in 1896, is the retention by the Crown, in the right of the province, of title to all land deemed to have as its highest and best use the growing of forest crops. The second, adopted in 1946, is the commitment of the provincial government to a continuous endeavour to place all the forest land in the province under sustained yield. The first
policy has permitted the dedication of nearly ninety percent of the province's forest land to the service of its citizens under the trusteeship of the provincial government. The second policy has assured forestry a permanent role in the provincial economy and has transformed the industry from one characterized by short-term expediency and instability to one dedicated to stability and long term growth.

Both these policies were motivated by a genuine concern for the long-term public interest, yet the implications which they hold for the spatial distribution of the industry and its effects upon human environment have not as yet been explored.
CHAPTER III

CHARACTERISTICS OF THE FOREST INDUSTRY

1. TYPES OF OPERATION

Extraction

**Introduction.** The removal of trees from the forests for commercial purposes is a complex, multi-staged operation involving a balance of economic, engineering, and manual skills, modified by the demands of geography and government policy. Because of the great variations of terrain and forest type to be found in British Columbia it is virtually impossible to define as "typical" any one combination of labor and capital to be found in the extraction process. However, certain broad characteristics are common to each stage of the process.

**Working Plan.** All forest operations must begin with a basic management plan including objectives, cutting method, allowable annual cut, development of the forest, reforestation, access, fire protection and provisions for review, research and annual report. These plans are mandatory for all Tree Farm Licenses, Pulpwood Har-

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vesting Areas and Public Sustained Yield Units, and must be approved by the British Columbia Forest Service before the granting of a license. Based upon these plans, the operator then makes more detailed year-by-year plans to guide his short-term operations. The first step in this planning procedure is to estimate the likely market requirements for species, size, and volume during the forthcoming cutting season. Then, with the assistance of aerial photographs and maps showing tree size, species and topography, foresters and forest engineers draw up the actual settings to be logged. These are then marked out on the ground, with adjustments being made where the limitations of equipment and unexpected geographical irregularities may dictate.

**Logging Areas.** Logging practices vary not only with terrain but also from company to company, reflecting differences of opinion on matters such as reforestation and capital utilization. However, the most common technique in use today appears to be that of "patch" logging in which areas of about 300 acres in extent are clear-cut, leaving extensive stands of surrounding timber from which the patch will be naturally re-seeded. This standing timber will not be logged until the cut patches have been satisfactorily restocked.

**The Extraction Process.** The steps in the extraction process consist of felling, bucking, yarding, decking, loading, hauling, sorting and shipping. Felling is the actual process of cutting down the
trees, and bucking consists of removing all branches, and cutting the log into lengths suitable for handling or as specified by the conversion plant for which they are destined. Yarding is the removal of the log from where it was felled, to a point where it is stacked or "decked" for loading. The most common form of yarding is the diesel-powered "high-lead" technique described previously, although in thinner stands a mechanized "arch" may be driven directly up to the fallen log in order to drag it to the roadside. The most commonly used high-lead equipment consists of a portable spar with an optimum reach of about 600 feet. "Decking" is simply the piling of logs at or near the base of the spar, from where they are subsequently loaded on to flat-bed diesel trucks by means of cranes. Hauling is almost invariably done by truck, although there is still one operation in British Columbia, that of Canadian Forest Products in the Nimpkish Valley of Vancouver Island, which uses rail in addition to truck. At the end of the haul the logs are dumped at a central sorting area, which is usually a lake, river or sheltered bay of the sea. Here they are sorted according to quality and species, either manually or by means of tiny but powerful boom-boats. At some of the smaller scale operations in the interior, hauling may terminate directly at a sawmill site, where the logs are dumped into a small mill-pond for sorting. After sorting the logs are assembled into rafts or loaded on to rail cars or barges for transport to the conversion plant.
Corporate Forms of Logging. Logging is conducted by three different forms of operators, the independent logger, the contract logger and the integrated firm. The independent logger is virtually non-existent in the interior, and his numbers are diminishing on the coast as well. The independent loggers are estimated to require approximately $20,000 to $30,000 of capital investment for each million f.b.m. produced. Since most operations produce three million f.b.m. or more, the typical independent is capitalized at perhaps $100,000, indicating that he is by no means a "small" businessman in the same sense that the word may be used in other fields of economic activity.\(^47\) The independent cuts logs from small license-areas and sells them on the open log market through brokers. It is estimated that there are approximately three hundred independent loggers producing some 250 million f.b.m., or approximately three percent of the total cut.\(^48\)

Contract loggers are firms whose production is promised, by first-refusal at market or some other form of contract, to sawmills or pulp-mills. They do not have any timber holdings of their own, but cut their customers timber instead. One of the terms of Tree Farm Licenses is that thirty percent of the cut be made available to contract loggers. It is estimated that there are approximately

\(^{47}\)Deutsch, op. cit., p. 21.

\(^{48}\)Ibid.
1,000 firms in this category.

The majority of logging to-day is carried out by crews employed by the owners of conversion plants. As the process of consolidation and utilization proceeds, capital investment in conversion plants becomes increasingly greater, to the point where no operator dares to risk the loss of his supply of logs. To assure their source of supply, plant operators bid against logging operators for timber and, being content to show a profit only on their milling operations, are able to submit higher tenders, thus gradually squeezing the independent logger out of the picture.

Conversion

Sawmills. Sawmills have traditionally been the backbone of the forest industry in British Columbia, consistently employing more workers, and contributing a greater proportion of the total "value added", than any other branch of the industry. The growth and importance of sawmilling is directly attributable to a government policy first enacted in 1901 prohibiting the export of non-manufactured timber except by special permits. This was the first, and undoubtedly the most important policy enacted in British Columbia to encourage the establishment of industrial activity within the province.

Sawmills exist in British Columbia in great profusion and in a wide variety of sizes, from portable two or three man operations to giant complexes employing as many as one thousand workers. Generally,
coast mills tend to be larger than interior mills, it having been noted in the Sloan Commission Report that the average number of workers employed by sawmills in the interior was nine or ten, while along the coast the average was sixty.

About two thirds of the larger mills are concentrated in the southwest coastal areas, either in the Port Alberni-Victoria axis on Vancouver Island, or on the north arm of the Fraser River in the lower mainland area. The pattern of sawmilling is undergoing such rapid change that a detailed picture of the distribution of activities is virtually impossible to obtain. Basically however the trend is toward further concentration, with the number of mills steadily declining over the past decade, while the capacity for production has actually increased. The figures contained in Table II give some indication of this trend.

**TABLE II**

**CHANGING SAWMILL CAPACITY IN BRITISH COLUMBIA**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Estimated 8 hour daily capacity 1,000's f.b.m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>2346</td>
<td>25,602</td>
</tr>
<tr>
<td>1955</td>
<td>2489</td>
<td>28,016</td>
</tr>
<tr>
<td>1956</td>
<td>2435</td>
<td>29,080</td>
</tr>
<tr>
<td>1957</td>
<td>2255</td>
<td>26,752</td>
</tr>
<tr>
<td>1958</td>
<td>2010</td>
<td>27,694</td>
</tr>
<tr>
<td>1959</td>
<td>2005</td>
<td>28,280</td>
</tr>
<tr>
<td>1960</td>
<td>1938</td>
<td>29,432</td>
</tr>
<tr>
<td>1961</td>
<td>1778</td>
<td>29,025</td>
</tr>
<tr>
<td>1962</td>
<td>1627</td>
<td>28,234</td>
</tr>
<tr>
<td>1963</td>
<td>1541</td>
<td>29,339</td>
</tr>
<tr>
<td>10 year average</td>
<td>2042</td>
<td>28,145</td>
</tr>
</tbody>
</table>

Basically, sawmilling is a process in which logs are converted into accurately shaped lengths of finished lumber such as boards, planks, ties and beams. The process includes the hauling of the log by means of a "green chain" on to a movable table or "carriage". The carriage passes the log through a "gang-saw" which saws it into longitudinal strips of the desired thickness. It is next passed through an edger which squares off the edges. Depending on the ultimate use of the finished product the lumber may, at this stage, be "trimmed" into the desired lengths and piled for eventual distribution, or it may be passed through a "planer" in which a series of cutting edges on rotating drums provide it with a smooth surface on all faces. Specialty mills might also include a further stage called "shaping", in which special profiles are cut into the wood for use as moulding and trim.

With the growing shortage of Douglas Fir and subsequent increased reliance upon hemlock, many mills have also installed large sheds for kiln drying. This is necessary since the high moisture content of green hemlock makes it dimensionally unstable. The larger and more efficient mills also have hydraulic barkers for the removal of bark before the log is passed through the saws. This makes possible the salvage of "slabs" or partially rounded edges, which were formerly wasted but which can now be "chipped" for sale to pulp-mills. Large mills are electrically powered, but very small ones may use diesel, or gasoline internal-combustion engines.
Pulp-mills. The factor that most distinguishes pulp-mills from other forms of forest activity in British Columbia is the impossibility of small scale operation. Current pulp-mill technology renders production most efficient when carried on at a scale of from 500 tons per day to 750 tons per day.\(^4\) A rough rule of thumb is that mills cost approximately \$100,000 per daily ton of output, so that optimum investments are in the range of from 50 to 75 million dollars.

Existing pulp-mills in British Columbia fall into two distinct age groups: those built prior to the First World War in response to a brief period of government encouragement through generous licensing terms, and those built after the adoption of sustained yield policies in 1947. In both cases it took the positive assurance of a continued wood supply to bring about the heavy investments involved. Similarly the current wave of expansion is a response to the introduction of the Pulpwood Harvesting Area tenure in 1961. The purpose of pulp-mills is to produce a fibrous material which can be used in the manufacture of paper and tissue products, as well as a chemical raw material, cellulose, which is used in the manufacture of a variety of products such as explosives, rayon and cellophane. Those mills engaged in producing pulp for paper manufacture are known as "kraft" mills, using the "sulphate" process, while those whose output is in the nature of a chemical raw material are known as "sulphite" mills, producing

\(^4\)Personal interview with Mr. N.C. Bruce, Design Engineer, Sandwell and Company Limited, Consulting Engineers, February 4, 1965.
"bleached" or "dissolving" pulp. Only two British Columbia mills use the "sulphite" process, those at Port Alice and Prince Rupert. The raw material for sulphite mills is limited to hemlock, spruce and balsam, while kraft mills are able to use virtually any species. It is therefore the kraft mill that is able to be most closely linked to major sawmills and thereby contribute to increased utilization. Significantly, not only are the majority of existing mills using the kraft process, but every one of the proposed future mills is of this type as well.  

Other Operations. There are a wide variety of specialty wood products which together account for some twelve percent of the total value of production in the forest industry. These include the manufacture of shingles and shakes, plywood, fibre-boards and presto-logs. Shingle and shake manufacture is carried out either by plants attached to established sawmills, or by small independent operators. It is an extremely volatile industry, with the number of mills in operation fluctuating widely from year to year. In 1961 there were sixty operating mills in British Columbia. In 1962 this figure dropped to thirty-three and by 1963 it had climbed back to sixty-


three. Under these conditions it is virtually impossible to generalize about this section of the industry. However, over the past ten years its output has amounted to only about three and one-half percent of that of the sawmill industry, so any trends that may emerge will have little significance upon patterns of employment or spatial distribution of activity. The fibreboard and presto-log activities are also relatively unimportant, being adjuncts of large sawmill operators and serving as a means of utilizing wastes considered unsuitable for pulp-mill purposes. Of the "other operations", only plywood plants would appear to constitute an activity of any degree of significance. There are at present nineteen plants in British Columbia of which ten are located in the Greater Vancouver area and fourteen are located in the highly urbanized southwest corner of the province.\(^\text{52}\) Like pulp-mills, plywood plants are sufficiently expensive to preclude the existence of small operators, with the typical plant being estimated to have cost approximately $500,000.\(^\text{53}\) Plywood manufacture consists basically of mounting logs on giant rotary lathes and "peeling" them against a knife edge so as to produce a long, thin continuous ribbon of veneer. These veneer-ribbons are then cut to desired size, dried, and glued together under pressure, with alter-

\(^{52}\)Interview with Mr. L. Reed, Director of Economic Research, British Columbia Council of Forest Industries, March 8, 1965.

\(^{53}\)Deutsch, op. cit., p. 35.
nate laminations having their direction of grain at right angles to one another, thus producing a thin sheet of exceptional strength and dimensional stability. Only the very choicest of Douglas Fir logs, straight-grained and free from defects, are considered suitable for making into plywood. In the trade these are referred to as "peelers" and fetch the highest prices of any logs in the British Columbia forest.

2. SPATIAL AND LOCATIONAL CHARACTERISTICS

Extraction

Introduction. It may be thought that nature is the only locational determinant for the extraction branch of the forest industry, since man must cut the trees where he finds them. However, a great many factors, economic, geographic and political must be considered in deciding what trees to cut at any given time.

Policy Determinants. Having put most of the forest land of the province under sustained yield, the government has, in effect, fixed the location of each individual operator's activities. One of the objectives behind this policy was the creation of stable communities by ensuring that, once an operator had assembled a labour force, there would be a perpetual supply of timber available within reasonable distance of the workers' place of residence. Unfortunately the need to impose this new policy on top of a pre-existing tenurial
system has meant that this ideal condition could not always be achieved. This is particularly true in the case of Tree Farm Licenses, where the long-established private policy of growth by accretion resulted in many long narrow timber holdings based on valley formations, or where a single license-area may embrace adjacent island and mainland sites separated by many miles of open water. One example of this is Tree Farm License 39, held by MacMillan, Bloedel and Powell River Limited. A portion of this area is on the Queen Charlotte Islands, a portion is on the mainland across some 150 miles of open water, and yet another portion is on northern Vancouver Island. Although the area involved may be large enough to be operated in perpetuity, it obviously cannot be worked by a labour force operating from a single permanent community.

Market Determinants. When log prices are high, operators prefer to cut in sparsely-treed areas and more difficult terrain, where costs per unit of output tend to be relatively high. Good log prices permit them to absorb these high costs, while the cutting of more lucrative stands is deferred until periods of low prices. Climatic conditions are a further influence in this regard, with denser and more readily accessible stands being cut during periods of inclement weather. Thus the scene of a particular logging operation may shift about considerably over relatively short time
spans. Where the shape and size of an operator's timber holding is long and narrow, and the community in which the workers live is not centrally located, this may have considerable effect upon the length of the journey to work.

**Conversion**

**Sawmills.** The extremely wide variation in sawmill sizes renders it difficult to generalize about many of the locational determinants for this branch of the forest industry. However, one critical determinant, that of location, is common to all mills. Because lumber is such a bulky commodity any unnecessary trans-shipment must be avoided at all costs. For this reason even the small interior mills tend to locate alongside railway spurs, where cars can be loaded for shipment to the widespread continental markets. Virtually all of the largest coast mills are located on tidewater, where advantage can be taken of cheap waterborne transport to overseas and eastern United States markets.

Sawmilling is a land-extensive industry, since the process itself is a horizontal one, and since a considerable area adjacent to the mill must be set aside for piling or stacking the lumber as it comes off the line. Site-size requirements vary greatly depending upon the capacity of the mill. The very largest mills, such as the Eburne Sawmills in the Marpole district of Vancouver, or Fraser Mills outside of New Westminster, with capacities in excess of
750,000 f.b.m. per day, occupy sites of approximately twenty-five acres. A moderate sized mill, employing approximately sixty and producing ninety thousand f.b.m. per day would occupy a site of about seven acres.\textsuperscript{54}

Because of their extensive site-size, sawmills are not generally able to afford land within built-up urban areas, and are usually located on marginal industrial land on the peripheries of cities or towns.

\textbf{Pulp-mills.} Pulp-mills have very specialized locational requirements which tend to make them completely independent of existing settlements, and for this reason they occasionally become the generators of new communities. Chief among these requirements is an exceptionally high demand for water. A typical pulp-mill requires approximately \(100,000\) U.S. gallons per daily ton of output.\textsuperscript{55} Thus a 500 ton-per-day mill would consume as much as 50 million gallons of water, a volume far beyond the capacity of even very large municipal systems.

Because of the enormous quantities of wood which they consume, pulp-mills must be located on tide-water where logs and chips can be cheaply transported or alternatively, if at an inland site, they must be as near as possible to the geographic centre of their supply area.

\footnote{\textsuperscript{54}N.C. Bruce, \textit{loc. cit.}}

\footnote{\textsuperscript{55}Ibid.}
Electrical energy requirements for pulp-mills are exceptionally high. Sulphite mills require 323,000 B.T.U.'s of electrical input per dollar value of output, a figure fifty percent above the 209,000 required for aluminum reduction, a process generally thought of as being the greatest of all industrial electricity consumers. Kraft mills, at a figure of 96,000 B.T.U.'s are still well above the average of 37,000 B.T.U.'s for all manufacturing industries.  

56 For this reason most mills generate their own electricity using oil-fired boilers or in the case of new interior mills, natural gas.

Pulp-mills discharge large volumes of toxic waste which pose severe disposal problems. Where a well-scoured tidal channel or a rapidly flowing river is available, waste may be disposed of after very little treatment, although Federal fish protection regulations have been tightened to the extent that most new mills are providing at least primary treatment, in the form of oxidation ponds.

Pulp-mills have long been notorious for their odour. Although much improvement has been made in this direction in recent years, they are still far from odour-free, and are thus unwelcome in areas where a high degree of urban amenity has been achieved.

An acceptable minimum site area for a pulp-mill is approximately two hundred acres, although, when selecting a new site operators will generally seek more than this if possible, to allow for

expansion and greater flexibility in arrangement of auxiliary activities. Thus an ideal pulp-mill site is a two hundred acre parcel of relatively flat land, on tidewater or rail, with a reliable river adjacent.

**Plywood Plants.** Generally speaking, the same locational requirements described for large sawmills are applicable to plywood plants as well. They must have very large sites to allow for material handling and storage, and good access to transportation facilities for marketing purposes. One other factor which is of special importance to plywood manufacturers is access to a plentiful log supply. Since only the very best of logs are suitable for making plywood, the point of maximum conversion of log flows is the point at which one may expect to find a concentration of plywood mills. At such locations operators are able to purchase from, or trade with their competitors when faced with temporary shortages. This explains the high concentration of plants in the southwest corner of the province. The lack of any single point of log-concentration in the interior may prove to be an inhibiting factor in the expansion of plywood manufacture in that part of the province.

### 3. EMPLOYMENT CHARACTERISTICS

**Extraction**

The basic unit of organization within the extraction process is called a "show". A show is a complete, integrated functional
Unit consisting of all the men and equipment required to get logs from the tree to the conversion plant. Shows vary greatly in size, depending upon many factors such as size of timber holding, nature of terrain, species, et cetera. Shows in turn are broken down into "sides", with smaller shows operating only one side while large ones may have as many as five or six sides. A side may be thought of as a field operation, with the remainder of the show being analogous to a headquarters staff. A side consists of people engaged in the process of felling, bucking, yarding, decking, loading and hauling, while the remainder of the show is made up of superintendents, foresters, engineers, time-keepers, road-builders and graders, mechanics, saw-filers, boom workers, scalers, cooks, kitchen helpers and "bull-cooks".58

The process of falling and bucking is carried out by "sets" consisting normally of four men, two fallers and two buckers. A typical side is made up of four sets (that is, sixteen buckers and fallers). In addition, there are usually three "chokermen", who attach the high-lead cables to the fallen logs, one high-lead operator or skidding-tractor driver, one loader operator, and two, three or four truck drivers, depending on the length of haul. Thus a typical side might consist of perhaps twenty to twenty-four men.

An exceptionally large show of six sides would have, in addition

57 Government-licensed specialists who measure the volume of timber in each log for taxation and other statistical purposes.

58 Those responsible for general camp "housecleaning".
to the approximately 140-150 men employed in the side, a base-camp labour force of perhaps fifty men, making a total payroll of around two hundred workers. This represents about the maximum size of operation to be found in the British Columbia woods to-day. A more typical sized show would consist of approximately one hundred workers on the coast, while small operators, particularly in light interior stands, may get by with as few as a dozen men.

Conversion Plants

Sawmills. Generalizations with respect to labour force in sawmills are extremely difficult to make because of the tremendous range of size exhibited by this branch of the industry. However, reference to statistics published by some firms in typical size-groups may be used as a rough guide. Two examples of extremely large mills would be those operated by Rayonier of Canada Limited, in the Greater Vancouver area. Of these, the New Westminster plant, producing 750,000 f.b.m. daily, employs 500 workers and the Marpole plant, producing 600,000 f.b.m. daily, employs 400. This would indicate a ratio of output to workers of roughly 1,500 f.b.m. per day per worker. This ratio would appear to hold good for the medium-sized mills as well. For example, Silvertree Sawmills in Vancouver produces approximately 90,000 f.b.m. with 60 employees, and Church Sawmills at Willow River near Prince George, produces 60,000 f.b.m. with 40 employees.59

Figure 4.
AERIAL VIEW OF PATCH Logging.

Figure 5.
TREE FELLING IN THE COAST FOREST DISTRICT.

Figure 6.
PORTABLE SPAR, "CHERRY PICKER" LOADER AND LOGGING TRUCK.
Figure 7.
BOOM BOATS AT BEAVER COVE
NORTHERN VANCOUVER ISLAND.

Figure 8.
BOOM WORKER SORTING LOGS.

Figure 9.
FLAT RAPT USED FOR
LOG TOWING IN
SHELTERED WATER.

Figure 10.
SELF DUMPING
LOG BARGES.
The very small mills, those producing under 5,000 f.b.m. daily, do not normally furnish statistical reports on employees so an estimation of output-to-worker ratio is unobtainable at this scale of operation.

Sawmilling is a highly labour-intensive branch of the conversion industry. Deutsch estimates that a 100,000 f.b.m. per day mill represents a capital investment of approximately $250,000. Using the figure of one employee per 1,500 f.b.m. derived above, this would indicate roughly one employee per $3,800 of capital investment.

Pulp-mills. Pulp-mills present a number of marked contrasts to sawmills. In addition to a much greater uniformity of labour force, they are also labour-extensive, requiring relatively few employees per dollar invested. For example, of new construction contemplated or actually underway, the Gold River mill of the Tahsis Company is expected to employ 321 workers, the Northwood Mill at Prince George approximately 325, and the Bulkley Valley Mill at Houston approximately 390. These represent capital investments of 60 million, 56 million and 52 million dollars respectively, indicating a ratio of one worker to roughly $160,000 of capital investment. Because pulp-mills are so highly capitalized there is frequently a tendency to over-estimate the magnitude of the effect which a new mill may have upon the economic

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60 Deutsch, op. cit., p. 25.
61 Bruce, loc. cit.
base of a region. However, the secondary effects of a pulp-mill, particularly the stabilizing of demand for log output and the increasing of large sawmill profits through product utilization, exert significant long-term effects upon the employment pattern of a region.

**Plywood Plants.** In terms of employment characteristics, plywood plants fall somewhere between sawmills and pulp-mills. They are not able to exist in such small-scale profusion as sawmills, since technology sets a lower limit on capitalization of around half-a-million dollars. On the other hand they are not so highly capitalized as pulp-mills, with a labour intensity even greater than that of sawmills. A typical half-million dollar plywood plant, such as that of Western Plywoods at Quesnel employs 275 workers or roughly one worker per $1,800 of capitalization, as opposed to the one-to-$3,800 ratio for sawmills. Because of limitations of log supply, and current market demand, plywood manufacturing is not a significant generator of overall employment, with only 5,127 workers in 1961, as opposed to 31,459 in sawmilling; 18,484 in logging; and 9,810 in pulp and paper. However, it is a significant concentrator of employment, with a $500,000 investment creating nearly as many jobs as a pulp-mill costing one

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hundred times that figure.

4. FUTURE TRENDS

Extraction

Recent studies prepared by the Council of Forest Industries of British Columbia estimate that the annual cut from British Columbia's forests will reach twelve billion f.b.m. by 1970, a fifty percent increase over the latest available figure of eight billion f.b.m. for 1963. Estimates of labour-force requirements in logging indicate a roughly proportional increase in employment, from 18,500 to 29,000 workers over the same period. Figures gathered by the International Woodworkers of America show that productivity per man in logging activities increased during the period 1957-1961 from 319,471 to 385,802 f.b.m. per annum, representing a twenty percent increase of efficiency in only five years. This is directly attributable to a higher degree of mechanization in the woods which is in turn linked in a cause and effect relationship to the gradual squeezing out of the small-scale, undercapitalized operators. In view of this trend toward increased efficiency, the assumption that increased production will lead to proportional increases in employment might

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65 Personal interview with Mr. J. Miyazawa, Associate Director, Research and Education Department, International Woodworkers of America, Vancouver, March 1, 1965.
appear unrealistic. However, it is pointed out that much of the expected increase in output will result from changes in government policy allowing smaller trees, down to nine inches in diameter, to be cut for both sawlogs and pulpwood. Since labour efficiency declines with decreasing tree size, this factor will cancel out any further gains in efficiency that might occur through further operational consolidation, justifying the conclusion that employment will rise in proportion to output. Only one significant technological advance is foreseen in logging during the next decade, and that is the process known as "balloon logging". In this process, giant helium-filled balloons are attached to the yarding cable in order to lift the front end of the logs clear of the ground. This is expected to make many presently inaccessible areas economically feasible to log, though overall labour-force requirements are not likely to be seriously effected.

Conversion

Sawmilling. A somewhat different trend in sawmilling employment is predicted over the next five years for, although output-per-worker has been increasing as in logging, there appear to be no compen-

66 Personal interview with Mr. L. Reed, Director of Economics Research, Council of Forest Industries of British Columbia, Vancouver, March 9, 1965.

sating factors that will permit employment to rise in proportion to increased output. In the same International Woodworkers' Association study referred to previously it was found that productivity per worker in coast sawmills had gone up by forty-three percent in the five year period from 1957 to 1961. In the interior the increase was a less spectacular twenty-three percent. Since no new techniques of sawmilling were introduced during this period, it can be stated that increased efficiency was obtained through centralization of activities into larger units. These figures indicate that centralization of activities is occurring in both regions, but that it has progressed further on the coast. However, a recent newspaper article notes that in the past two years the number of sawmills in the Cariboo area has dropped from one hundred and twenty-three to forty-three, evidence that the centralization process has accelerated rapidly in the interior since the 1961 figures were gathered.68 The net affect of this process has been an actual decline of ten percent in sawmill employment on the coast, with interior employment remaining relatively constant in spite of a twenty-nine percent increase in production. Centralization of activities is expected to increase during the next five years to the extent that the Council of Forest Industries predicts overall labour force requirements of approximately 30,000 in 1970 as opposed to a

1961 figure of 31,459. Basically it may be said then that although no employment increases or technological changes are foreseen in sawmilling, a sweeping program of re-alignment is underway in the industry which will be intensified when new pulp-mills encourage the further capitalization of large mills through the installation of chipping facilities. In view of the fact that overall employment in sawmilling is higher than in any other branch of the forest industry, this re-alignment holds significant consequences for future settlement patterns in the province.

Pulp-mills. There are eighteen new mills under construction or in the planning stage, and some existing plants are undergoing expansion. For this reason, the Council of Forest Industries expects the 1961 labour force of 9,810 to expand to over 17,000 by 1970. Significantly, only five of these new mills are proposing to locate in areas where there are no existing settlements. Of these, two are proposing to locate close enough to each other that they will be able to share the use of the same townsite, and two others are in such a preliminary stage of investigation that no mill-site has been selected. Consequently only two new towns have been confirmed as a result of this tremendous industrial expansion. However, some of the existing towns which are proposed as mill-sites are presently so small that they will be literally engulfed by the new wave of settlement which

will accompany the mill construction.

**Plywood Mills.** A recent American study published under the auspices of "Resources for the Future" notes that British Columbia's high wage rates, coupled with the very high labour content involved in plywood manufacture, have prevented a large export market from being built up.\(^7^0\) In 1959 only ten percent of British Columbia's plywood production was exported to foreign markets. Consequently the study expected future production to expand at a rate no greater than that of Canadian domestic consumption, and estimated that 1975 production would range from 1.25 to 1.8 times the present figure. However, the Council of Forest Industries expect a more rapid rate of expansion, with the 1.8 figure being reached by 1970. Their more optimistic forecasts are based on increased acceptance of the product by the building trades, plus greater use of "inferior" quality woods for structural grades of plywood, which frees the industry somewhat from its restricting reliance upon choice-grade Douglas fir peelers.\(^7^1\) On this basis a labour force of 9,000 is expected by 1970, nearly 80% above the 1961 figure of 5,100, with most expansion occurring in the interior. Six new mills are already under construction at such widespread points as McBride, Golden, Williams Lake, One Hundred Mile House, Canoe and Creston.

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\(^7^1\)Reed, *loc. cit.*
5. CHAPTER SUMMARY

The forest industry in British Columbia is a production process involving a continuous flow of material from the tree on the stump to the marketing of finished products in the form of sawn lumber, pulp and paper, plywood and several miscellaneous materials. For analytic purposes this process may be broken down into two broad stages, extraction (or logging) and conversion, with the latter being further divisible into three major activities of sawmilling, pulp and paper making, and plywood manufacture.

Historically the processes of logging and sawmilling have been relatively easy to enter as commercial ventures, and as a result both of these branches of the industry present to the analyst a bewildering variety of small and large scale operations. Pulp-mills and plywood plants on the other hand are much more uniform in size, since high capitalization requirements have restricted these undertakings to large-scale business enterprises.

The government's policy of sustained yield, a growing awareness of an absolute upper limit to available timber resources, and the increasing costs of new technology have combined to produce an accelerated trend toward concentration and stability in logging and sawmilling activities. This in turn will have significant consequences upon the evolution of settlement patterns within the province, with many small marginal logging camps and sawmill sites being abandoned, and
their labour force absorbed into larger establishments.

The creation in 1961 of a new tenure system, known as the Pulpwood Harvesting Area, has initiated a program of dramatic expansion in pulp-mill activities with eighteen new mills planned or under construction, primarily in the interior of the province. This in turn will lead to the establishment of at least two new towns and the expansion of several more within the next ten years.

For plywood manufacturing, an increase in productive capacity of approximately eighty percent is looked for over the next decade, with most new facilities being located in established interior towns.

Labour-force distribution in logging and sawmilling will become more concentrated, both corporately and spatially, over the next five years, with logging employment expanding by fifty percent to 29,000 while sawmilling employment will remain relatively static at 30,000. In the same period the pulp-mill labour force will expand by almost one hundred percent to over 17,000 workers, with its spatial distribution being already largely pre-determined. Plywood labour force trends are more uncertain, though estimates place its 1970 size at about 9,000 or roughly eighty percent above its present figure of 5,000.

Re-alignment and expansion in all phases of the forest industry will produce significant changes in provincial settlement patterns which, if channelled by firm government policies, could be directed toward the fulfillment of community planning and development objectives.
CHAPTER IV

IMPACT OF THE FOREST INDUSTRY

UPON SETTLEMENT IN BRITISH COLUMBIA

1. COMMUNITIES

Camps

Definition. It is difficult to draw a precise dividing line between a camp and a town, for many features of one are common to the other. Camps are thought of basically as being only for male workers, but from the earliest days it has not been uncommon for the superintendent and other key personnel to have their families living in camp. Camps are characterized by a complete absence of owner-residents, non-company personnel and local government, yet these features are common to company towns as well. Most camps were intended to be temporary, yet many have grown into permanent communities. It is therefore necessary to identify a number of criteria in order to define a camp. For purposes of this study a camp is to be considered as an unincorporated settlement of temporary or portable buildings owned entirely by the operator of a business enterprise, and inhabited principally or exclusively by male employees of the enterprise.

History. Camps were the earliest form of community to be established by the forest industry, with the first one being that erected to serve Sayward's sawmill at Mill Bay north of Victoria in
From that beginning, logging and sawmill camps spread virtually to every corner of the province, reaching their peak in the days of railroad logging prior to the Second World War, when camps housing five hundred workers or more were quite common. Now, with improved technology in the woods, camps of from one hundred to two hundred are considered large, with a few reaching close to four hundred where large booming and sorting operations are carried out in conjunction with logging.

Basic Characteristics. Camps have traditionally been considered by their owners as temporary. Because of the difficulty of transporting workers through the woods, camps were always established as near as possible to the actual cutting site, and were moved to a new location when the standing timber had been liquidated. When railroad logging was adopted, entire camps were built on railway bogeys, and were simply hauled along the tracks when operations shifted down the line. Modern methods of truck-logging have brought a high degree of mobility to the woods, with workers being transported many miles to work and back each day in company-owned vehicles called crummies. Nonetheless, the tradition of portability has continued, with virtually all camp buildings being mounted on timber skids instead of

72Deutsch, op. cit., p. 23

permanent foundations. The only justification for continuing with this practice is that a tax advantage is gained through lower assessments on portable buildings.

Another product of the attitude of impermanence is that virtually no attention has been paid to site planning or landscaping, with buildings being simply scattered haphazardly or arranged rigidly in tight, sterile geometric patterns, and with no attempt being made to define or delimit streets, parking areas, pedestrian routes, gardens and other uses of open land. The only exception to this rule is the use of picket fences to demarcate small gardens around the houses of married workers, which are usually clustered in a small precinct set well apart from the rest of the camp.

Facilities. The basic housing unit in a camp is the bunkhouse. Over the years a wide variety of bunkhouse types have been evolved, with the general trend being toward greater respect for the privacy of the individual. Early bunkhouses were little more than barracks with no partitioning between beds or groups of beds. Now, four-bed and two-bed rooms are the rule, with some camps even providing single-bed rooms. Standard of finish is generally primitive, with unfinished board floors, plywood or fibreboard walls and bare light-bulbs typifying the quality of furnishings. However, beds are invariably comfortable, with spring-filled mattresses often being included as a mandatory

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74 Interview with Mr. A. Richmond, Superintendent, Vernon Lake logging camp (Canadian Forest Products) February 23, 1965.
part of union agreements. Meals are served in a cookhouse which consists basically of a kitchen opening on to a serving counter, and a large dining hall furnished simply with tables and benches. Cafeteria techniques are used for serving, thus reducing the size of the cookhouse crew, with consequent savings in labour costs. Washroom facilities, consisting of washbasins, flush-toilets and showers are provided in quantities varying with the size of the camp, and are generally located in a building completely separate from the bunkhouses. Other facilities include a laundry and drying room where workers may wash their clothes and hang them to dry. Frequently this facility will be attached to the washroom building, to minimize the expense of installing plumbing. Large camps also may include a commissary and recreation hall, with provision for the sale of tobacco, confectionery and magazines, as well as for card playing and other forms of indoor recreation.

**Governing Legislation.** Under Section Nine of the "Health Act", Chapter 170, *Revised Statutes of British Columbia*, 1960, the Lieutenant Governor in Council is authorized to make regulations with respect to logging and sawmill camps. Under this legislation a set of regulations entitled "Regulations for the Sanitary Control of Industrial Camps" was passed in 1946, to be administered by the Medical Health Officers of the areas in which camps are located. The regulations establish minimum standards for drainage, construction, floor area per inhabitant, toilet facilities, preparation and serving of food, and general sanitation.
Evaluation. Camps are regarded by both management and labour as being, at best, necessary evils. Company dissatisfaction with camps derives from many sources.

1. They are money losing propositions, since the charge of $2.50 per day levied against each worker for board and lodging as laid down in the union agreement covers only a fraction of the total cost of housing and feeding a worker.

2. They foster conditions of high labour instability, with workers quitting on short notice over petty grievances or simply failing to show up for work after a week-end "in town". Statistics gathered by Rayonier of Canada Limited indicate that at their logging operations on southern Vancouver Island, where workers are able to commute daily by automobile from established communities, annual labour turnover is relatively low. In 1964 the ratio of turnover was thirty-five percent at Honeymoon Bay and fifty percent at Gordon River. At their operations on northern Vancouver Island, where workers must live in camps, the ratio of turnover was 235 percent at Mahatta River, 260 percent at Holberg, 267 percent at Jeune Landing and 300 percent at Fraser Bay.75

3. They impose upon superintendents and foremen managerial burdens over and above those normally associated with the running of a logging or sawmilling operation.

75 Figures supplied by Mr. L. Vivian, Chief Forester (Northern Vancouver Island) Rayonier of Canada Limited, February 22, 1965
Though no industry researchers have attempted to estimate a precise figure, management representatives are virtually unanimous in stating that the problems associated with camps represent additional factors in the overall cost of production. Operations fortunate enough to function without camps due to proximity to established communities are not burdened by these costs and so enjoy a definite competitive advantage.

For the most part, the workers themselves appear equally dissatisfied with camps, with their attendant sense of isolation and lack of variety and amenity. The most graphic evidence of this dissatisfaction is the willingness with which workers undergo considerable inconvenience to avoid living in camps wherever alternative possibilities exist. On the southern half of Vancouver Island, for example, it is common for loggers to live in established incorporated communities such as Duncan and Ladysmith and drive to work for distances of up to sixty miles per one-way trip. Under these conditions a worker may put in a portal-to-portal day of thirteen hours in order to work an eight hour shift. In spite of this great daily sacrifice of personal time, camps are becoming increasingly rare in southern Vancouver Island.


77 Miyazawa, loc. cit.
**Future Trends.** In an effort to overcome the shortcomings of camps two trends have emerged in recent years. The first of these is the development of specialized firms of "Feeding and Housing Contractors", sometimes called simply "caterers". These firms first became prominent in the early nineteen-fifties, when a number of large-scale construction projects created the need for the efficient accommodation of large numbers of workers for short terms under standards that would minimize labour unrest. As their name implies these firms contract with business operators to provide housekeeping and dining service, including purchasing, preparation and serving of food, the supplying and laundering of bedding, and general housekeeping activities such as daily bed-making and room cleaning. They are also able to provide the actual buildings, equipment and other physical plant involved in establishing a camp, although this aspect of the business has generally had greater application in construction projects than in the forest industry, where the process has largely been one of taking over the management of already established camps. These firms are extremely flexible with respect to size of operation, managing camps ranging in size from ten occupants to as many as seven hundred and fifty.\(^7^8\) The principal advantages to be derived from this form of operation are:

\(^{78}\)Interview with Mr. J.W.D. MacCormac, Vice-President, Canus Services, Limited, Vancouver, British Columbia, March 8, 1965.
1. It is generally cheaper for the operator of a forest activity to enter into a contract with a caterer than to run his own camp, since these firms are specialists in their field and are able to effect economies of scale through purchasing food and other supplies in vast quantities.

2. The forest-operator's managerial staff is relieved of responsibilities in fields in which it has no training, being free to concentrate exclusively on the forest operations.

3. Financial planning or budgetting by the forest operator is greatly assisted since, once the contract is signed, he knows what his camp costs will be for the forthcoming year. The caterer assumes the risks associated with rising food prices and other unpredictable cost fluctuations.

In spite of the advantages of the catering system, it does nothing to overcome the greatest shortcomings of camps, that of labour instability. For example, all the Rayonier camps cited as exhibiting high rates of labour turnover make use of caterers.

The approach taken in recent years to combat instability has been the introduction of family-type accommodation into camps, in recognition of the fact that married workers with families are generally more stable and reliable than single workers.\(^79\) At this stage the distinction between a camp and a company town begins to

\(^79\) Institute of Local Government, Queens University, *Single Enterprise Communities in Canada*, (Queens University, Kingston Ontario, 1953) p. 142.
become blurred. However, in practically all cases where family housing has been added to camps, the buildings have been of a portable nature, and the population has remained predominantly one of single males, so that the definition of a camp is still applicable. One example of such a camp is that operated at Woss Lake, in the Nimpkish Valley of Vancouver Island by Canadian Forest Products, Limited where, with a total labour force of some two-hundred workers, provision has been made for twenty-three families in the form of single family detached houses on timber skids. In addition the camp is provided with a four-room elementary school, and the commissary has been expanded into a small-scale general store. However, this solution to the camp problem has been only partially successful. The isolation and low level of available amenities make camp life sufficiently unattractive to most wives of forest workers that single males continue to make up the greater part of the population of any camp. This in turn frequently creates additional problems in respect to the raising of children in an environment conditioned by a predominance of young single males. Another problem confronts the worker who has remained in a camp long enough to raise his children to the teen-age level. After this length of service the employee has usually worked up to a position of responsibility and income which he would not be able to maintain if he were to move elsewhere. Yet, for the teen-age child

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80Interview with Mr. T.G. Wright, General Manager Forest Operations, Canadian Forest Products Limited, Vancouver, British Columbia, February 8, 1965.
the environment of a camp is stifling, since neither the school nor the facilities for extra-curricular activity are able to provide the range of experiences which the adolescent and his parents consider a necessary prerequisite to well-rounded maturity. This dilemma must be resolved by choosing from among three rather unattractive alternatives:

1. Remaining in the camp, and depriving the child of access to facilities.

2. Splitting up the family, either by sending the child to a boarding school or having the wife and child establish a home in the nearest urban centre, to which the husband commutes on week-ends and holidays.

3. Leaving the camp to seek work elsewhere, which will probably involve a loss of income and position.

There are, in addition, other problems associated with the matter of expanding an employer-employee relationship into a landlord-tenant relationship as well. However, as these problems are also common to company towns, they will be discussed under that heading. Perhaps the most significant feature of all about camps is that so little attention has actually been paid to them despite the fact that they are estimated to house perhaps \( ^{\%} \) percent of the forest industry's labour force, or some \( ^{\text{\textbullet}} \) people. No statistics on camps are available on an industry-wide basis to enable trends to be discovered or policies to be made. They represent, in effect, an unwanted step-child of the forest industry.
Figure 11.

CORMON RIVER CAMP.

Perhaps the best designed camp in British Columbia being entirely architect designed by R.R.McKee of Vancouver yet still exhibiting little in the way of site planning and landscaping.

Figure 12.

BUNKHOUSES AT CORMON RIVER.

Figure 13.

A TYPICAL CAMP.
VERNON LAKE,
NORTHERN VANCOUVER ISLAND.

Figure 14.

A TYPICAL COOKHOUSE OPERATED BY PROFESSIONAL CATERERS.
Figure 15.
FAMILY HOUSING IN A LOGGING CAMP, BEAVER COVE, NORTHERN VANCOUVER ISLAND.

Figure 16.
HOUSE GROUPING AT BEAVER COVE.

Figure 17.
TYPICAL LOGGING CAMP HOUSE.

Note the end of a timber skid projecting through the siding.
Company Towns

Definition. Two basic features distinguish company towns from camps. First, they are conceived of as being permanent, with a better quality of building than is to be found in camps, and with permanent "townscape" features such as streets, roads and landscaping. Secondly, they are intended primarily to accommodate families rather than single male workers, and so possess more community facilities such as schools, churches, shops and recreational buildings, in addition to a proportionately higher number of family-type houses, than are to be found in camps. Unlike ordinary towns however, company towns are unincorporated, with all property belonging to the company, and all residents being its employees and their dependants. For purposes of this study a company town is considered as an unincorporated settlement of fixed and durable buildings owned entirely by the operator of a business enterprise and inhabited exclusively by the employees of the enterprise and their dependants.

History. The origins of company towns may be traced to the establishment of the early pulp-mills in the province, since these were the first forest operations in British Columbia to be considered by their owners as permanent. Because of their specialized site requirements these mills were located at isolated coastal sites where a plentiful log supply, abundant fresh water and deep-sea access to markets could be combined. Preferring not to rely solely upon itinerant camp dwellers for their labour supply, yet recognizing that their
remoteness militated against the normal processes of urban growth, these mill owners had no alternative but to build towns adjacent to their operations. The first company towns to be established were Swanson Bay and Ocean Falls, in 1909, Powell River in 1910, Woodfibre in 1912, Port Alice in 1917 and Port Mellon in 1918. Since the Port Mellon mill first went into production in 1909 it must be assumed that it provided only camp facilities during the initial years of its life. Subsequent years saw the establishment of additional company towns at Youbou, Tahsis and Honeymoon Bay, established in 1919, 1946 and 1943 respectively. These towns were based on large sawmills drawing upon timber stands whose locational peculiarities made it impractical to transport logs to established conversion sites or urban areas. Tahsis, for example, was established because, until the development of the self-dumping log barge, timber cut on the west coast of Vancouver Island could not be towed through the swells of the open Pacific. At the Youbou and Honeymoon Bay sites, in the centre of Vancouver Island, the dependence upon rail transport to get wood from tree to market made it practical to reduce product-bulk by sawmilling at or near the cutting site before shipping. All of these company towns are still in existence as such, with the exception of Powell River which has grown into an incorporated municipality, and Swanson

Bay, which was abandoned when the mill was closed in 1923. Improved techniques of transportation, combined with a growing opposition to the concept of company towns on the part of labour, management and government, have meant that in spite of all the expansion that has taken place in the forest industry there have been no new company towns established in over twenty years.

**Basic Characteristics.** Company towns established by the forest industry of British Columbia vary in size from 360 at Port Mellon to 3,000 at Ocean Falls. While the size of the plant which gave rise to the town is the most important determinant of town size, it is significant to note that the smallest towns all possess road links to the "outside world" and, in particular, to other nearby communities. For example, Port Mellon on the west coast of Howe Sound has road connections to Gibson's Landing and other Sechelt Peninsula communities; Youbou and Honeymoon Bay have road connections via the Cowichan valley to southern Vancouver Island communities such as Duncan; and Woodfibre is connected by a short ferry ride to Squamish. In all these cases a considerable number of workers have chosen to live outside the company town, commuting each day to work by car. On the other hand, the largest town, Ocean Falls, is completely isolated, being reached only by coastal steamer and float-plane. Commuting in this case is obviously impossible. In spite of the intention to cater to married workers, single males still account for approximately fifty percent of the
labour force in all company towns. Bunkhouses are therefore an im-
portant feature of company towns, though they tend to be of a higher
quality of construction than those found in camps. In most cases,
they are multi-storey buildings with integral washroom facilities.
The inability to achieve a totally-married labour force in company
towns is due partly to the reluctance of wives to move to remote
areas, and partly to the fact that these towns have invariably been
built on such crowded sites that the company has found it difficult
to erect sufficient family housing. These crowded sites have also
made it necessary to build townsite and plantsite immediately adja-
cent to one another, so that the visual scale, noise and odour of
the mill completely dominate the residential environment. Site
crowding has also led to the adoption of a more compact urban form
than is to be found in non-company towns of equivalent size, with
lots, blocks and street-widths all being smaller than average.

Facilities. Generally speaking company towns tend to be
better provided with facilities than non-company towns of equivalent
size since the companies must try to attract workers to remote areas
by providing a good standard of urban amenities. For example Port
Alice, an average-sized company town of 1,200 people, is provided

82 Interview with Mr. William McGee, General Manager Forest
Operations, Crown Zellerbach Canada Limited, Vancouver, British
Columbia, February 8, 1965.
with an eighteen-bed hospital, a full-time doctor, public schooling up to the junior matriculation level, a movie theatre, a community hall, a library, a ball-field, a bowling alley, a golf course, two churches, a cafeteria with licensed premises, a laundry, dry-cleaning and shoe repair service, a beauty parlour, a barber shop, a taxi, a gasoline service station and a general store handling groceries, drygoods, hardware and many other items. In addition, paved roads, curbs, concrete sidewalks and boulevard trees are provided, giving to the urban landscape a quality of finish well above that found in the typical British Columbia village of 1,200. Every house is on sewer, street-lighting is provided throughout the town, and fire protection is provided by an eighteen-member volunteer brigade under the direction of a full time paid fire-chief.

**Governing Legislation.** In 1919 the Legislature of British Columbia passed the "Company Towns Regulation Act", which still exists on the statute books as Chapter 63 of the *Revised Statutes of British Columbia, 1960*. The Act enabled the Lieutenant Governor in Council to declare as a company town any place "where any one hundred or more persons employed by any company in or about any industrial operation or business carried on by the company are living or sojourning on lands owned, occupied, or controlled, either directly or indirectly, by the company..." The Act is primarily concerned with
establishing the right of the general public to have ingress to, and
egress from the town by way of company-owned wharves and roads, as
well as freedom to move about through the town on company-owned
streets. "The Act was thought to be necessary in the days when
government officials, union organizers, travelling salesmen and
others were informed that they could not land on the company wharves
or they would be trespassing on private property". The only towns
established by the forest industry which were officially designated
as "company towns" under the Act were Ocean Falls, Powell River and
Swanson Bay of which, as noted previously, only Ocean Falls remains
to this day as a company town. Responsibility for the administration
of the Act, which has by now virtually fallen into disuse, rests with
the Department of Lands, Forests and Water Resources, the same de­
partment which governs the activities of the forest industry. Of
greater importance to-day than the Company Towns Regulation Act are
a number of general functional Acts containing clauses relevant to
the construction and operation of Company towns. These include:

1. The Health Act, Chapter 170, R.S.B.C., 1960, providing for
the regulation of water supply, sewage and refuse disposal,
and all matters pertaining to public health and sanitation in
unorganized territory.

^84 Queen's University, Institute of Local Government, Single
Enterprise Communities in Canada, (Ottawa: Central Mortgage and
Housing Corporation, 1953) p. 57.
2. The Highways Act, Chapter 172 R.S.B.C., 1960 establishing regulations governing all public streets and roads in sub-divided land in unorganized territory, including the conveyance to the Crown of the freehold in every such street and road.

3. The Land Act, Chapter 206, R.S.B.C., 1960 providing that any townsite on Crown grant land must be sub-divided into lots and a plan of sub-division deposited in the Land Registry Office.

4. Land Registry Act, Chapter 208, R.S.B.C., 1960, containing legislation covering in detail the methods by which land may be sub-divided and registered.

5. Taxation Act, Chapter 376, R.S.B.C., 1960, by which the provincial government is authorized to raise and collect taxes on all real property in unorganized territory.

Evaluation. As with camps the principle of company towns is almost universally condemned to-day. In a magazine article S.D. Lash, Head of the Department of Civil Engineering at Queen's University states:

On the whole, experience in Canada with company towns has been good. Nevertheless they are seldom popular. The workers prefer a freer environment; the industrialist dislikes the diversion of capital and effort required to build a town and recognizes that being a landlord makes for poor labour relations; governments regard such towns with suspicion as being at least temporarily beyond the pale of ordinary municipal government.85

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Because of this widespread feeling it has been agreed by government and industry that there should be no more company towns built, and that existing ones should be either incorporated as municipalities or abandoned. Principal complaints registered by workers against company towns include:

1. A feeling that one can never leave the job behind. Since the company owns and controls everything in the town, "the boss" is all-pervasive. This often creates the suspicion that the employer can and does apply extra sanctions against recalcitrant employees by such devices as providing poorer service at the company store.

2. A transferal of the organizational hierarchy of the company staff into the social and political structure of the community. This leads to a feeling that the worker is expected to "know his place" in the community and "not step out of line".

3. A complete lack of freedom in choosing one's home with houses generally being assigned to workers by a housing administrator.

The complaints raised by the companies are, for the most part, merely opposite sides of the same coin, and include:

1. Grievances over real or imagined wrong doings suffered by the worker, or his wife, such as alleged rude treatment by clerks in the company store, are reflected in employee discontent on the job.

2. In its sincere endeavours to learn about dissatisfaction which the employees' families may feel toward the town, company
officials may become too deeply involved in the personal and social affairs of the employees, and thus become subject to charges of meddling, snooping and prying.

3. Because the company must "bend over backwards" in financing and supporting community facilities in order to avoid being accused of niggardliness, and because employee-tenants demand a higher quality of home-maintenance and services than they would provide for themselves if they owned their own homes, the operation of a company town is much more expensive than would be the case for a similar-sized incorporated community.

General complaints directed toward company towns by government and public-at-large include:

1. When a worker reaches retirement age he must leave town, since employment is a necessary prerequisite to occupancy of a house. For a worker who has lived a substantial part of his life in the town this can mean a very painful and cruel period of re-adjustment.

2. The practice of using payroll deductions to pay for rent, grocery bills and other items associated with personal cost of living tends to evolve a class of citizens who are not fully capable of budgetting their earnings.86

3. Company paternalism in the role of "universal provider" leads

86Single Enterprise Communities, op. cit., p. 37.
to apathy and lack of organizing initiative on the part of the residents of company towns.\textsuperscript{87}

In spite of all these criticisms of company towns, there are some things to be said in their favour. If the ordinary forces of free-enterprise had been left to look after the housing needs of workers in remote areas, housing would be either inadequate or very expensive, since mortgage funds were not normally available under such circumstances. Furthermore, a generally higher level of amenity exists in company towns, than in other communities of the same size.

Other Communities

Introduction. While camps and company towns are the most obvious forms of community to be established by the forest industry, they represent only a fraction of the total number of settlements for which the industry has been either partially or totally responsible. In viewing the overall picture a continuous spectrum of communities may be seen, ranging from tiny unincorporated clusters of residences around marginal sawmill operations to the metropolitan area of Greater Vancouver, with over 800,000 inhabitants. Upon analysis five general types of community may be identified, which, for purposes of this study, will be described as:

1. Multi-Industry Incorporated Communities.

2. Single-Industry Incorporated Communities

\textsuperscript{87}Ibid., p. 167
Figure 18.

AERIAL VIEW OF A COMPANY TOWN.

Ocean Falls, B.C.
Note the close proximity of mill to townsite and the limited area of buildable land.

Figure 19.

STREET SCENE IN OCEAN FALLS, B.C.
Note the relatively high quality of the public sector of the environment.
3. Emerging Incorporated Communities.

4. Unincorporated Communities

5. "Instant Towns".

*Multi-Industry Incorporated Communities.* Basically, these consist of cities which, though containing important forest operations, have developed a widely diversified economic base through the growth of other industrial or service functions. These would include such cities as Vancouver, Victoria, New Westminster, Prince George, Kamloops and Nanaimo. The development of these cities has progressed to the point where it is difficult to pinpoint characteristics which can be said to be the exclusive result of the forest industry. The workers, whether they be employed as loggers or in conversion plants, commute to work from homes in middle-class residential districts, and in the contribution they make to the economy and life-style of the city are virtually indistinguishable from factory workers, construction workers and other tradesmen. It may be argued that loggers in particular have acquired for themselves a certain degree of notoriety with respect to excessive drinking, frequent brawling, and other forms of anti-social behaviour in the "skid-road" section of the city. The very fact that districts which contain the more unsavoury institutions of city life are referred to as "skid-roads" is an indication of this association since, as noted earlier, the first skid-roads were the trails down which logs were dragged to water by animal power. That there is a high incidence of loggers patronizing the skid-road
district is not denied, but for the most part these are loggers who have come into town in search of recreation after protracted periods in remote camps. Under these circumstances the skid-road is performing a kind of "service centre" function for hinterland residents, and its presence is attributable not to the existence of a resident forest-industry labour-force, but rather to conditions prevailing beyond the city which create a demand for this type of service. Where actual forest operations are found in such cities, they exist in the form of conversion plants in peripheral industrial zones, where low cost land may be combined with rail or tidewater access. As urban development proceeds, with attendant increases in land values, the requirement of low-cost land frequently results in shifts of conversion-plant locations within metropolitan areas. Hardwick points out that sawmills in Vancouver were originally concentrated around Burrard Inlet, then moved to False Creek during the boom which followed the completion of the Canadian Pacific Railway in 1886, and finally moved to the North Arm of the Fraser River in a gradual process of relocation beginning around 1920. He further speculates that the day may come when sawmills may eventually be forced out of Greater Vancouver altogether, perhaps to relocate adjacent to pulp-mills. Whatever the eventual fate of such plants may be, it can be stated that the point has been reached in British Columbia's multi-industry incorporated communities

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88Hardwick, op. cit., p. 65.
where the problems they exhibit are the same as those found in practically all typical North American cities; problems of traffic congestion, central-area decay, fringe-growth, conflicting land use, and a host of others. Important though these problems are, they are not of special relevance to the forest industry and for this reason will not be dealt with in this study.

**Incorporated Single Industry Communities.** There are several British Columbia communities which have grown and flourished under the stimulus of the forest industry to the point where they have achieved full local self-government and a reasonable level of urban amenity. Examples of such communities are:

1. The twin cities of Alberni and Port Alberni. Soon to be merged as a single municipality these two cities have a combined population of over 16,000 dependent largely upon the pulp, paper, plywood, sawmill and logging activities of MacMillan, Bloedel and Powell River, Limited.

2. The District of Powell River. Formerly a company town with a surrounding fringe-area, this community of 11,000 people is almost entirely dependent upon another MacMillan, Bloedel and Powell River Limited operation.

3. The Village of Lumby in the south-central interior of the province, based on a number of small and medium sized sawmills with a population of 884 people.
4. The Village of Ladysmith on Vancouver Island, with a population of 3,410, which derives eighty-five percent of its economic base from logging and a further eleven percent from sawmilling.\(^8^9\)

This is but a representative list, with the Alberni Valley cities being the largest single-industry community in the province. Generally speaking, communities based upon a number of small firms are less well provided with amenities than those based upon a single large firm since, in the former case, there is a tendency for the operator to establish outside the town to escape local taxation. This problem is further intensified if logging is the principal activity, as this must of course be carried on well beyond the boundaries of the community. In the case of a single large industry, on the other hand, the industry not only provides the town with a substantial tax base, but is also a frequent financial contributor to civic projects in the interests of public relations. The presence of a large firm confers additional benefits in that it is better able to carry its employees through brief periods of depressed market conditions. However, regardless of company size a protracted slump in the industry is bound to result in layoffs which can have serious repercussions throughout the entire community. Similar effects may arise as a result of prolonged industry-wide strikes. In many respects these

single industry communities are indistinguishable from other small and medium sized towns throughout North America, exhibiting many of the same problems. However, one very significant problem faces many of those communities dependent upon small-scale operations such as sawmills and independent logging shows. As indicated earlier, an industry-wide process of consolidation is under way in which many of these smaller operations are being shut down. The consequences which this process may hold for the future should be of grave concern to the government, as the very existence of many communities may be in jeopardy. Since, in addition to private investments in housing and commercial ventures, these communities contain significant investments of social capital in the form of sewers, waterworks, streets, schools and other public buildings, the question of whether any of these communities should decline or disappear is too important to be decided solely by the market-place.

Emerging Incorporated Communities. In recent years a number of the larger companies in the forest industry have grown increasingly dissatisfied with the instability of camp-based labour and have tried to attract married workers by adding to the camps a number of family-type rental houses. This has not been entirely satisfactory however, because the companies have found their role of landlord to be a distasteful one, and because the steady reliable type of worker whom it is hoped will be attracted, prefers home-ownership in an
established community to tenancy in a company-owned camp. In response to this a few companies have recently begun to experiment with the sale of building-lots to employees. In this type of venture the company plays the role of subdivider by acquiring from the Crown, usually at a nominal sum, the freehold title to a parcel of land in the vicinity of the camp, installing services such as sewers, water, electricity and gravelled roads, and selling the lots at or near cost to employees. By the time services have been installed to the standards required by relevant government departments this figure may vary from $1,500 to $3,500 per lot. The north end of Vancouver Island contains examples of this type of company activity, with MacMillan, Bloedell and Powell River Limited sponsoring developments at Port Hardy and Kelsey Bay, and Rayonier of Canada Limited involved in a similar venture at Port McNeill. However, there are a number of shortcomings to this approach.

1. There is a lack of clear direction from the government. In such matters as water supply, sewage disposal, community planning, street and road standards, etcetera, the company finds that it must deal independently with many separate government departments most of which do not have any published schedule of requirements. The normal procedure is for the

90 The majority of the information on which this section of the study is based was obtained during a personal interview with Mr. D.F. McCrimmon, Manager, Timberlands and Property Division, MacMillan, Bloedel and Powell River Limited, Vancouver, B.C., February 3, 1965.
company to put forward proposals to all the relevant government departments for acceptance, rejection or revision, making cost-projection by the company almost impossible in the decision-making stage.

2. The location of these communities is not considered in a regional context, with proximity to company work-sites and road-systems being the principal criteria in site selection. One result of this is the establishment of a number of small competing centres connected to each other by private company roads, or perhaps not connected at all. This in turn militates against the establishment of as high a level of public services and amenities as could be sustained by the same size of total population if distributed in a more rational regional pattern.

3. The remoteness of the sites makes mortgage financing difficult to obtain, and while National Housing Act funds are available where sewers and other services have been provided many potential residents lack sufficient capital to "bridge the gap" between the statutory mortgage ceiling and the full cost of a house. To overcome this difficulty the companies have initiated the practice of making second mortgage money available from their own resources. Further company participation is frequently necessary in the form of an agreement to purchase an employee's house if he should choose to leave, or be fired or layed-off, within the first year of occupancy. This has been found
necessary to overcome the reluctance of workers to undertake heavy financial commitments in the face of uncertainty as to whether they are going to like their new surroundings. In a few cases the company has even found it necessary to "break the ice" by building the first few houses in a new community, and offering them for sale to employees. In all of these ways the company finds itself reluctantly engaged in activities such as the "house building business" or the "mortgage lending business", for which it is just as unsuited as it was for the "landlord business" from which it was seeking to disentangle itself.

4. The emerging communities have a tendency to rely upon the sponsoring company for the provision of many services. For example, company equipment is requested for road-grading and snow removal purposes; and the company is frequently expected to "donate" the school to the community. In this way the "paternalistic" features so deplored in the company town are repeated.

5. No specific provisions are laid down in advance regarding methods or time by which the emerging community is to achieve corporate status. This is due partly to the impossibility of predicting in advance the rate at which development will proceed, and partly to the feeling that it should be left to the initiative of the residents to decide such matters for
themselves. This leaves the company with no concepts of how long it must continue to play the role of developer, or how much of its own investment it may hope to recover. Thus, though initiated by reasonably commendable objectives, the activities of the forest industry in sponsoring the development of new incorporated communities fall short of being satisfactory, and may even place stumbling blocks in the way of proper regional development in the outlying parts of the province.

Unincorporated Communities. In addition to the types of communities already described, the forest industry has spawned a great number of small settlements which fit no previous definition. These are simply clusters of privately owned dwellings which have grown up in the vicinity of small operations, being particularly prevalent around marginal interior sawmills. These settlements usually started off as crude camps to which some workers, on their own initiative, began adding accommodation for their families. Customarily this accommodation took the form of very basic frame dwellings built on small-holdings or acreage acquired through Crown lease, Crown grant or, in some cases, "squatter's rights". When a sufficient number of such dwellings materialized, the local school district would be obliged to provide a schoolhouse, to be followed perhaps by a general store. In this way a small community emerged with no local government, no public services except a school, and no commercial services except a general store. The pattern of settlement along the Canadian National Railway east of Prince George presents an
example of the results of this process, with communities such as Shelley, Gicombe, Willow River, Aleza Lake, Upper Fraser, Cornell Mills, Hutton Mills, Longworth, Penney and Dome Creek existing at regular intervals of fifteen to twenty miles along the tracks. These communities vary in size from 377 to less than a dozen people and provide for their residents a bare minimum level of amenity. Many are dependent upon private wells for their domestic water supply, sewage disposal is by septic tank or outdoor privy and other community services such as fire protection and street lighting are generally non-existent. Nor is there any strong pressure for corporate status in order to improve the standard of service. The tools of local government in such areas are frequently regarded with suspicion as being merely a means of imposing unwanted regulations and taxes. With virtually no investment in social capital, and a very low level of investment in the private sector, these communities face a precarious future. The consolidation of sawmill activities which will undoubtedly follow upon the completion of new pulp-mills may well lead to the closure of many of the small mills upon which these communities depend and once the economic base is gone, the minimal level of capital investment will not be sufficient to hold many of the residents. As with the small incorporated communities mentioned previously, the social consequences of such a process of community decline and abandonment are too important to be left entirely to the dictates of the market.
"Instant Towns". This is a term coined by the incumbent Minister of Municipal Affairs, Mr. Dan Campbell, to describe the intention behind a bill to be introduced before the Provincial Legislature during the current session. The legislation is intended to provide for the establishment, by the government, of new District Municipalities\(^*\) in advance of the arrival of a resident population, when it is known that an industrial undertaking is going to result in a new settlement where there is no pre-existing form of local government. Up to the present time, three such communities are under construction or in the planning stage as a result of expansion in the forest industry. These are:

1. Bumble Beach, which is currently under construction and is intended to supercede the old Port Alice townsite.

2. Gold River, which is to house the labour force associated with the new pulp-mill projected for the west coast of Vancouver Island by the Tahsis Company.

3. An as yet unnamed town to be built on the Parsnip River north of Prince George, based on two pulp-mills being built in the area by Cattermole Timber Limited and Alexandra Forest Products.

The district municipality form of incorporation has been selected as being most appropriate, since this allows residential and industrial land uses to be widely separated for reasons of amenity while still

\(^*\) a form of local government applied to areas of 2,000 acres or more having a population density of less than two persons per acre.

See "Municipal Act" R.S.B.C., 1960, Chapter 255, Section 19(2).
placing the plant-site within the boundaries of the municipality for purposes of providing a tax base. At the time of writing, details of the legislation have not been made public. However, it appears that a considerable amount of discretion in decision-making is left to the developing company in the area of site selection and planning.92

2. REGIONAL DEVELOPMENT

Introduction

As pointed out earlier, the British Columbia forest industry has been until quite recently a "sawlog" industry, with pulp-mill capacity falling considerably short of what would be required to provide a fully integrated forest economy. The dominant position of sawmills, combined with the geography of the province, have resulted in two distinct patterns of activity in the coast and interior districts. These varying activity patterns have in turn contributed to the development of the regional settlement patterns of the province.

Coast Development

The first commercial sawmilling activity in British Columbia was established in the vicinity of the present cities of Vancouver and Victoria. As these centres grew in importance, the sawmills found

92Based on personal interview with Mr. Don South, Director of Regional Planning, Department of Municipal Affairs, Victoria, B.C., February 16, 1965.
it advantageous to remain, even after nearby timber resources were depleted. Access to shipping facilities by rail and water, a readily available labour supply which did not have to be accommodated at company expense, and the pre-existence of capital installation were all contributing factors in inducing the mills to "stay put"; but perhaps the most important factor of all was the ease with which logs could be towed through the sheltered waters of Georgia Straits from timber stands as far away as the north end of Vancouver Island. Once this pattern of activity had become firmly established, most new productive capacity simply reinforced it, rather than seeking out new sites nearer to the log supply. Hardwick notes that "... concentration rather than dispersal of processing has become the dominant characteristic of the geography of the forest industry of coastal British Columbia".93

For this reason, the forest industry has contributed substantially to the growth of metropolitan Vancouver and Victoria, though by no means being the exclusive reason for their emergence as British Columbia's two principal cities. On the other hand, the industry has done very little to develop the remaining areas of the coast forest district, in spite of the fact that it has always been the district's most important economic activity. The settlement pattern of the coast district is, in fact, exactly analogous to the activity

93Hardwick, op. cit., p. 70.
pattern of the forest industry, with high concentration in the southwest corner and a very thin diffusion of population throughout the remainder of the area.

The only exceptions to the general rule of industrial concentration have been the pulp-mills, which have dispersed themselves along both shore lines of the Straits of Georgia, where they have been able to find sites affording them their unique combination of locational requirements. Where these mills were added to pre-existing service centre towns such as Nanaimo and Campbell River, or where they were combined with large sawmills in integrated corporate operations such as at Alberni and Powell River, they have contributed to the growth of cities large enough to sustain a wide range of commercial services and a comparatively high level of public amenities. In isolated sites, on the other hand, the mills have led to the establishment of quite small towns, such as Ocean Falls, Port Alice and Woodfibre, which are able to sustain only a very limited level of facilities.

In view of the fact that the coast forest is being cut at, or near, its allowable limit, it is not likely that developments in the forest industry will produce any significant alteration to regional settlement patterns in this area. The only completely new pulp-mill capacity being planned for the coast is that of the Tahsis Company at Gold River. Although the new town to be created in conjunction with this development will benefit from the "Instant Towns" legislation
and will have a highway link with Campbell River and the "outside world" it will nonetheless remain for the foreseeable future a rather small settlement of some 3,000 persons, since it will have neither service centre activities nor other forms of industry to add to its basic labour force. All other new capacity is being planned in the form of additions to existing plants, which are likely to result in only marginal expansion of labour force and population.

Perhaps the only development which might lead to increased urbanization in the outlying areas would be a large-scale shift in the location of sawmilling activities in response to increasing land values in metropolitan areas. The possibility of this was raised by Hardwick when he suggested that some mills might be forced out of Greater Vancouver, perhaps to sites adjacent to sulphate pulp-mills. However, there is as yet no evidence of this occurring.

**Interior Development**

The pattern of development in the interior has been quite different from that of the coast, with the lack of cheap water transportation making areal concentration of activities unfeasible. Generally speaking development in the interior consists of a great number of small mills thinly diffused in a ribbon pattern along the railroads and highways. Where a high level of urbanization has evolved, it has not been as a result of the forest industry. For example, Prince

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94 Ibid., p. 64.
George in the north-central interior has developed largely as a regional service centre although containing sawmill activity within its boundaries. The Okanagan cities have grown from a variety of causes including regional service, fruit-growing and tourism. The east Kootenay cities, such as Trail or Rossland are heavily dependent upon mineral extraction and smelting. However, significant developments are underway in the interior forest industry, in the form of pulp-mill construction and sawmill concentration. If the activities of sawmilling and pulp-milling can be brought together in the same towns, significant increases in population, and the overall level of urbanization, may be looked for in the interior. Where these facilities are to be added to already established service-centre towns even more intensive urbanization will result. This trend is already noticeable in Prince George, which is to receive three new pulp-mills within the next two years and which has become the province's fastest growing city.

Conclusions

The extractive activities of the forest industry, concerned as they are with the harvesting of a widely distributed crop, do not in themselves contribute to the achievement of urbanization. Conversion activities, on the other hand, are able to make such a contribution, provided they are arranged in groups or concentrations. Up to the present time however the only significant grouping of conversion
activities has occurred in the extreme south-west corner of the province, an area which would have succeeded in becoming urbanized in spite of the forest industry. Other minor centres of urbanization throughout British Columbia have also achieved their present condition with only secondary assistance from the forest industry. It is a paradox that although British Columbia is the most highly urbanized province in Canada, with over 76.6 percent of its population being classified as urban by the 1961 census, its most important economic activity has had little to do with bringing this about.

The range and quality of services which a society is able to provide for its citizens is directly related to their numbers, and their distance from the locus of the facilities concerned. Thus, the more concentrated a society's population becomes, the more services it is able to provide. One of the key problems in the development of British Columbia has been the emergence of many small, isolated and unconnected settlements, a process to which the forest industry has been a prime contributor. With significant changes about to take place in the distribution of forest activities, the opportunity is presented for a reversal of this process, under the guidance of firm government policies.

3. CHAPTER SUMMARY

The forest industry has contributed to the development of many types of settlement in the province of British Columbia, ranging
from primitive isolated camps to thriving metropolitan areas. The largest of these settlements have achieved municipal incorporation and economic diversification to the extent that they are no longer significantly affected by internal re-adjustments in the industry. The well being of the smaller settlements however is closely linked to that of the individual forest operations which sustain them, and policy changes effecting the industry are of compelling significance to these communities as well.

Up to the present time, the forest industry has contributed to the evolution of a settlement pattern in which over fifty-three percent of the population is concentrated in the extreme south-west corner of the province. The result of this has been that throughout much of the rest of the province the population is scattered in settlements too small to maintain more than a minimum level of service and amenities. However, changes appear imminent in the industry, which could be utilized as a means of achieving a higher incidence of urbanization.

Dr. John Deutsch has stated that "... To-day, the non-export of logs is taken as an axiom of policy ... Industry must be encouraged to grow in British Columbia. The question then arises, in what part of British Columbia? The early policy makers did not care." A further question follows from this: do the present policy makers care? Do they care enough to devise and implement policies that will direct

95Deutsch, op. cit., p. 70.
the growth of the forest industry to achieve the maximum good for the province?
CHAPTER V
THE DETERMINATION OF SETTLEMENT PATTERNS THROUGH THE
CONTROL OF THE SPATIAL DISTRIBUTION OF FOREST ACTIVITIES.
I. PLANNING FOR DEVELOPMENT

The Need to Plan

Provincial Responsibilities. In previous chapters it was indicated that a process of widespread change is already underway in the forest industry of British Columbia, which has significant implications upon the environment of the province's citizens. The provincial government is deeply involved in this process for a number of reasons.

1. It holds title, on behalf of the people, to over two-thirds of the productive forest land of the province.
2. Many of the changes which are taking place within the industry are a direct result of government policy.
3. The forest industry is the most important economic activity in the province.

In the light of this involvement the government may respond to the forces of environmental changes in one of three ways.

1. It may simply let things happen, accepting as inevitable whatever results eventually materialize.
2. It may try to stop the process, freezing or propping-up the status quo by way of statutes or subsidies.
3. It may utilize the forces of change as a means of assisting in the positive reshaping of the province.

Pursuit of the first alternative would be inconsistent with the government's willingness to enact and enforce, on behalf of the public interest, firm and far-sighted policies affecting other aspects of the forest industry. Examples of such policies include Crown ownership of the forest lands, severe restrictions upon the export of manufactured timber, and sustained yield. Pursuit of the second alternative would mean the perpetuation, at great cost, of conditions which are presently responsible not only for inefficient utilization of the forest crop, but for unpopular and unsatisfactory environmental conditions as well. Pursuit of the third alternative, on the other hand, would materially assist in achieving the stated goal underlying the previously mentioned policies: the growth of prosperous stable communities. The propensity for change is, in itself, a resource which can be wasted or dissipated just as surely as any other resource. The two concepts which most clearly distinguish current from previous approaches to resource development in British Columbia are the concepts of full utilization and multiple use. To allow the changes in the forest industry to occur without any attempt being made to harness their latent energies, released in the form of environmental change, would constitute a failure to apply these concepts to this potentially valuable resource.
Re-statement of Goals. It was established in Chapter I that the goals of resource development could be expressed by such phrases as "the use and convenience of man", "the wealth, health and happiness of mankind" and "happiness achieved through individual self-realization". It was further established that the role of "legislators and planners" in contributing to the fulfillment of these goals consisted of providing:

1. Freedom to search for self-realization, so long as this freedom did not impede the search of others.
2. Opportunities for education and upbringing.
3. Abundant scope for search.

Finally, in Chapter I the question was posed, "To what extent does our present approach to resource development support, or conflict with, the creation of that environment which will best enable us to fulfill our goals?" and offered disturbing evidence to the effect that our goals were far from being achieved. If policy-makers choose, as a means toward goal fulfillment, to harness the forces of environmental change arising from developments in the forest industry, it is in the realm of "freedom, educational opportunity and abundance of scope" that they must work. However, simple though they may be to express, the concepts involved in these few words are exceedingly complex.

Freedom. The concept of freedom lies at the very roots of modern society, yet it defies precise definition. To some it is
simply absence of restraint upon individual thought and action. Yet, in a complex and interdependent society, the unrestrained actions of some may impose severe restraints upon others. "The slave is not made a free man by virtue of any power put in to him, but by virtue of re- straints imposed upon the actions of others".\(^9\) Freedom then involves a delicate balance between the rights of the individual and the rights of society to impose restraints upon individual action in the interest of the community at large. Where the fulcrum of this balance is to be placed will depend, at any one point in time, upon the relative weights which society assigns to private versus community rights, as determined through the political process. It involves in effect a process of continuous arbitration between the private and public interests. In matters of resource development and environmental change, concerned as they are with the permanent commitment of material and spatial resources, this arbitration process must take cognizance not only of current interests, both public and private, but of future interests as well. Any decision taken today in these matters is paid for at the price of that which could have been done instead. With respect to the forest industry in British Columbia, matters affecting resource development are in fact subject to a continuous arbitration process involving public and private interests viewed in a long-term context. Matters affecting environmental change, how-
ever receive no such treatment. It is often contended that, in British Columbia, local government is the device through which the democratic process is enabled to reconcile differences between public and private interests in matters pertaining to the human environment. This approach is clearly inadequate for a variety of reasons.

1. Many crucial decisions which concern resource development but which will produce significant environmental change are taken before any local government or any population has materialized in the area concerned.

2. The issues involved in resource development and environmental change have a spatial incidence far broader than that normally encompassed by local government.

3. The most important policy decisions taken in matters of resource development are taken at the provincial level, which is not subject to local government efforts to influence environmental change.

Freedom to search for self-realization without impeding the search of others clearly includes the establishment of a means for arbitrating between public and private interests, based on rule of law and subject to democratic process, at the provincial level.

**Education.** The most obvious item to be considered under this heading is the public school system by means of which children are equipped with the basic tools of knowledge, enabling them to function
effectively in communion with their society. In a world whose technol­
ogy is increasing in complexity day by day, this system is being
expanded proportionately, to impart a widening range of specialized
technical and intellectual knowledge, without which the individual is
severely handicapped in his efforts to contribute to, and share in,
the bountiful productivity of his society. Formal education is be­
coming an increasingly specialized art, requiring the services of
highly trained personnel and costly equipment. Beyond the most rud­i­
mentary level of education it is becoming increasingly necessary to
concentrate these scarce resources of capital and manpower at points
where they can be most efficiently utilized in serving the maximum
number of people. However, education in its broadest sense involves
much more than schooling, it comprises the whole range of experience
by which man, through the exercise of his sensual perceptions,
widens his knowledge.

Yet all experience is an arch wherethrough
Gleams that untravelled world, whose margin fades
For ever and for ever when I move.97

Used in this sense education includes all media of communication,
radio, television, films, books, newspapers and, above all, face­
to-face contact with a wide range of variegated individuals. If
education is to be employed in the service of self-realization, it
can be most effectively utilized under conditions that permit the

97Tennyson, Ulysses, Stanzas 19-21.
concentration of population in aggregates large enough to sustain modern institutions of formal education and a wide range of personal experiences.

Scope for Search. As Haig-Brown points out, self-realization means different things to different people, and no specifications for its achievement can be written in advance. The individual must seek and find it for himself. Freedom gives him the right to seek, and education gives him the tools, but the total environment in which he lives gives him the locus for his search. The narrower and more circumscribed this environment is, the less abundant is the scope for search; the greater the range of choice in every aspect of daily life, the greater is the likelihood that the search will bear fruit. If the goal of self-realization is to be served through the provision of abundant scope for search, then environmental changes which will broaden the individual's range of choice should be initiated and encouraged.

Evaluation of Present Conditions. In terms of its contribution to the fulfillment of the ultimate goals of resource development, it is apparent that the forest industry falls short on two specific grounds.

1. Developments proceed in the absence of any provisions for identifying and protecting in advance, the public interest with respect to the environmental changes which this devel-
Development of the forest industry has led to the establishment of a settlement pattern in which many people are denied access to full educational opportunities and to a wide range of choice in their search for self-fulfillment.

The following questions then arise: Are these shortcomings inevitable as a result of inherent characteristics of the forest industry, or can they be overcome? If they are not inevitable, what policies should be enacted in order to bring about more desirable conditions? When a society poses these questions and conscientiously seeks to answer them it has, in effect, adopted the basic ingredient of planning; preparing a course for the future based on a predicted set of preferred consequences.

The Planning Process

The Meaning of Regional Planning. The word "planning" is an ubiquitous one. Recent years have seen the emergence of many kinds of planning: social planning, economic planning, physical planning, etcetera. In the complex world of modern western society these various forms of planning are really only subdivisions within a continuous or circular spectrum, since actions taken in one sector have ramifications within the others. Nonetheless, the very complexity of modern society has made specialization necessary. As has already been stated, the general concern of this study is development within
the forest industry, the effects of this development upon the spatial environment, and the possibilities for utilizing the forces of change generated by this development as a means of achieving specified goals. Within the current vocabulary of planning, the type of planning which is specifically concerned with the spatial incidence of development is referred to as "regional planning". In a recent study prepared by the Graduate Students in Community and Regional Planning at the University of British Columbia, regional planning was defined as "a continuous dynamic process in which a society formulates, selects and pursues its goals by initiating, co-ordinating and ordering, in terms of space, the development of its environment". This definition will be deemed to apply wherever the term regional planning is used in this report. From this definition it follows logically that a process of goal fulfillment through utilization of the environmental change engendered by the development of the forest industry is, in fact, a limited or specialized form of regional planning. Having established this fact, the two questions posed above may be reduced to one of: "How may the development of the forest industry be made subject to the process of regional planning?"

**Steps in the Planning Process.** The planning process has been described as:

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98 *Graduate Students in Community and Regional Planning, University of British Columbia, Student Project Number 5, Planning for Development in British Columbia* (Vancouver: unpublished mimeo. 1965) p. 6.
a sequence of action which begins with establishing certain goals, involves certain decisions as to alternative ways of achieving these goals, and eventually takes the form of steps for carrying out decisions, followed by evaluation, and perhaps a new sequence of action. The sequence falls into these stages:

1. Goal specification stage.
2. Decision making stage.
3. Plan execution, evaluation and re-orientation stage. 99

The first stage has been touched on briefly in mentioning "happiness through self-realization" as being the ultimate goal of resource development. Before policies can be evolved, however, a more explicit statement of goals is necessary. The second stage involves the evaluation of alternative forms in which these explicit goals may be given substance. The third stage involves the establishment of policies to bring about the selected goal forms, specific programs for carrying out the policies and the creation of administrative machinery to implement and evaluate the policies.

II. GOALS AND GOAL FORMS

Criteria For Goals

Introduction. Chapin states that "while goals of planning have been in the forefront of planning thought since the early literature on utopias, only in relatively recent times has the identification of goals been made an integral part of the technical work of planning." 100


100 Chapin, op. cit., p. 225.
Because of the recentness of the concept there is, as yet, no absolute uniformity of terminology, with many writers on the subject preferring the word "objective" to "goal". However, there is more or less unanimous agreement on the importance of goal-identification, and on the criteria by which a set of goals, or objectives, should be judged. Basically, these criteria are explicitness, comprehensiveness, and measurability.

**Explicitness.** For planning to be effective goals must be explicitly stated. If this is not done there can be no common agreement among policy-makers as to what purposes underlie any proposed policy, nor can the citizens have any real comprehension of why policies are being initiated.

**Comprehensiveness.** It was stated earlier that freedom to seek self-realization must not impede the search of others. Yet it is quite conceivable that the goals of one individual or group may conflict with those of another. Only if all goals are stated can such potential conflicts be anticipated.

**Measurability.** Goals should be capable of being reduced to measurable quantities so that it is possible to test empirically the extent of improvement to be sought and so that, where conflicts between goals are unavoidable, the conflicts may be resolved objectively through the establishment of priorities.

**Proposed Goals**

**The Nature of Goals.** Goals have their origins in the social
values of a community. For this reason they are frequently difficult to identify in explicit terms. Because of this there has been a strong tendency for planners, in the past, to seek to formulate goals intuitively. This, Chapin states, is "a holdover from the design origins of the field" and is an unsatisfactory approach toward solving an admittedly vexing problem. A combination of social research and the political process appears to offer the best method for identifying and formulating goals, although work in this field is still in its infancy. The important thing for planners and policymakers to keep in mind is that goals must not simply be imposed from above, but must be an honest reflection of the values of the community.

Benjamin Higgins, in an article written well before the emergence of the planners current concern with goals, stated:

... the purpose of planning is to help the people of the community get what they want, not to give them what the planners want, nor even to tell the community what they ought to want. Education of popular tastes regarding physical environment and social services is extremely important, and community planners must help in the process of public education; but this education is not a major aim of planning as such.

If the current study is to be conducted in a manner consistent with the steps outlined for the planning process, it should be based on a comprehensive, explicit, measurable set of goals having its origins in the socially-rooted values of the citizens of British Columbia.

101 Chapin, op. cit., p. 226.

Unfortunately, no such set of goals has ever been evolved in this province. Under these circumstances two alternatives are open:

1. Conduct a detailed survey, using all the available tools of social science, to identify the goals of the province.

2. Assume a set of goals which appear to be more or less consistent with the social values of the citizens of British Columbia.

Since the object of the study is to investigate only one limited aspect of regional planning, namely the relationship between the forest industry and regional planning, it would be unreasonable to pursue the former alternative. For that reason an assumed set of goals will be used, although the point is emphasized that this is not being advocated as a proper approach under actual, rather than hypothetical, circumstances. The assumption of a set of goals applicable to provincial development was recently made by the Graduate Students of Community and Regional Planning at the University of British Columbia, based upon a survey of statements made by government, political parties and other major groups within the province. From this set, the following goals have been selected as being of relevance to the environmental impact of forest development.

**Selected Goals.** It was postulated in the study that there exists a three-level hierarchy of goals consisting of a "central"

103Graduate Students of Community and Regional Planning, _loc. cit._
or "paramount" goal; "overriding" goals; and "specific" goals. The paramount goal was stated to be: "...the opportunity for every individual to have a high and rewarding level of life. Everyone should possess the right to make a meaningful choice among a variety of life styles, so long as that style does not conflict with the rights of others." This is completely consistent with the already accepted ultimate goal as outlined in the introductory chapter of the study. The second level, or overriding, goals were concerned basically with "optimization and maximization of the different aspects of the social, economic and physical conditions in which man lives". At this level, recognition is given to the fact that the provincial government has an important role to play as "guide, stimulator and developer". This is consistent with the point made at the beginning of the chapter regarding provincial responsibilities in accommodating the environmental impact of forest development. It is the level of "specific goals" that is of special relevance to regional planning. These are goals which "are more often viewed as issues than general goals".

Specific goals relevant to the spatial incidence of the forest industry are:

1. To provide every person with the means to maintain his health

104 Ibid.

and welfare. This includes access to the services of doctors, dentists, pharmaceutical outlets and hospitals.

2. To make available to every person the means of acquiring an education to suit his own particular needs.

3. To provide every person with access to a variety of job opportunities.

4. To provide for the creation of durable settlements which will have the highest possible level of urban services, institutions and amenities. "It seems clear that there is a rising rate of expectancy on the part of citizens, which should be fully recognized by the government."^106

5. To provide more efficient linkages between urban centres and between regions of the province.

Higgins, in the previously mentioned article, defined another goal which it is felt must be added to the above in order to make the list comprehensive. It is "minimum travel time, without accidents, by preferred modes of travel."^107

III. THE CONCEPT OF GOAL FORMS

Definition

The second stage in the sequence of planning action has been

^106 Graduate Students of Community and Regional Planning,

^107 Higgins, op. cit., p. 10.
identified as the "decision making stage", involving the evaluation of alternative forms in which the selected goals may be given substance. Goal forms may be either tangible, as in the case of a physical layout, or intangible, as in the case of a policy or an administrative program. Goals must be given form in order that they may be evaluated by the decision makers, as a prerequisite to selecting that form, or set of forms, which will fulfill the stated goals with a maximum of efficiency and minimum of conflict. All of the selected goals have spatial manifestation, in that they require the provision of physical facilities in which to be fulfilled. The services of doctors, nurses and educators, for example, require the provision of clinics, hospitals and schools to be fully effective by modern standards. Employment facilities, shipping facilities and transportation linkages all have locus in space. Any goal form proposed to serve the above set of goals must therefore be of the tangible variety. It is equally true of course that intangible forms must exist simultaneously to realize a number of these goals. For example, access to health facilities would require a goal form in the nature of a policy or program to train and recruit doctors. This, however, merely serves to illustrate the point previously made that regional planning is only part of a continuous and interlocking spectrum of planning. The significant point is that the six selected goals may all be served by a goal form, or set of goal forms, having physical or tangible manifestations in space. Such a goal form has
been defined by Chapin as "an abstraction referring to the general character and form of the land development pattern of an area which has been structured to fulfill certain defined goals." By reference to the previously stated goals it may be seen that any proposed goal form must consist basically of an arrangement of facilities for:

1. The provision of goods and services including health and education facilities.
2. The provision of employment.
3. The provision of transportation facilities.

All proposed goal forms will therefore be presented as alternative combinations of these three variables.

Goods and Services

Central Place Theory. In the sciences of urban geography and regional analysis, places at which goods and services are made available have come to be referred to as "central places". Over the past thirty years a complex "central place theory" has been evolved, largely as a result of the writing of two German analysts, Walther Christaller and August Losch. Recently the theories have been empirically tested and found valid in localities having many features

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108 Chapin, op. cit., p. 234.

in common with British Columbia, including Snohomish County, in Washington, with strong geographical similarities and southern Saskatchewan, with strong political similarities. Other empirical tests in Sweden, Germany and, most recently, the United States Midwest, have further substantiated the theory. The central place theory postulates the existence of a hierarchical structure of goods and services arrayed or ranked in terms of "order". Higher order goods and services are those purchased infrequently, for which people are willing to travel considerable distance to obtain. Lower order goods are generally necessities requiring frequent purchases with little travel. Two additional concepts are associated with the order of a good, the concepts of "range" and "threshold".

**Range of a Good.** The range of a good delineates the zone or tributary area around a central place from which persons travel to the centre to purchase the good. The upper limit of the range is the maximum distance which people are willing to travel to purchase the good. The lower limit of the range is the radius which encloses the minimum number of consumers necessary to provide a sales volume

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Saskatchewan Royal Commission on Agriculture and Rural Life, Report No. 12, Service Centre, (Regina: Queen's Printer, 1957).

adequate for the good to be supplied profitably from the central place. This lower limit is a function of density of population, since in regions of high density the requisite "minimum" will be contained within a relatively smaller area than in regions of low density.

**Threshold.** The actual number of people required to enable a good to be supplied profitably from a central place is termed the "threshold" population for that good. High order goods have a greater range and threshold than low order goods. The effect of this is to produce a hierarchy of "orders" of goods. Higher order service centres provide all the goods and services to be found in service centres of lower order and, in addition, those goods and services whose threshold population exceeds the population available in the lower order centre.

**Hierarchy of Service Centres.** Most empirical tests have established the existence of a six-step order of service centres, classified in the Saskatchewan study as Hamlets, Villages, Towns, Greater Towns, Cities and Provincial Cities. Analysts have applied the central place concepts to theoretical regions where the basic workers are evenly distributed over a flat plain; in other words, to an agricultural economy. Under these circumstances the forces of supply and demand act in concert with the concept of "range" and "threshold" to produce an economic landscape in which lowest order centres exist in profusion at close spacing, and progressively higher order centres exist in progressively fewer numbers at progressively
wider spacing. Under conditions of absolute uniformity of terrain and equal ease of access in all directions, the landscape assumes a pattern in which all trade areas become hexagonal, and lower order centres and their trade areas "nest" within those of larger centres according to a rule of threes. This pattern is illustrated in figure

In actual fact, of course, a great many factors including irregular terrain, the concentration of specific economic activities such as mining or port facilities, and even historical accident, operate to disturb the regularity of this pattern. In spite of real-life deviations in the pattern, however, the basic concepts of range and threshold remain valid. Where the population of a given settlement is below the threshold required for the provision of a specified "order" of goods and services, and where there is no higher order centre within range, the residents of that settlement must simply go without that level of goods and services. Under these circumstances the problem can be solved either by increasing the population above the threshold level, or by improving transportation linkages to bring the higher order centre within range.

Proposed Goal Forms

Spacing of Service Centres. The goal with respect to goods and services has been defined as access to the widest possible range of facilities. Consequently any settlement pattern in which the rank and spacing of service centres is consistent with the mathematical
Figure 20  Pattern of Location of Six Classes of Centers

Legend:
- Hamlet
- Village
- Town
- Greater Town
- City
- Provincial City
relationships of the central place theory would constitute a suitable
goal form, since this pattern would provide as many "orders" as the
population was capable of sustaining. Because the whole complex
system is built upon the spacing of the lowest order centres, which
is in turn established by the maximum distance, expressed as a time-
distance factor, which people are prepared to travel to purchase
lowest order goods (namely, bread, milk, et cetera) the determination
of this distance is a necessary first step in the preparation of
proposed goal forms. This distance is a function of many objective
and subjective factors including spatial distribution of the popula-
tion, price willingness of purchasers and preferred modes of travel,
and could only be determined by a lengthy process of empirical social
value identification. As this is obviously beyond the scope of the
present study the hamlet spacing of ten miles, observed in the
Saskatchewan study, will be used for purposes of example. If ten
miles is the optimum hamlet spacing, then half of this distance, five
miles, may be deemed to be the maximum distance people should be re-
quired to travel to reach a first order service centre. The mathema-
tical relationships of the central place theory are such that, once
the spacing of the lowest order centre has been established, the
spacing of all other centres may be determined.

One of the mathematical properties of the theoretical model is
that the distance between two adjacent centres of equal rank is
always 1.73 times larger than the distance between two adjacent
centres of the preceding rank.\textsuperscript{112}

\textsuperscript{112}Saskatchewan Royal Commission, \textit{op. cit.}, p. 67.
Table III indicates the spacing of all levels of service centres in accordance with the central space theory, assuming an initial hamlet spacing of ten miles.

**TABLE III**

<table>
<thead>
<tr>
<th>Centre</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamlet</td>
<td>10.0</td>
</tr>
<tr>
<td>Village</td>
<td>17.3</td>
</tr>
<tr>
<td>Town</td>
<td>30.0</td>
</tr>
<tr>
<td>Greater Town</td>
<td>52.0</td>
</tr>
<tr>
<td>City</td>
<td>90.0</td>
</tr>
<tr>
<td>Provincial City</td>
<td>155.7</td>
</tr>
</tbody>
</table>

*Source:* Saskatchewan Royal Commission.

**Alternative Forms.** In conceiving possible settlement patterns as goal forms, within the framework of the central place theory, it is possible to imagine six alternative forms, ranging from one in which all six levels of service centre are present, to one in which only the highest order exists. These six alternatives are illustrated in Figures 21 to 26, page 135 A.

**Journey to Work.** It is obvious that if the concentrated form (Figure ) were selected, no-one could live more than five miles from the central city, since this is the maximum distance a person is
THEORETICAL MODELS OF ALTERNATIVE SETTLEMENT PATTERNS BASED ON THE CENTRAL PLACE THEORIES OF CHRIS TALLER AND LOSCH

ASSUMPTIONS
1. System consists of flat plain of uniform productivity,
2. All residents of the system are to be within range of all orders of service-centres.
3. Spacing of lowest-order centres: 10 miles.

LEGEND
(§) Provincial City
O City
© Greater Town
O Town
• Village
• Hamlet

Provincial City Only. Figure 22
Total Number of Communities: One
Maximum Journey to Work: 76 miles.

Greater Towns, Cities and Provincial City. Total Number of Communities: 19
Maximum Journey to Work: 26 miles.

Greater Towns, Cities and Provincial City. Total Number of Communities: 7
Maximum Journey to Work: 45 miles.

Figure 23
Greater Town, City, and Provincial City.
Towns, Greater Towns, Cities, and Provincial City*

Total Number of Communities: 61
Maximum Journey to Work: 15 miles

Figure 26

Hamlets, Villages, Towns, Greater Towns, Cities and Provincial City.

Total Number of Communities: 169
Maximum Journey to Work: 18.7 miles

THE FOREST INDUSTRY AS A DETERMINANT OF SETTLEMENT IN BRITISH COLUMBIA: THE CASE FOR INTEGRATION THROUGH REGIONAL PLANNING

Masters Degree Thesis in Community and Regional Planning

J. F. GILMOUR

UNIVERSITY OF BRITISH COLUMBIA

1965
to be required to travel to reach a centre offering lowest order goods. However, as the extractive operations of the forest industry are carried out over a wide area of the province, such a form would entail, for the logger, a daily journey to work of up to two hundred miles or more. It is obvious therefore that a more dispersed pattern is required. On the other hand the most dispersed pattern (Figure 26, page 135A) may not be necessary since, in this form no point within the system is more than five miles from a central place. This degree of coverage would be necessary only if the maximum permissible journey to work were also five miles. We have seen, however, that some loggers are prepared to travel up to sixty miles per day to get to work. What constitutes a desirable maximum journey to work is another figure which can be satisfactorily determined only through an involved process of social value identification. Once such a figure had been obtained, however, it would be possible to determine the maximum spacing of towns that would permit every worker to live within acceptable range of a lowest order service centre and, simultaneously live within acceptable range of his place of work. If, for example, the desirable maximum distance for the journey to work was deemed to be fifteen miles, reference to Table III, page 135, indicates that this is half the optimum spacing of the "town" level of service centre. Under these circumstances the optimum settlement pattern would be one consisting of all orders of service centre ranging upward from the level of "town" (Figure 23, page 135A). This pattern would be the one requiring
the least number of settlements to provide a full range of services, while satisfying the limits imposed by journey to work and journey to first order service centre.

The Influence of the Threshold Concept. The selection of this particular goal form was made solely on the basis of the concept of "range". But, as was previously established, the central place theory rests on two concepts, range and threshold. To determine whether or not the selected goal form is valid with respect to threshold it is necessary to determine whether or not the employment characteristics of the forest industry would result in sufficient population being present within range of each service centre to support the "town" order of central place functions. The determination of this condition would require analysis of three factors:

1. The population threshold of each order of service centre.
2. The ratio of basic workers to total population.
3. The number of forest workers employed per unit area of productive forest land.

Threshold Sizes. As was the case with journey to work and journey to first order goods, the population thresholds for service centres are functions of many subjective and objective factors, such as relative costs of marketing particular goods in the region, purchasing power, and consumer demand as influenced by social values.
For this reason thresholds could be determined satisfactorily only through an extensive process of empirical study. Since the complexity of such a process would be inconsistent with the scope of the present study, a set of assumed thresholds will be used for illustrative purposes. The use of the Saskatchewan study as a source of example for hamlet spacing and service centre terminology would suggest its re-use as a source of threshold data. Unfortunately, however, the population figures quoted in the Saskatchewan study were for service centre residents only and did not include the total trade area population. Therefore, it is proposed to use instead the figures contained in the Upper Midwest Study. Since the figures are only being used to illustrate a hypothetical situation the inconsistency is irrelevant. The threshold population disclosed for the five lowest order service centres in the Upper Midwest Study were:

<table>
<thead>
<tr>
<th>Type</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamlet</td>
<td>960</td>
</tr>
<tr>
<td>Village</td>
<td>3,900</td>
</tr>
<tr>
<td>Town</td>
<td>9,000</td>
</tr>
<tr>
<td>Greater Town</td>
<td>14,600</td>
</tr>
<tr>
<td>City</td>
<td>43,400</td>
</tr>
</tbody>
</table>

On the admittedly untested assumption that these figures are valid for British Columbia, and assuming also that the forest industry were the only basic employer in the province, the productive forest land circumscribed by a fifteen mile radius would have to generate employment sufficient to sustain a population of 9,000 if the selected goal form were to achieve the stated goal of maximum access to a full range of goods and services in accordance with the central place theory.
Employment to Population Ratio. To determine whether or not such a population could be sustained, the ratio of basic workers to total population would first have to be established. This too is a complex factor, subject to many influences such as typical family size, ratio of married to single workers, and ratio of basic to service workers. As with other factors, extensive empirical study would be the only satisfactory way of establishing this ratio, but the complexity of the problem necessitates instead the making of further assumptions for illustrative purposes. In a recent study of the possible impact of a new pulp-mill upon the Peace River District, a ratio of 1:3.33 was used\textsuperscript{113} while in an interview with the Regional Planning Director of the Province of British Columbia it was suggested that the figure might go as high as 1:7.\textsuperscript{114} For illustrative purposes a compromise ratio of 1:5 is proposed. The acceptance of this ratio would mean that to support a total population of 9,000 the forest industry would have to provide a total of 1,800 jobs within the area circumscribed by a fifteen mile radius (that is, within an area of 700 square miles). This works out to a figure of 2.5 employees per square mile.


\textsuperscript{114} Don South, op. cit.
Employment Per Unit Area. Topography, nature of species, and general forest productivity vary so widely throughout the British Columbia forests that a meaningful average figure for employment per unit area is impossible to calculate. However, given access to detailed cutting plans and forest inventories, plus sufficient resources of time and money, it would be quite feasible to make meaningful estimates for desired areas. Since the present study is concerned only with the development of general techniques, it is proposed to establish an assumed figure based on the Celgar operations in the vicinity of the Arrow Lakes.\(^{115}\) Since this is presently the only integrated operation in the interior, where most future development is expected to take place, it is felt that it is roughly typical of the pattern that may emerge throughout the interior during the next few years. Relevant figures for the Celgar operations are:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total License Area</strong></td>
<td><strong>4,000 square miles</strong></td>
</tr>
<tr>
<td><strong>Logging Employment</strong></td>
<td><strong>464</strong></td>
</tr>
<tr>
<td><strong>Sawmill Employment</strong></td>
<td><strong>305</strong></td>
</tr>
<tr>
<td><strong>Pulp-mill Employment</strong></td>
<td><strong>320</strong></td>
</tr>
<tr>
<td><strong>Total Employment</strong></td>
<td><strong>1,089</strong></td>
</tr>
</tbody>
</table>

Employees per square mile \(0.28\)

It has already been established that to achieve the goal form of "town", service centres at thirty mile spacing would require 2.5 employees per square mile, a figure nearly ten times as high as

that provided. Under these circumstances there are three possible approaches to a solution.

1. Hold the "order" constant while accepting an increased journey to work.

2. Hold the journey to work constant, and accept a lower order of service centres.

3. Compromise between these two extremes.

If the first solution were followed, the tributary area required to create enough employment to support a "town" would be $1,800 + 0.28 = 6,430$ square miles, necessitating a maximum journey to work of about forty-five miles. This would produce a settlement pattern of "towns" at ninety mile spacing, in which no higher order of center would emerge, since this spacing substantially exceeds the fifty-two mile limit upon "greater town" spacing as determined by the "range" of the next highest order of goods. (See Table III).

If the second solution were followed, with journey to work limited to fifteen miles, then each tributary area would provide employment for only 197 workers, resulting in a total population of 985 persons per service centre. This is approximately equal to the threshold population of 960 required to support a hamlet. Thus the resulting settlement pattern would consist of hamlets at thirty mile spacings. Since this spacing exceeds the 17.3 mile limit imposed by theory on the spacing of the next highest order of centre, no higher order would emerge.
Clearly, by choosing the latter alternative the entire system is condemned to function with only the lowest order of services being made available. Yet this is precisely the solution chosen throughout much of British Columbia, where industry has been left free to select the location of settlements and has opted in favour of proximity to work, at the cost to the public of a higher order of service.

If the compromise solution were accepted, the result would be a uniform pattern of settlements at the "village" level spaced approximately sixty miles apart. From the above calculations it is apparent that the forest industry by itself does not generate enough employment to allow a full hierarchy of settlements to emerge, and the only valid goal forms from which a choice may be made would be those represented by Figures 127 to 129, page 146, in which all settlements are of the same order, with the variable factors being desired level of service, and maximum journey to work. The choice clearly depends on the relative value which society places on level of service and journey to work. As pointed out earlier, the determination of these values is a matter of sociological research. For illustrative purposes it will be assumed that the "hamlet" solution is regarded as unduly favoring the journey to work factor, and that the choice lies between the village pattern at sixty mile spacing, and a town pattern at ninety mile spacing.
However, another factor must be taken into account before a final solution can be proposed. This is the fact that, while logging activities are diffused over a wide area, the conversion activities are carried out at concentrated points. The effect which this may have upon employment distribution must be considered as a final step in the testing and selection of a preferred goal form. Based on the assumed "typical" operation, 4,000 square miles of territory will support the following conversion activities:

1. One pulp-mill of 200,000 tons per year output employing 320 workers. This is the approximate minimum economic size for a pulp-mill, as established in Chapter III, so this activity could not be dispersed among more than one centre.

2. Sawmilling activity with an annual output of approximately 70 million f.b.m. This activity could be concentrated at a single point, or could be dispersed up to a limit of five sawmills of 14 million f.b.m. capacity. Below this limit it is not economically feasible to install "barking" and "chipping" equipment, making full utilization impossible.\(^{116}\)

3. Logging activity employing 464 men, dispersed in a moving pattern in accordance with cyclical patch logging practices.

To determine the effects of these employment characteristics upon the two alternative goal forms selected above, consideration is

\(^{116}\)Les Reed, op. cit.
given first to a pattern of complete concentration of activities. The requirement of a 4,000 square mile area to support the selected level of operations would mean locating all conversion plants in points at, or near, the centres of areas circumscribed by radii of approximately thirty-six miles. Retaining the original assumption of uniform topography and yield, this would mean a pattern of conversion plant sites at seventy-two mile spacing. Three possible approaches could then be taken to accommodate the employment pattern to the previously selected settlement pattern.

1. Hold the employment pattern fixed, and revise the settlement pattern, so that all people live at conversion plant sites.
2. Compromise between the ninety mile "town" pattern and the established employment pattern.
3. Compromise between the sixty mile "village" pattern and the established employment pattern.

If the first alternative were chosen the result would be a uniform pattern of settlements at seventy-two mile spacing having a population of $5(1,089) = 5,445$. This is well below the 9,000 threshold for a town, so the resulting settlements would be villages with, perhaps, a few more amenities than the threshold-sized village. The selection of this alternative would produce a pattern in which the level of services would be only slightly higher than the sixty mile village pattern, in which the loggers maximum journey to work would be increased by six miles from thirty to thirty-six, but in which
travel for conversion plant workers, constituting some sixty percent of the labour force, would be reduced to a minimum. This pattern is illustrated in Figure 30, page 146A.

If the second alternative were chosen, adjustments would be necessary in order to adhere to the 1.73 relationship required to produce a logical interlocking pattern. Policy changes allowing more intensive harvesting through a reduction in the minimum allowable diameter of cut, plus the operation of plants at slightly less than optimum capacity, might permit the spacing of conversion plants to be reduced by approximately ten percent to, say, sixty-five miles. The 1.73 relationship would expand the spacing between settlements to 112 miles, as indicated in Figure 31, page 146A. The increase in spacing would add slightly to the population, but not enough to effect the level of services. The net effect of this alternative would be a level of services approximately equal to the ninety mile "town" pattern, an increased maximum journey to work of fifty-six miles as opposed to forty-five miles for loggers and an extended journey to work for all conversion plant workers as well.

If the third alternative were chosen, village spacing would have to be reduced and conversion plant site spacing expanded, in order to maintain the 1.73 ratio. The net effect would be a return to the "village" level of service as in alternative one, with a slight decrease in the maximum journey to work for loggers, but with all conversion plant workers forced to travel long distances
to work. Clearly this alternative is inferior to the first, and the decision would have to be made between alternatives one and two. It will be assumed that alternative one is preferred, on the basis that the social cost of having both loggers and conversion plant workers involved in a lengthy journey to work is too high a price to pay to achieve the "town" level of service. Thus, the goal form finally selected is that of uniform settlements at seventy-two mile spacing, with all conversion plant facilities contained within, with loggers facing a maximum journey to work of thirty-six miles, and with goods and services being provided at the village level only. The Upper Midwest Study suggests that at this level, commercial facilities would likely consist of the following:

- Gasoline Service Station
- Grocery
- Drug Store
- Hardware Store
- Bank
- Eating Place

plus any two of the following:

- Garage, automobile or implement dealer
- Variety Store
- Meat, Fish or Fruit Market
- General Merchandise Store

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117Borchard, op. cit., p. 4.
ALTERNATIVE SETTLEMENT PATTERNS BASED
ON THE CENTRAL PLACE THEORIES AS MODIFIED BY THE CHARACTERISTICS OF THE FOREST INDUSTRY.

- Towns
- Villages
- Service
- Conversion Plant
- Tributary areas of service centres
- Tributary areas of conversion plants

THE FOREST INDUSTRY AS A DETERMINANT OF SETTLEMENT IN BRITISH COLUMBIA: THE CASE FOR INTEGRATION THROUGH REGIONAL PLANNING

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Communities of this size in British Columbia also typically support public education facilities up to junior matriculation level and a thirty to forty bed hospital.¹¹⁸

Residual Goal Forms

Goal forms relevant to the other stated goals of employment opportunities and transportation facilities are residuals of the goal form selected with respect to goods, services and other amenities. The forest industry can, itself, create employment opportunities only within its own operation, and within the service sector of the economy which it supports. By selecting a settlement pattern that maximizes the level of goods and services available to forest workers while respecting both the technical requirements of the industry, and other goals such as minimum travel time, stability of employment is satisfied. The goal form with respect to transportation must clearly be the most efficient road network that can be devised to link up the settlements of the selected settlement pattern. This, of course, is predicated on the assumption that "preferred modes of travel" refers to automobiles. While there seems to be overwhelming evidence that this is the case at present, it is not inconceivable that this preference might change at some date in the future, in which case the "preferred mode" would be yet another element to be identified through

social research.

Conclusions

Before the technique illustrated in this Chapter could be applied to obtain realistic rather than hypothetical results, substantially more data would be required than is presently available. Much of this essential data is of a general planning nature, including "threshold" and "range" figures for British Columbia conditions; basic to non-basic employment ratios for all sizes and all economic characteristics of British Columbia communities; employment to total population ratios; and socially desirable standards for journey to work. To obtain this data an extensive empirical study of the entire province would be required involving such specialists as social and regional scientists and economic geographers.

Additional data would be required from the forest industry itself. This would include accurate information on employees per unit area for different regions and localities within the province, data on productivity, and future cutting plans. Much of the raw data from which this information could be compiled is already collected for other purposes. Examples of this include the Continuous Forest Inventory and the cutting plans filed with the British Columbia Forest Service by every logging operator functioning within the provincial sustained yield program.

The forest industry, though the most important economic
activity in the province, is by no means the only one. All other activities such as mining, agriculture, fishing, manufacturing, government service, transportation, and recreation also contribute toward the establishment and development of communities, and their effects would have to be analyzed in exactly the same manner as the forest industry.

Equally important would be a thorough analysis with respect to existing conditions of development and urbanization throughout the province. This would be essential to provide an estimate of the extent to which current conditions fall short of desired goals, and to provide a point of departure for the process of planning for the future.

Only when all this had been done could meaningful goal forms be devised for the achievement of desired goals. Obviously the forest industry can not function alone or independently in this field. A province-wide approach to planning is required, which would not only embrace the entire area of the province, but every economic activity and government function as well.

It may be argued that the complexity and volume of needed research is so great as to make such an approach either excessively expensive or completely impossible. However, as was pointed out earlier, a great deal of the required research is already being conducted on a continuous or periodic basis for other purposes. Census data on population, labour force, income, retail activity and
housing, for example, could be restructured to aid in the process of establishing figures for range and threshold. Data gathered by the British Columbia Forest Service, and by other functional government departments could be similarly restructured to enable the relationships among resources, employment and population to be determined. Some of the more subjective data, such as relative values assigned by society to level of services and journey to work would admittedly be more difficult to obtain. However, the techniques of social science are already well enough developed to allow a more accurate appraisal to be obtained than could be produced through intuition or hunch, which are the only techniques now being used.

The most vital prerequisite to such an undertaking would be the desire of the province's citizens, and their government, to define their goals and devise the means to achieve them. If this were present, then the development of the forest industry, and of all other economic activity within the province, could be made "subject to the process of regional planning."\textsuperscript{119}

IV. CHAPTER SUMMARY

The forest industry of British Columbia is undergoing extensive changes in the forms of the consolidation of existing activities

\textsuperscript{119} Supra, p. 122
and the extensive development of new productive capacity. This propensity for change constitutes a potential resource which could be utilized as a means toward the fulfillment of a number of social goals, particularly those associated with the achievement of desirable standards of urban life. Primary responsibility for initiating such a process rests, in British Columbia, with the provincial government.

To attempt to direct the forces of development in pursuit of defined goals is, in effect, to undertake the process of regional planning. This planning process begins with the identification and explicit statement of goals. Although a comprehensive set of provincial goals has never been explicitly stated there is ample evidence of a strong desire on the part of the citizens living beyond the extreme southwest corner of the province to achieve a higher standard of urban services and amenities.

The "central place" theories of Christaller and Losch provide an analytic tool for the purpose of conceptualizing possible forms in which such a goal could be given substance. Application of these theories to the peculiar spatial and employment characteristics of the forest industry appears to indicate that a full range of urban services can not be supported by a society depending solely upon forest operations for its economic base. However, a higher level than that prevailing in many of the forestry based regions of the province could be sustained by concentrating settlement in more widely
spaced centres, each of which would ideally be based upon an integrated pulp-mill - sawmill complex. Such a pattern would impose a longer journey to work upon those workers engaged in logging, but improved road systems could partially compensate for this.

The forest industry, acting in isolation, could not possibly achieve these conditions. A complete, province-wide program of research and action would be required involving the co-ordination of all sectors of the economy and all government departments. Such a program would be entirely feasible, and if undertaken would provide a comprehensive framework for directing the development of the province toward the fulfillment of desired goals.
CHAPTER VI

PROPOSED POLICIES FOR INTEGRATING FORESTRY WITH REGIONAL PLANNING IN BRITISH COLUMBIA

I. ADMINISTRATIVE FRAMEWORK FOR REGIONAL PLANNING

Basic Requirements

Introduction. While it was established, in the previous chapter, that the environmental changes being generated by the forest industry could be utilized as a means toward goal fulfillment, the point was made that this could only be accomplished within a comprehensive province-wide framework of regional planning. It is therefore necessary to indicate in broad outline what form this framework would take before specifically analyzing the ways in which the forest industry and the Department of Lands, Forests and Water Resources could function within it. To be effective such a framework would have to possess three fundamental characteristics: it would have to be province-wide in area, it would have to be fully comprehensive, and it would have to be able to account for regional variations.

Province-Wide Scope. The need for a province-wide approach is based on three principal factors:

1. Constitutionally the provincial level of government is assigned sovereignty over all matters relating to property
and civil rights, all matters of a purely local nature, and all Crown lands and resources. This embraces the major areas of concern of the process of regional planning, and hence the provincial government is the most appropriate level at which to initiate and administer such a process. When a provincial government applies itself to the fulfillment of public goals, a concern for less than the entire area of its jurisdiction would amount to local favoritism.

2. As a matter of policy the provincial government has retained direct ownership of many resources, developing and administering them itself in the interests of the public. The forest industry provides a perfect example of this with the British Columbia Forest Service, as was noted before, being "in business". As there is scarcely an area anywhere in the province that is not either directly or indirectly affected by resource development, the machinery for anticipating and coping with the effects of this development must, of necessity, be province-wide.

3. The provincial government is the principal investor in the province, being active in the fields of road construction, power generation and distribution, ferry operation and railway operations. Its Crown Corporations represent a net investment

120 British North America Act, 1867, As Amended, Chapter VI, Section 92.
of $1,112,000,000 and returned a net profit of nearly $11,000,000 in 1963. These activities have a very strong influence upon the nature and direction of development, and if regional planning is to be effective, their influence must be co-ordinated within the process.

**Comprehensiveness.** The need for comprehensiveness arises directly from the complex interrelationship existing among the social, political, economic and physical aspects of development. These interrelationships are nowhere more apparent than in the chain reaction of urbanizing events set off by resource development. The opening of a mine, or the construction of a pulp-mill, brings into a hitherto undeveloped area a new population with wants and needs that embrace the entire gamut of human experience, and are directly translatable into explicit goals. These must be met from a limited reservoir of fiscal, spatial and temporal resources. Action taken in the pursuit of one goal, and drawing upon these scarce resources, may unnecessarily frustrate the pursuit of another goal. Conversely, it may fail to take full (or any) advantage of the opportunity to reinforce the pursuit of another goal. Either case constitutes a failure to apply the modern concepts of full utilization and multiple use to our most

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valuable resources. An example of such a resource-waste would be the establishment of two separate settlements by independent resource developers where the opportunity existed to combine these into a single large settlement, making a higher order of service available to the residents.

**Regional Accountability.** The Province of British Columbia has an area of 228 million acres, within which exist many diverse regions. Some of these, such as the lower mainland and the southern tip of Vancouver Island, are highly urbanized, while others are in a very preliminary stage of urbanization. Some are experiencing extremely rapid economic growth, while others remain relatively static. Some depend primarily on forestry for their economic base, some on agriculture, some on mining; yet none is an exclusively one-industry region. For these reasons policies formulated centrally and applied uniformly across the province will affect various regions in different ways. For example, a policy of liberal tax allowances to farmers, designed to preserve highly productive farmland from the encroachment of urban growth, but applied uniformly throughout the province, might have the effect, in some regions, of encouraging marginal farmers to remain on unproductive land at public expense. Conversely, if no means exist for determining and understanding regional conditions and transmitting information up to the policy-making level, then the special requirements of each region cannot be accommodated in any
Existing Provisions

New Legislation. New legislation placed before the current session of the Provincial Legislature in the form of amendments to the Municipal Act indicates that the government has become more aware of the need for regional planning within the province. Basically the amendments allow for the creation by the Lieutenant-Governor in Council, on the recommendation of the Minister of Municipal Affairs, of **Regional Districts**, each of which is to be governed by an executive body called a **Regional Board**. The Regional Board is to consist of representatives, called directors, drawn from the elected councillors of municipalities within the District, plus directors elected directly by the residents of unorganized territory within the District, in order to provide them with representation.

The Regional Board is required to prepare regional plans for the District, using the services of a full-time, paid, professional **Planning Director**. This Planning Director, also serves as Chairman of a **Technical Planning Committee** whose duties are to:

1. Advise the Regional Board on planning matters.
2. Act as liaison between the administration of the Regional

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Board and the respective departments of government and the member municipalities.\textsuperscript{123}

The Technical Planning Committee is to consist of the Director of Planning, The Medical Health Officer, a representative of the Provincial Planning Department, one officer at the option of each of the member municipalities, and one representative at the option of the following provincial departments:

1. Land Service, Department of Lands, Forests and Water Resources.
2. Water Resources Service, Department of Lands, Forests and Water Resources.
3. Department of Agriculture.

The Regional Planning Board is also required to appoint one or more Advisory Planning Commissions, to provide the Board with a source of non-political, non-technical advice.

\textbf{Evaluation.} As these legislative amendments have not yet been put into force, it is too early to judge their effectiveness. However, while the amendments undoubtedly represent a great step forward in the field of regional planning in British Columbia, they appear to fall short of meeting the three criteria established at the beginning of this Chapter.

1. \textbf{Province-Wide Scope.} It is not known yet how large the proposed

\textsuperscript{123}Ibid., p. 18.
regions will be, though there appears to be an intention to base them upon school districts. Nor is it known whether districts will be contiguous or whether they will result in islands of planning within a sea of unplanned territory. However, it seems that each district will be basically introspective, co-ordinating development and resolving conflicts within its own area without reference to an overall provincial picture. There is no provision for the expression of overall provincial goals with respect to urbanization or development, and hence no provision for machinery to make development occur in regions where additional levels or "orders" of urban services would be desirable.

2. **Comprehensiveness.** The proposed Regional Districts are not fully comprehensive in their representation to the Technical Planning Committee. There is, for example, no provision made for inclusion of representatives from key Provincial Crown Corporations such as the British Columbia Hydro and Power Authority or the Pacific Great Eastern Railway. The activities of these bodies can be of considerable significance in the process of urbanization in areas such as the Arrow Lakes in the case of the British Columbia Hydro, or the Squamish Valley in the case of the Pacific Great Eastern Railway. Of greater relevance to this particular study is the absence of any provision for including the British Columbia Forest Service. This
constitutes yet another failure to recognize the importance of the forest industry in the process of urbanization.

3. **Regional Accountability.** As was mentioned previously the Regional Boards appear to be somewhat introspective, concerned primarily with controlling activities within their own boundaries. However, the fact that they do have representation from some provincial departments provides the opportunity for a flow of information so that provincial policy-makers in the represented departments may account for regional variations in their decision making. However, the fact that certain key departments involved in resource development do not have representation may prove to be a weakness. Furthermore, in the absence of any information as to Regional District size, the possibility exists that the districts may be too small in area to encompass, and effectively deal with, the total area of incidence of developmental decisions. Another weakness may prove to be that basic responsibility for co-ordination above the local level rests with the Department of Municipal Affairs. This may make it difficult at times to secure the fullest cooperation of other departments which, though equal to Municipal Affairs in the organizational hierarchy, may have greater power or more influence at certain times or in certain regions. In the settlement of disputes, the decisions of the Municipal Affairs Department are subject to cabinet approval, which pro-
vides an opportunity for inter-departmental co-operation. However this is only a method for resolving conflicts and provides nothing in the way of machinery for initiating a multi-departmental program of development.

Proposed Provisions

Introduction. Politics has been defined as "the art of the possible", and undoubtedly the current amended legislation represents a political judgment as to the tempo or rate at which change can be successfully injected into a well-established social, economic and political order. However, as it is not the planner's role to make political judgments, but rather to identify where the public interest lies, as an aid to politicians in their decision-making, a framework for planning which meets the above three criteria will be assumed to exist, in order to illustrate how the forest industry could best be utilized to serve the fulfillment of provincial goals. Such a framework was proposed in the student project, Planning for Development in British Columbia and it is this framework that will be assumed to exist for purposes of this study.

Provincial Development Department. The proposed framework is based on the establishment of a Provincial Development Department, similar to all other functional departments of government, such as the Department of Highways, or the Department of Health and Welfare. The portfolio for this department is held by the Premier, with the department acting as a technical staff to the cabinet-at-large. The functions
of the department include formulating provincial goals, advising the Cabinet on matters of overall development policy, and co-ordinating the policies and activities of all other government departments. The department also provides the means of bringing the various provincial Crown Corporations within the Cabinet structure.

**Regional Development Offices.** The Provincial Development Department has a number of regional branches called Regional Development Offices, each of which is under the direction of a Regional Development Officer and each of which administers a territory large enough to embrace the area of incidence of developmental decisions. The functions of these Regional Offices include preparing an overall development plan for the region, in conformity with provincial goals, feeding back data on local conditions to the policy-makers in the Cabinet and the Provincial Development Department, evaluating the regional effects of government policy, and co-ordinating the developmental activities of other government departments, and of private enterprise within the region.

**Regional Inter-Departmental Committee.** The principal instrument through which this co-ordination is achieved is a body known as the Regional Inter-Departmental Committee. This committee consists of the regional representatives of all provincial government departments active in the region, who meet at regularly specified intervals under the chairmanship of the Regional Development Officer. This
committee provides an opportunity for continuous review of develop­mental action, with the role to be played by each individual depart­ment being clearly established. In this way development is enabled to proceed in a united, co-ordinated manner with an absolute minimum of inter-departmental conflict.

**Regional Size and Scope.** A precise definition of regional boundaries, and the total number of regions to be established, is not presented in the study. However, it is proposed that no part of the province should be outside a region, and that, as a tentative suggestion, seven such regions would provide areas of reasonable size. The study also provides for a lower level of co-ordinating bodies called Joint Services Boards, by which municipalities may co­operate with each other in the provision of municipal services. However, as these operate at a level of decision-making below that at which the forest industry is involved they will not be examined in this study.

**Evaluation.** These proposals provide a two-dimensional frame­work for planning for development, with existing functional depart­ments, plus the new Development Department, providing "vertical" administration in which policies are directed downward from the central authority in Victoria; and the regional offices and commit­tees providing a means for "horizontal" co-ordination of action in the field. A very strong similarity may be seen between the pro-
posed framework and the existing structure of the British Columbia Forest Service as described on page 33. It is interesting to note that the proposal of seven "regions" for planning purposes falls between the existing number of five Forest Districts and the ten tentatively suggested by Sloan as being an appropriate number. For these reasons it seems apparent that the Forest Service could adapt itself quite readily to fit into such an administrative framework.

II. IMPLEMENTATION OF REGIONAL PLANNING

Determination of Regional Boundaries

Statement of Problem. Upon the establishment of the administrative framework the logical next step would be the definition of regional boundaries. This is an extremely difficult problem involving the assessment of many factors. Paul Ylvisaker, Associate Director, Public Affairs Program of the Ford Foundation recently wrote:

...If anything has been learned, it is that the region is an extremely elusive concept, and often has no more substance than what each person may impute to it. Also, even among the regions which exist and are not imaginary, there are considerable differences in size, character and purpose, and it would be going far beyond what is known to assert that there is a common set of general principles which prescribe how regions should be organized and administered for purposes of effective planning.125

124 Sloan, op. cit., p. 55.

It is felt by some planners that the definition of precise regional boundaries should be avoided, it being argued that, as every problem has its own area of incidence, the machinery set up to deal with these problems should be capable of expanding or contracting accordingly. If this point of view is accepted, then a co-ordinated, rather than an ad-hoc, approach to problem solving requires that all action taken within the "elusive" region originate from the same centre and extend outward as far as necessary to deal effectively with each particular problem. However, two basic difficulties are inherent in this approach. First, not all problems within an area necessarily originate from the same centre. Secondly, action taken in one centre to deal with a particular problem may, at the periphery overlap or conflict with action being taken in an adjacent centre. For these reasons, clearly defined regional boundaries are necessary. However, there should be machinery for reviewing and changing boundary locations if and when the original choice appears unsuitable. Principal determinants to be taken into consideration in establishing regional boundaries are: (1) Statistical and Administrative, (2) Geographic, and (3) Economic.

Statistical and Administrative Determinants. The Province of British Columbia is presently sub-divided into a great many statistical and administrative areas, which frequently bear little relationship, one to the other, in terms of boundaries or size. Examples of this include school districts, land-registry districts, forest
districts, census divisions, federal electoral constituencies, and provincial electoral constituencies. The establishment of regional planning boundaries should be used as an opportunity for rationalizing these inconsistencies, so that all such jurisdictions are either contiguous, or multiples of one another. To accomplish this a program of boundary definition should take cognizance of all existing boundaries which appear reasonable, and should re-align all others to compliment the boundaries chosen for regional planning.

**Geographic Determinants.** Geographic features may be very strong determinants of regional boundaries, with river basins, water sheds and mountain ranges having been used quite frequently for this purpose in the past. Essentially, any geographic determinant should delineate an area of contiguous geographic similarity. For this reason rivers are generally unsuitable as boundaries, in spite of their frequent use for this purpose, since the areas through which they flow are usually similar on either side.

**Economic Determinants.** Economic determinants of regional boundaries include such factors as contiguity of economic activity, flow of intra-regional accounts, and systems of cities. Contiguity of economic activity is generally related to geographic factors such as climate, soil fertility and topography, and the use of such determinants is likely to lead to the establishment of boundaries similar to those arrived at geographically. Intra-regional flows of accounts
serve to indicate how strong the economic, or "business" linkages are between different towns, cities or other areas within a tentatively proposed region. The zone in which this inter-dependence appears to decline can frequently be used as a regional boundary. The analysis of system of cities within an area will help to disclose what parts of the area are under the dominance of a major city, and the "twilight zone" between equal areas of influence can often be used as a boundary.

**Summary.** In summary, the determination of regional boundaries would have to depend upon a thorough program of research and analysis. Such a program should take cognizance of all existing boundaries, without being committed to retain any that prove unsuitable. By re-aligning existing statistical and administrative boundaries and by paying full regard to geographic and economic factors, a rational system of regional boundaries could be established which would not only assist in the process of regional planning, but would improve other aspects of provincial administration as well. Once the regions had been delineated, the boundaries of the Forest Districts could be revised to conform and the District Forest Rangers could take their places on the Regional Inter-Departmental Committees.

**Evaluation of Current Conditions**

**Statement of Problem.** Before any planning action can be undertaken in pursuit of specified goals a thorough survey of
existing conditions must be undertaken, and the results analyzed. This will indicate how far short of the goals the present conditions are, and what action should be taken. In a regional planning study concerned with urbanization, such a survey would involve the appraisal of current conditions of urbanization, the establishment of standards by which the degree of goal fulfillment could be measured, and precise definition of regional goals, based on provincial goals but modified and refined in the light of regional conditions.

Basic Research Requirements. The interrelatedness of social, economic, physical and political factors implicit in planning means that a program of research designed to provide a basis for planning action would have to be broad enough to encompass all these fields. Of particular relevance to urbanization would be the classification of every settlement according to its position in the hierarchy of service centres. Data would also be required on the combination of goods and services to be found in each level of service centre, including public facilities such as schools and hospitals. The "range" and "threshold" of each order of service centre would also need to be determined, as would data on the ratio of population-to-base employment for all increments of community size in British Columbia. Additional information, which could only be obtained through the subjective techniques of social surveys, would be needed to form a basis for establishing maximum standards for
journey-to-work and journey-to-school. While this represents an extremely extensive program of research, it must be noted that effective planning cannot be undertaken without a firm foundation of facts. A province thoroughly committed to planning should consider such research to be as much a matter of course as the decennial census, and indeed, much of it could be conducted in conjunction with census taking.

Analysis of Data. Upon the completion of the research program, the data could be analyzed to obtain a precise, quantifiable picture of the relative standards of urbanization within each region. This could be expressed in terms of relative degrees of "disadvantagement" with respect to urbanization, by determining what percentage of the population of each region was beyond "range" of first order services, second order services and so on. Further refinement could be introduced by separating out such important specific services as hospitals and schools, and giving added importance to their absence. In this way an overall provincial picture of the current state of urbanization could be presented in order to provide guidelines for overall provincial policies, and to establish priorities for provincial action. However, because of the considerable differences which exist between regions of the province, the preparation of detailed developmental programs would have to be conducted at the regional level. By integrating the forest industry into these regional programs the forces of change within the industry
could be harnessed to serve in the fulfillment of the goals of urbanization.

**Regional Application**

**Basic Approach.** The application at the regional level of the data obtained through the above research program would involve a more precise analysis of settlement patterns and road networks to determine the existing hierarchy of service centres. This analysis would provide the foundation for the preparation of a development plan aimed at achieving that pattern of service centres and road linkages which would bring the maximum number of people within range of the highest possible order of goods and services that the region is capable of supporting.

**Technique of Analysis.** The technique of analysis would involve mapping the region, locating all service centres and drawing circles around them equivalent to the space-time "range" of each order. By comparing these circles against the known distribution of population within the region, it is then possible to evaluate what the present pattern means in terms of numbers of population experiencing "disadvantagement" with respect to access to various levels of urban facilities and amenities. It would then be possible to view this "disadvantagement" in terms of two separate time-spans. In the short run the objective would be to re-structure the settlement pattern and road network so that conditions of urbanization for
the maximum number of existing residents would be brought up to
the highest level the region is capable of supporting under
present conditions. In the long run the objective would be to in­
crease the overall level of urbanization to the extent required for
fulfillment of regional and provincial goals. This would involve
introducing new inputs of economic activity into the region and
directing their location in order to contribute to the establish­
ment of the optimum settlement pattern, as determined by the con­
cepts of "range" and "threshold".

Short Run Objectives. Where areas are found to be under­
developed with respect to the potential level of urbanization that
could be supported, the problem could be the result of any one of
a number of reasons, or combinations thereof, each of which would
call for a different remedy. Principal causes and remedies would
include:

1. Inadequate transportation within the area.
   Remedy: provide new inputs of capital in the form of road
   construction, bridges, ferries, et cetera.

2. Two or more equal, low order centres which are frustrating
   one another, so that none can achieve a higher order.
   Remedy: analyze each centre to determine which appears to
   have the greatest potential for becoming a higher order
   centre. Factors to be considered would include centrality,
   space for expansion, site amenity, total value of existing
investment in social capital, et cetera. After selection, programs could be initiated to encourage the emergence of the chosen community to a position of dominance within the area. Examples of such programs would include rearranging road networks to focus on this community, concentrating future public facilities within the community, and using positive and negative controls such as financial incentives and land use restrictions to direct growth in this private sector toward reinforcing this choice. Where deemed desirable, programs could also be undertaken to phase-out certain communities by discouraging growth and providing financial assistance for resettlement.

3. A newly developed area in which services have not had time to catch up to population.

Remedy: analyze to determine if time alone is all that is required to rectify conditions. If the problem appears to involve more than this, then the analysis, in all probability, will suggest the remedy. For example, a shortage of risk capital to invest in retail facilities would perhaps suggest making low interest loans available to interested local investors.

*Long Run Objectives.* The conditions required for the achievement of long run objectives would be set forth in the development plan for the region. The preparation of this plan would involve
making a complete assessment of the economic potential of the region and the determination of what this would mean in terms of employment and total population. It is theoretically possible that such an assessment might reveal that the economic potential is insufficient to support the expected natural increase in future population. In this case the long range development plan would have to include proposals for de-populating the area through planned emigration. However in an underpopulated and richly endowed province such as British Columbia it is highly unlikely that any region would exhibit these characteristics. In this case the pursuit of long run developmental objectives would involve relating the economic potential to the locational requirements of the economic activities which this "potential" could support. Application of the basic-employment-to-total-population ratios as determined earlier in the research stage would then indicate which alternative location of each activity would contribute to the achievement of this optimum pattern of settlements. In this way policy makers would be provided with a means for objectively resolving conflicting claims for developmental rights to the same resources as well as being provided with firm guidelines to direct them in their own developmental activities.
III. ROLE OF THE FOREST INDUSTRY
IN REGIONAL PLANNING

Research Activities

Productivity. As part of the necessary data required to determine the economic potential of a region, information would be required with respect to the productive capacity of all forest land within the region. Most of the necessary information is already collected in the Continuous Forest Inventory, in the determinations of allowable annual cut made by the British Columbia Forest Service and in the cutting plans for sustained yield units and tree farm licenses on file with the provincial government. All that would be required to make this information of value in planning regionally would be to put it at the disposal of the Regional Development Office.

Employment Characteristics. Much of the information with respect to employment could also be obtained from existing files and records. By gathering data on the size of labour force employed by each operation, and relating this to such factors as size, capacity and relative efficiency of the operation, technological trends, species mix, topography, length and mode of transportation and other regional and sub-regional variables, it would be possible to determine fairly accurately the labour force which the region would be able to support. By combining this with the appropriate basic-population-to-total-employment ratio, it would be possible to pre-
dict the eventual population which could be supported by forest activities within the region.

Existing Operations. A survey of existing productive facilities within the region would be required in order to determine which ones are operating efficiently and which ones are likely to succumb to the effects of competition and technological change. This would be of particular importance in regions containing many small sawmills which would be unable, due to inefficiencies of scale, to install barking and chipping equipment in order to make sawmill waste into pulpwood chips. When a market for chips develops within such a region due to the establishment of a pulp-mill, the probable effect will be to enable the larger mills to operate so much more profitably than the smaller ones that, during the next bidding cycle the small mills will lose their assigned commitments and will be forced to shut down. Data on the relative strength or vulnerability of each operation could be combined with planning research on such matters as service centre hierarchy, environmental quality and net value of social capital in order to determine which activity-locations should be phased out, which should be retained, and which should be expanded.

Policies With Respect to Existing Conditions

Consolidation of Activity. One of the most controversial byproducts of the government's sustained yield policy has been the gradual disappearance of the small scale operations which tradition-
ally formed the major part of the Forest Industry in British Columbia. However, if the forest resource is to be efficiently and fully utilized this disappearance is inevitable, and any attempt to prevent it, in order to preserve a "way of life" or a "right to a livelihood" would be as illogical as an attempt would have been, at the turn of the century, to prevent the widespread use of the automobile in order to protect the village blacksmith. The end result of this "squeezing out" of small scale operations need not necessarily be the concentration of all resources in the hands of a few industrial giants for, through the use of such devises as co-operatives and anti-monopoly legislation, ways may be found to enable existing operators to pool their resources of capital and "know how" in order to remain competitive. These matters are not of direct concern to regional planning, however, and are presented only to indicate that the process of consolidation of activities is not only inevitable but desirable, and need not be looked forward to with regret by anyone provided that effective policies exist to deal with all its ramifications.

Camps. As a general policy camps should be eliminated wherever possible in view of the unanimous agreement that they are costly to industry, contribute to the development of undesirable social characteristics and do little or nothing toward urbanizing the area in which they are located. The development plan will
indicate whether elimination of any individual camp should involve abandoning it or transforming it into a permanent community. Abandonment would be feasible wherever the opportunity exists for workers to live in established communities and commute to work. To enable commuting to take place a program of road improvement would be necessary. Where the camp is beyond commuting range of any community it must of course be retained. Under these circumstances it should be the aim of the development plan to transform the camp into a permanent community. An essential first step in this process would be the evaluation of the camp's location in terms of the development plan since locations chosen by companies for their own purposes are not necessarily the most suitable locations for permanent communities. Once the best location is established, every effort should be extended to ensure the development of a viable community. These efforts would include the provision of good road access to minimize any feeling of isolation, full utilization of the provisions of the National Housing Act to create a favorable climate for home investment, and, wherever possible, the establishment of other economic activity within range of the community to stimulate its growth. Where the decision is made to abandon a camp, the provision of adequate road connections to nearby communities will generally be all the action required, since both workers and industry will be glad to relinquish their use of the camp as soon as alternative
accommodation becomes available. Under certain conditions the retention of camps will be inevitable. This is particularly so in rugged coastal areas, where there are no nearby communities and where the cost of building road links to other parts of the province is prohibitive. Under these circumstances some of the problems associated with company ownership of the camps could be overcome by having professional catering companies contract directly with the government through the Regional Development Office to provide full camp services under a form of Public Utility License. Even under these conditions the choice of locations should be made very carefully, since, if any unexpected new development occurs in the vicinity the camp could become the nucleus of a new town. By removing the camps from company ownership they can be expanded to accommodate workers associated with other enterprises as soon as the need arises.

Company Towns. All company towns should be analyzed with respect to their location within the hierarchy of service centres proposed in the regional plan, their net value of social capital and their standards of environmental quality. Those which are considered suitable for retention should be elevated to incorporated status, while unsuitable ones should be phased out. As was pointed out earlier, company towns are generally of a higher standard of quality than equivalent sized non-company towns, are usually located beyond reach of established communities and are based on
permanent industrial operations. For these reasons most company towns would likely be chosen for establishment as incorporated communities. The only ones likely to be scheduled for phasing out would be those which are no longer isolated or remote, such as Woodfibre. Under these circumstances since all company towns are at least twenty years old and are money losing propositions, the companies could be expected to concur with this decision to phase out, and little would be required in addition to the provision of access and alternative accommodation in order to have the decision implemented.

**Emerging Incorporated Communities.** Wherever these are in the process of being established, their location should be carefully analyzed with respect to the settlement pattern proposed in the development plan. Where it is felt that their existence will frustrate rather than support the plan, their further growth should be discouraged. If a considerable amount of development has already occurred, then the techniques of cost-benefit analysis should be applied to determine if the costs of compensation involved in their closure would be greater than the long term costs associated with their continued existence in conflict with the plan.

**Unincorporated Communities.** These too must be assessed in terms of their role within the overall regional development plan. As was indicated in Chapter IV it is these communities that are
most likely to experience economic decline as a result of technological change. Analysis of the viability of the particular enterprise on which they are based, of their value and quality of social capital, and of their location and size within the hierarchy of settlements proposed in the plan, will determine which should be retained and which should be expanded. For those communities scheduled to be phased out, the timing or staging of the phasing-out program can be based upon the date when the cutting permits of the particular operation are known to expire. This will be the date when the uneconomic mills will be forced to close due to their inability to match the bids made for new timber sources by their larger and more successful competitors. When this event occurs, the existence of firm policies to assist families to relocate in more viable communities will minimize the effect of personal economic crises and, at the same time, serve to promote the fulfillment of the regional plan. Resettlement policies could be adopted similar to those existing in Newfoundland, in which financial assistance of up to $600 per household is available to all residents of an unviable community, providing that unanimous agreement is obtained to abandon the community.126 To ensure that resettlement would be directed toward those communities selected to be retained or expanded, it

would be necessary to create both job opportunities and housing accommodation in advance of the closure of the abandoned community. The construction of limited-dividend low-cost housing under the terms of the National Housing Act could be undertaken in the selected communities by a subsidiary of the Regional Development Office, to be co-ordinated with the phasing-out of the old community. A period of slack employment may be expected to occur between the closure of the old mill and the emergence of new productive capacity based on the timber allocation lost by the original operator. A fund should therefore be established to supplement unemployment insurance and thereby encourage displaced workers to remain in the region until the new operations are commenced. Both the provincial government and industry should contribute to this fund, since both would derive benefits from ensuring a smooth transition in employment from old to new locations. Government would benefit through seeing its plans materialize, and industry through being able to draw upon an existing pool of experienced labour.

**Existing Incorporated Communities.** In most cases these could be expected to be the communities to be retained and expanded in any regional development plan, since they are generally larger and better located than the unincorporated settlements, and possess a greater momentum of pre-existence. These communities would therefore, as a general rule, be on the receiving end of the resettlement
policies described above. To ensure that the new productive capacity which would be required to supplant the inefficient mills would, in fact, materialize in the desired location, a variety of devices could be employed. These could include tax incentives, the creation of industrial estates in desired locations and the use of stringent zoning regulations to discourage growth where it was not wanted.

Policies With Respect to New Development

All new development within the forest industry would be required to conform with the regional development plan with respect to location of activities and settlements. Wherever such developments are the first activities to be established in remote areas, as is frequently the case in British Columbia, the Regional Development Office should be responsible for the ultimate selection of settlement locations. The existence of a well defined development plan would materially assist in this process of locational decision making, and would be of value as well in resolving conflicts which arise when different proposals are put forward by competing interests for the harvesting rights to the same area.

IV. CHAPTER SUMMARY

In order that the environmental changes being generated by the forest industry might be utilized as a means toward the fulfillment of provincial goals, it would be necessary to establish a
province-wide framework for regional planning. Such a framework should consist of a Provincial Development Department, of Cabinet rank, with the portfolio held by the Provincial Premier. This department would have a number of Regional Development Offices under the direction of a Development Officer, with each Office being responsible for preparing and administering a regional development plan for the area within its jurisdiction. Co-ordination with the other departments of government would be achieved through Regional Inter-Departmental Committees made up of the regional representatives of all government departments.

The process of regional planning would commence with a thorough province-wide program of research aimed at evaluating current conditions of urbanization and establishing basic data on which to base future decisions. This data would include such matters as "range", "threshold" and "characteristics" of service centres, employment to population ratios, and journey to work standards. On the basis of this information, development plans could be prepared for each region in the province.

These regional plans would enable rational decisions to be made with respect to the location of forest activities and their dependent settlements. The processes of consolidation and expansion could be guided so as to phase out unsatisfactory settlements, improve satisfactory ones, and contribute to the realization of an optimum settlement pattern within each region.
CHAPTER VI

CONCLUSIONS

Within the time-span of a single century British Columbia has been transformed from an almost uninhabited, virgin wilderness to a modern prosperous province of over 1,600,000 citizens. Throughout the period, the forest industry has played a leading part in bringing this about. The foregoing study was undertaken to analyze the relationships between the forest industry and the growth of communities within the province, with a view toward devising policies for the future development of the industry in order that it might make the maximum possible contribution toward the establishment and maintenance of a stable, prosperous and satisfying environment.

During the progress of the study, a number of important facts were made clear. Perhaps of greatest significance is the fact that throughout much of its evolutionary years the forest industry has been subject to a very gradual process of ever-increasing government control. This process has aimed at transforming the industry from one characterized by a philosophy of short-sighted, exploitive transience to one of socially-responsible permanence. The transformation has progressed to the extent that, to-day, over ninety percent of the forest land of the province is under public ownership and management, with much of the remainder having been voluntarily brought within the framework of government policy.
By this policy the forest resources of the province have been placed under a program of sustained yield, in which the annual cut is carefully balanced to match the annual increment of regrowth to ensure a perpetual supply of timber. The stated objectives of this policy are the conservation of the forest-resource and the establishment of permanent communities. However, while the policy has been prepared in considerable detail to ensure the realization of the first objective, there has been very little done in a positive way to bring about the fulfillment of the second.

Another significant fact that has emerged from the study is that, although it is the largest and most important industry in the province, the forest industry is very incompletely documented. Dr. Deutsch, in his recent study of the industry, points this out in the following manner:

The usual sources of industrial information; tax statistics, investment dealers' studies, Dominion Bureau of Statistics manufacturing statistics, and trade associations provide only fragmentary information, since the diffusion of the industry has apparently defied the information gatherer. Only the British Columbia Forest Service has facilities for a complete periodic economic survey, but this organization directs its efforts primarily to matters of forest management. Yet the development of policies for this most important of industries involves investigation of costs of production, efficiency of wood-use, transportation expenses, et cetera, that are so far largely unknown. The average citizen of the west coast is much less informed about desirable economic policy for the forest industry than is the prairie resident about the wheat industry.127

This general lack of accumulated knowledge extends beyond purely economic matters into the realm of forest communities as well. In a recently published book concerned with resource-based communities in Canada, Dr. Ira Robinson notes:

The only important resource activity not covered by the case studies is the forest products industry. Unfortunately, detailed information was not available on any post-war forest community.\(^{128}\)

In spite of this general lack of detailed information, it has been possible to conclude from the study that employment within the forest industry has meant, for many thousands of workers and their families, a denial of the opportunity to participate fully in the wide range of life experiences which the industry has so materially helped to create in the province of British Columbia.

This condition has been partly the result of the peculiar geographic requirements of the industry, and partly the result of its historic pattern of entrepreneurial development. These two factors have combined to produce an extreme concentration of conversion facilities in the highly urbanized southwest corner of British Columbia, and an equally extreme diffusion of activities in a multitude of small communities throughout the rest of the province. Where these small communities have been able to combine a number of related forest operations, such as sawmills, plywood plants or pulp-mills, or to acquire additional non-forest activities

\(^{128}\)Robinson, op. cit., p. 7
to supplement their economic base, they have succeeded in becoming
stable, incorporated communities; but most of them are simply camps,
isolated company towns and small unincorporated settlements.

It has been disclosed in the study that most people associated
with the forest industry, in government, business and labour,
are aware of the shortcomings of these communities as manifested by
labour instability, heavy drinking, high operating costs and limited
opportunity for personal development. Yet, working within the limita-
tions imposed by their exclusive concern with forest operations,
these people have been able to do very little to improve matters.

It is apparent that if significant improvements are to be
realized, existing settlement-patterns will have to be re-structured
to consolidate settlement into larger communities, and new develop-
ment will have to be guided to prevent a repetition of past mistakes.
Technological change, combined with entrepreneurial realignment has
created a situation in which the widely dispersed pattern of forest
operations is becoming more concentrated, both corporately and
spatially. Such a process of realignment offers the opportunity for
simultaneous alteration of the pattern of communities dependent upon
the affected operations.

This alteration will achieve a maximum of effectiveness if
it can be combined with developments which are occurring simultane-
ously in other fields of activity. To realize such co-ordination,
the developmental activities of all agencies, public and private, must be brought under the controlling influence of a single body. The most appropriate body for this purpose is the provincial government.

At the present time the government does not appear to be administratively equipped to undertake effectively the initiation and co-ordination of development. However, the establishment of a Provincial Development Department with Regional Branch Offices, as proposed in the study, would provide a method of effectively formulating and administering developmental policies. By subdividing the province into a number of contiguous, rationally bounded regions, these policies could be translated into regional development plans. By then making all activities of the forest industry subject, not only to provincial forest policy, but to regional development policy as well, the maximum possible contribution which the industry is able to make toward the creation of a stable, prosperous and satisfying environment could be achieved.

Such a process would involve the province in extensive programs of research into existing conditions of urbanization, of analysis of all the forces influencing urbanization, and of regulation and control over the activities of agencies affecting or creating urbanization. Up to the present time such a process has not been initiated in British Columbia with respect to the development of communities, yet
the enlightened and effective policies of the government with respect to utilization of the forests are based on precisely such a process.

The Forest Management Policies of the provincial government could therefore serve as an inspiration for the introduction of regional planning policies as well. In this way the two objectives of forest policy, perpetual yield and stable communities, could both be fully realized. That the forest industry could effectively function within a regional planning policy, and that by doing as it could materially assist in the realization of environmental goals has been clearly demonstrated by the foregoing study. It is therefore concluded that TO ENSURE OPTIMUM PLANNING AND DEVELOPMENT IN THOSE AREAS OF BRITISH COLUMBIA WHERE THE FOREST INDUSTRY IS THE DOMINANT ECONOMIC ACTIVITY, THE PROVINCIAL GOVERNMENT SHOULD INTEGRATE THE PRINCIPLES OF FOREST MANAGEMENT, AND COMMUNITY AND REGIONAL PLANNING INTO A SINGLE COMPREHENSIVE POLICY.
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