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**Success and Failure
in British Columbia's
Softwood Plywood Industry,
1913 to 1999.**

By

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**A Dissertation Submitted in Partial Fulfillment of the
Requirements for the Degree of**

DOCTOR OF PHILOSOPHY

in the Department of History

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to the required standard**

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ABSTRACT:

British Columbia's plywood industry between 1913 and 1935 bore little relationship to the industry of the post-World War II period. In 1913, the Canadian Western Lumber Company's Fraser Mills plant manufactured Douglas fir plywood, but until the late 1930s the largest part of its production was used in door manufacture. Two cottonwood plywood manufacturers, Laminated Materials Company (1913-1931) at New Westminster and the British Columbia Veneer Works (1928-1945) at Nelson, sold their plywood for interior wall paneling and specialty uses such as packing crates. The opening of the H. R. MacMillan Export Company's (MacMillan Bloedel) Vancouver plywood plant in 1935 and its Alberni plant, built in 1942, began a new era of plywood production. Sanded Douglas fir plywood dominated sales. The major producers (MacMillan Bloedel, Canadian Forest Products, Crown Zellerbach, British Columbia Forest Products, and Weldwood), assisted by the Plywood Manufacturers Association of British Columbia, targeted customers and created demand for waterproof Douglas fir plywood. The major producers established a network of wholesale warehouses across Canada and used these warehouses as a competitive strategy to develop and influence sales.

The major manufacturers after World War II used the high profits generated by Douglas fir plywood to assist their expansion into integrated forest products. Each company chose a different strategy of expansion and adapted its plywood production to suit its corporate goals. Plywood became one product among several and declined in importance for each company. By the 1970s substitute products such as oriented strand

board were being promoted as replacements for plywood. Cheaper production costs and the use of waste wood fibre, instead of high quality Douglas fir logs, meant that government and industry favourably viewed the substitute products. The high value of old growth Douglas fir logs and increased costs in all aspects of production resulted in the closure of all but one coastal plywood plant, Richmond Plywood, by 1999. Exports were a small percentage of total plywood sales and did not compensate for declining domestic demand.

The interior plywood industry was re-established in 1951 with the opening of Western Plywood's Quesnel plant. A number of plants, scattered throughout the interior, produced plywood using small logs and species other than coastal Douglas fir. Production was mainly sheathing used to clad building floors, roofs, and walls. The scattered nature of plant location, cheaper log costs, small log processing technology, and different harvesting tenures contributed to the success of interior plywood production.

The large producers closed their coastal plywood plants arguing that production costs were too high and that other products were replacing plywood in the marketplace. The prosperity of interior plywood manufacturing suggests that the coastal industry stopped production because neither government nor manufacturers saw any reason to seek viable alternatives. The forest industry's diverse nature and its perception of

future, based on past activities, supported the closure of the coastal plants and the continued survival of the interior plants within a new forest economy.

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TABLE OF CONTENTS

Abstract	ii
Table of Contents	v
List of Tables	iv
List of Graphs	ix
List of Maps and Illustrations	x
Acknowledgements	xi
CHAPTER I: Establishing the Framework	1
Section 1: Introduction	1
Section 2: Evolutionary Economics	12
Section 3: The Nature of Business	16
CHAPTER II: Beginnings	25
Section 1: Introduction	25
Section 2: The Early Plywood Producers	28
Section 3: From Doors to Panels	43
Section 4: Conclusion	46
Chapter III: Organising an Industry	49
Section 1: Introduction	49
Section 2: An Overview of British Columbia's Plywood Industry, 1945-1999	54
Section 3: MacMillan Bloedel	60
Section 4: Canadian Forest Products	76
Section 5: British Columbia Forest Products	85
Section 6: Crown Zellerbach Canada Limited	91
Section 7: Weldwood	98
Section 8: The Smaller Companies	131
Section 9: Conclusion	146
CHAPTER IV: Selling Plywood, World War II and Beyond	155
Section 1: Introduction	155
Section 3: Douglas Fir Dominates	158
Section 4: Domestic Markets in the 1950s and 1960s	173
Section 5: Competition in Plywood Markets	200
Section 6: Domestic sales: 1970 and on	215
Section 7: Exports and Imports	223
Section 8: Substitution: Panels not Plywood	238
Section 8: Conclusion	250
Chapter V: The Factors of Production: Raw Materials, Labour and Technology	257
Section 1: Introduction	257
Section 2: Logging Peelers	259
Section 3: Working People	279
Section 4: Technology and Plywood Manufacturing	294
Section 5: Conclusion	305
Chapter VI: Conclusion	308
Bibliography:	317

Appendix I: British Columbia Veneer and Plywood Plants	339
Appendix II: The Manufacture of Plywood	365
Appendix III: Changing Technology at Fraser Mills	381
Appendix IV: Known Production of Plywood Plants, 1953 to 1993, by plant.	395
Appendix V: Total British Columbia Plywood Shipments, 1952 to 1994	398

LIST OF TABLES:

Table II-1: British Columbia Plywood Panel Producing Plants Prior to World War II	27
Table II-2: Canadian Western Lumber Company Retail Lumber Yards in 1913	29
Table II-3: Laminated Materials Company Sales Agencies in 1927	35
Table III-1: Softwood Plywood Plants in British Columbia, 1913-1999	56
Table III-2: MacMillan Bloedel, Company Growth, 1909-1999	62
Table III-3: MacMillan Bloedel, Percent of Total Revenue by Product, 1960-1995	70
Table III-4: MacMillan Bloedel Panel Production, 1948-1997	71
Table III-5 MacMillan Bloedel Panel Plants, with start date	73
Table III-6: MacMillan Bloedel Lumber and Panel Production	74
Table III-7: Canadian Forest Products, Company Growth, 1938-1999	78
Table III-8: Canadian Forest Products, Percent of Total Revenue, by Product, 1980-1995	81
Table III-9: Canadian Forest Products Panel Plants, 1999	81
Table III-10: Canadian Forest Products Panel Production, 1952-1990	81
Table III-11: British Columbia Forest Products, Company Growth, 1946-1986	86
Table III-12: British Columbia Forest Products, Sales in Percentage by Product, 1960-1985	88
Table III-13: British Columbia Forest Products, Plywood Production, 1952-1986	89
Table III-14: Crown Zellerbach, Company Growth, 1889-1980	92
Table III-15: Crown Zellerbach/Fletcher Challenge, Percent of Total Revenue by Product, 1960-1998	96
Table III-16: The Restructuring of Fletcher-Challenge	97
Table III-17: Sales by Product Line, by Percent of Sales and Total Sales in Dollars, 1965-1997	99
Table III-18: Weldwood, Company Growth, 1943-1999	99
Table III-19: Small Plywood Manufacturers Columbia Softwood Plywood Plants Small Producers, 1945-1999	131
Table III-20: Small Company Start-Up Reasons	135
Table III-21: Ownership at start-up of Small British Columbia Softwood Plywood Plants, 1945-1980	136
Table III-22: Integrated versus Non-integrated Small Producers, 1945-1980	137
Table III-23 Canadian Collieries Plywood Profits and Production , 1957-1964	142
Table III-24: Plywood versus Lumber Recovery	142
Table III-25: The Big Five, Reasons for Entry	149
Table III-26: Major Producer Plants	150
Table III-27: Large Company Plywood Plants in British Columbia	151

Table III-28: Plant Acquisition by Major Producers	153
Table IV-1: British Columbia Plywood Plants Operating, 1930-1950	159
Table IV-2: Advertisements Placed by MacMillan Bloedel in 1940	161
Table IV-3: British Columbia Plywood Producers, 1950 to 1969	174
Table IV-4: Advertisements Placed in Building Related Periodicals January to October 1961	180
Table IV-5: Plywood Sales by Selling Organisation, 1956-1961	188
Table IV-6: Western Plywood's Domestic Sales Force, 1951-1959	191
Table IV-7: Location and Number of Warehouses and Jobbers of Selected British Columbia Plywood Producers and of Weldwood in 1960.	194
Table IV-8: B.C. Plywood Producers Company Owned Warehouses, 1960-1990	198
Table IV-9: Plywood Producer Owned Warehouses by Region, 1950 to 1995	198
Table IV-10: Company Owned Warehouses by City, with Approximate Years of Operation, 1960-1990	199
Table IV-11: Number of Retail Yards Associated with Buying Groups in 1966	212
Table IV-12: Softwood Plywood Plants Operating in British Columbia, 1970-1998	216
Table IV-13: Seaboard Export Shares 1965-1966	225
Table IV-14: Seaboard Exports to United Kingdom, 1955-1963	226
Table IV-15: British Columbia Exports to Japan, 1987- 1996	234
Table IV-16: COFI Product Promotion Budget, 1985	234
Table IV-17: Panel plants (Non-Plywood), Operating Canada in 1970	245
Table IV-18: Canadian Board Plants (Non-Plywood), in 1980	246
Table IV-19: Canadian Board Plants (Non-Plywood), in 1990	247
Table V-1: Weldwood Contractor Relationships, 1959-1963	268
Table V-2: Canadian Collieries Veneer Plant Consumption, Purchased logs	270
Table V-3: Canadian Collieries Timber Supply, 1963 (MBM)	271
Table V-4: Weldwood Mill Requirements, (MBM)	272
Table V-5: Rates of Pay for Weldwood Kent Avenue Lathe Operators, 1973-1987	287
Table V-6: Productivity per Worker for Selected Years MacMillan Bloedel's Alberni Division, 1954-1987	290
Table V-7: Employees by Production Department and Productivity at the British Columbia Forest Products Victoria Plywood Division	291
Table V-8: Employees at the Crown Zellerbach Fraser Mills Plywood plant, before and after modernization, 1978	293
Table V-9: Alberni Division, MacMillan Bloedel, Plant Visits with Date and Reason for Visit, 1954-1975	298

Table VI-1: Plants by Company and Type of Acquisition	315
Table Appendix III-1: Major Machinery Additions Between 1955 and 1968	391
Table Appendix III-2: Machinery Revisions and Proposals, 1972-1988	393

LIST OF GRAPHS:

Graph II-1: Softwood Plywood Production, British Columbia and the Pacific Northwest, 1925-1940	27
Graph II-2: Canadian Western Lumber Company Plywood Sales, 1935-1938	31
Graph III-1: Profit and Loss, Alberni Plywood Operations, 1955-1975	66
Graph III-2: Crown Zellerbach Canada, Net Earnings, 1972-1984	95
Graph III-3: Comparison of Growth and Decline of the Production of the Large Versus Small Producers	133
Graph IV-1: The Canadian Western Lumber Company's Total Domestic and Export Sales 1935-1950	170
Graph IV-2: MacMillan Bloedel's Sales and Production, 1936-1944	171
Graph IV-3: British Columbia Plywood Production, 1944 to 1954.	172
Graph IV-4: British Columbia Plywood Production, 1950 to 1960	175
Graph IV-5: British Columbia Softwood Plywood Production, 1970-1997 (compared with 1951-1969)	217
Graph IV- 6: British Columbia Plywood Exports, 1952-1996	229
Graph V-1: Total Employment in the British Columbia Plywood Industry, 1944-1995	280
Graph V-2: Female and Male Employment in British Columbia Plywood Plants 1944-1949	284
Graph V-3: Lathe Operator's Wage Rates at Weldwood's Quesnel Plywood Plant, 1953-1993	288
Graph V-4: Increased productivity per Plywood Employee, 1951-1995	289
Graph V-5: Employees at MacMillan Bloedel's Alberni Division, 1954-1990	290

List of Maps:

Map 1: Location of British Columbia Plywood Manufactures	58

List of Diagrams:

Diagram III-1: Corporate Linkages	50
Diagram IV-1: Movement of Plywood from Manufacturer to Wholesaler and Special Customers	165
Diagram V-1: Network of Interactions inducing Technical Change	297

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Any errors or omissions are my sole responsibility.

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Chapter I **Establishing the Framework**

Introduction:

The history of British Columbia's plywood industry demonstrates how an industry is formed and the role corporate strategy plays in shaping industrial growth and decline. Plywood production and sales were a unique, but small sub-sector of the forest industry. The various segments of the forest industry depend on the same raw material - logs harvested from the forest. Lumber, plywood, and shingles, the solid wood products sector, are closely allied, but operate using independent technologies. Even when these products filled similar market niches, they generally competed rather than complemented each other. Plywood manufacturers created their largest market by substituting plywood for lumber in certain building applications.

Softwood plywood production began in 1913 in British Columbia, not long after its beginnings in the United States; it quickly established itself as a provider of door components. Production opportunities on the West Coast of North America subsequently made this region the world-wide leader in the manufacture of softwood plywood. It was and is a distinct industry, one that sought world markets but remained principally focused on domestic markets, so much so that Canada became the world's largest per capita consumer of softwood plywood.

Most activity and growth occurred after World War II. Plywood production was very profitable, but it rarely played a large role in the growth strategies of British Columbia's forest giants. The industry structure consisted of a mixture of integrated operators, including some of the largest firms in British Columbia and a variety of

smaller producers. Plywood currently faces competition from new forest-based panel products and from non-forest industry products.

This study focuses on how the coastal plywood industry created a new market for plywood in the twentieth century, and why only one coastal plywood plant remained in production at the end of that century. Industrial structure, technology, raw materials and the market all play a significant role in this story, but equally critical is understanding how decisions, made by the plywood industry's men and women, shaped British Columbia industry. The issues faced by the plywood industry are representative of the changes that occurred within the whole of British Columbia's resource sector. The decline of coastal plywood production is a metaphor highlighting the decline of British Columbia's coastal forests as this province's leading economic engine.

Understanding an industry as fragmented as the forest industry requires intensive study of the various elements prior to its consolidation into a comprehensive narrative. This dissertation focuses on one of the least understood aspects of the forest industry, the production of softwood plywood. It provides new information on how forest industry companies operated their varied holdings, and it pays special attention to the relationship between the manufacturing and sales branches and their relationship to overall corporate organisation. Finally, by relating organisation and markets to raw materials, technology, and labour, this study enhances our understanding of these interrelationships within the forest industry.

Historians of the North American forest industry have assembled an impressive body of literature as they scrutinised the forest, the industry, community, companies, people, and technology. Several excellent overviews of the industry in the United States

have appeared.¹ Two recent, well-researched and valuable studies, Drobney's study of the north Florida timber industry and Sitton and Conrad's study of Texas sawmill communities, illustrate current trends within this literature.² Drobney conforms to a more traditional approach than Sitton and Conrad, but he advanced beyond a simple chronicling of industrial development. He focused in part on the relationship of the minority black labour force to the industrial environment but he also analyses the activities of the industry as whole, including its early development, sawmills, logging, union activity, and the employment of convict labour gangs.

Using oral interviews Sitton and Conrad reconstructed life in several small east Texas lumber towns. Their study clearly places the historiography of the forest industry into the mainstream. Each community depended on a single sawmill and its surrounding logging activities for its existence. Sitton and Conrad document the shift of rural population into a new town environment and the effects of this change on people's lives. The subsequent closure of the sawmills and its effects are unfortunately less well portrayed, but Sitton and Conrad create a compelling picture of life in single resource, often paternalistic, small towns.³

Despite considerable research and publication British Columbia's historiography remains much less perceptive in its approach. Ken Drushka's book, *Tie Hackers to Timber Harvesters: The History of Logging in British Columbia's Interior*, while making

¹ The best overview is Michael Williams, *Americans and their Forests: A Historical Geography* (Cambridge: Cambridge University Press, 1989).

² Jeffrey A. Drobney, *Lumbermen and Log Savvyers: Life, Labor, and Culture in the North Florida Timber Industry, 1830-1930* (Macon: Mercer University Press, 1997). Thad Sitton and James H. Conrad, *Nameless Towns: Texas Sawmill Communities, 1880-1942* (Austin: University of Texas Press, 1998).

³ Sitton and Conrad establish the context for their study but build on the earlier study by Maxwell and Baker who documented the business end of the Texas lumber industry. The two volumes differ in format and approach, but when taken together they provide a perceptive account of the Texas forest industry from

a very significant contribution to our understanding of British Columbia's interior forest industry, does not meet the standard established by Drobney and Conrad and Sitton.⁴

Drushka's volume remains largely a chronological catalogue of activity rather than an analysis of what that activity means and the social changes that ensued.

British Columbia historians have often focused on three issues: logging technology, government management of harvesting rights, and labour relations.⁵ Richard Rajala's is probably the most significant history to appear to date, while it examines the traditional areas of historiography, logging technology, and government regulation of the harvest, Rajala took a fresh look at some of the issues and presented new information.⁶ His study is valuable for this alone, but more importantly he placed logging technology and forest harvest regulation within an international context. He examined these issues as they related to the Pacific Northwest of the United States and British Columbia. His book is a significant step toward creating a literature that looks at the North American forest industry as a network regardless of international boundaries. A.R.M. Lower's

its origins until the 1940s. Robert S. Maxwell and Robert D. Baker, *Sawdust Empire: The Texas Lumber Industry, 1830-1940* (College Station: Texas A&M University Press, 1983).

⁴ Ken Drushka, *Tie Hackers to Timber Harvesters: The History of Logging in British Columbia's Interior* (Madeira Park: Harbour Publishing, 1998).

⁵ The best overviews of technology are: Richard Rajala, *Clearcutting the Pacific Rain Forest: Production Science and Regulation* (Vancouver: UBC Press, 1998) and Ken Drushka, *Working in the Woods: A History of Logging on the West Coast* (Madeira Park: Harbour Publishing, 1992). Most of the best studies of government regulation of harvesting and labour relations are unfortunately as yet unpublished except in article format. The exception is Rajala's *Clearcutting the Pacific Rain Forest*. An example of an unpublished study is Peter G. Aylen, "Sustained Yield Forestry Policy in B.C. to 1956: A Deterministic Analysis of Development" (MA Thesis, Department of Sociology, University of Victoria, 1984). The two best studies of British Columbia labour relations are by Hak and Gray. Gordon H. Hak, "On the fringes: capital, labour and class formation in the forest economies of the Port Alberni and Prince George Districts, British Columbia, 1910-1939" (Ph.D. dissertation, Department of History, Simon Fraser University, 1986) and Stephen Gray, "Woodworkers and Legitimacy: The IWA in Canada, 1937-1947" (Ph.D. dissertation, Department of History, Simon Fraser University, 1989). There have been several studies in addition to those on logging, regulation, and labour. The best are: Perrault's study of Seaboard Lumber and Shipping and Drushka's biography of H.R. MacMillan can perhaps be included here although both leave many unanswered questions. E.G. Perrault, *Wood & Water: The Story of SEABOARD Lumber and Shipping* (Vancouver: Douglas & McIntyre, 1985). Ken Drushka, *HR: A Biography of H.R. MacMillan* (Madeira Park: Harbour Publishing, 1995).

cross-boundary research failed to produce such a literature, but Rajala's work will hopefully instigate new international studies.⁷ The North American forest industry cannot remain divided by political boundaries. The labour force on the West Coast was, for decades, international in scope. Technology, lumber markets, and entrepreneurs all crossed the Canada-United States boundary at will. Rajala's research has broadened the scope of forest industry studies.

Similarly, historians have paid scant attention to the wood processing industries. Individual volumes occasionally include descriptions of the processing plants, such as Drobney's excellent description of the operation of a sawmill, but most historians have been content to chronicle regional development or focus on the companies, the people, or on logging technology.⁸ Studies examining processing as a manufacturing industry are rare. For example, pulp and paper production, one of the major industries of the twentieth century, has had few book length studies beyond scattered company histories. Only three monographs stand out: Zieger's study of pulp and paper unionism in the 1930s, McGaw's study of early Berkshire paper making, and Ohanian's economic study of the industry in the United States from 1900 to 1940.⁹ None of these studies is comprehensive enough to be considered a history of pulp and paper manufacturing in the United States.

⁶ Rajala, *Clearcutting the Pacific Rain Forest*.

⁷ See A.R.M. Lower, *North American Assault on the Canadian Forest: A History of the Lumber Trade between Canada and the United States* (New York: Greenwood Press, 1938, 1968).

⁸ Drobney, *Lumbermen and Log Sawyers*, 96-102.

⁹ Robert H. Zieger, *Rebuilding the Pulp and Paper Workers' Union, 1933-1941* (Knoxville: University of Tennessee Press, 1984). Judith A. McGaw, *Most Wonderful Machine: Mechanization and Social Change in Berkshire Paper Making, 1801-1885* (Princeton: Princeton University Press, 1987). Nancy Kane Ohanian, *The American Pulp and Paper Industry, 1900-1940: Mill Survival, Firm Structure and Industry Relocation* (Westport: Greenwood Press, 1993).

McGaw's brilliant and revealing study makes a valuable contribution to our understanding of both nineteenth century industrialisation and the role of the pulp and paper industry, but it is limited in scope. Geographically it examines a small region in New England and its time period is prior to the large-scale development of wood pulp manufacturing. Ohanian's study is very different. Her intent was to examine industrial structure and she gave little consideration to other aspects of pulp and paper production. Plywood and panel production historiography is even more limited. It consists of only one industry published volume on the early Douglas fir industry, and a volume cataloguing early eastern hardwood veneer mills.¹⁰

Employment, profits, and company participation all suggest the plywood industry and especially the Douglas fir plywood industry played an important if lesser role in the West Coast forest industry. Yet, very little is known about the role of plywood production within the industry. The plywood industry also followed a separate line of development from that of other wood products. A central aspect of this dissertation is to provide a history of British Columbia plywood production and sales and to place this within the context of the larger forest industry. This history is crucial if historians are to chart the overall influence of North America's forest industry, and to analyse its historical evolution.

This dissertation unfortunately cannot document the industry continent wide. Limitations of secondary sources, the relative paucity of collected primary sources, and the logistics of time and scope prohibit a broader study of the plywood industry at this

¹⁰ Robert M. Cour, *The Plywood Age: A History of the Fir Plywood Industry's First Fifty Years* (Portland: Douglas Fir Plywood Association, 1955). John C. Callahan, *The Fine Hardwood Veneer Industry in the United States, 1838-1990* (Lake Ann: National Woodlands Publishing Company, 1990).

point.¹¹ Political boundaries provide a useful demarcation and this is particularly true of plywood production. Unlike lumber, shingles, or pulp and paper British Columbia plywood markets were largely Canadian. Little competition existed in the domestic market from the United States as a result of differences in manufacturing standards and tariff protection. Finally, limiting the study generally to British Columbia producers provides a discrete and valid group for study. The British Columbia's forest industry perceived itself as a separate industry from the rest of Canada and generally acted independently of eastern Canada. As well, eighty-five to ninety percent of Canadian softwood plywood production came from British Columbia, while most domestic hardwood production occurred in eastern Canada.

Business history in British Columbia is also at an early stage of development. An extensive literature exists only about resource extraction. Manufacturing, wholesaling, and retailing have all been sadly neglected. Manufacturing studies are limited generally to basic examinations of resource industries, primarily sawmills and fish canning. Manufacturing outside the resource industries is described in a few pages in Geoffrey Taylor's *Builders of British Columbia*, in Schreimer's study of the British Columbia Sugar Company, and in several theses, of which John Lutz's study of engine building is notable.¹² Lutz provides a brief overview of early manufacturing before focusing on the

¹¹ Few company records have been collected in archives in either the United States or Canada that relate to plywood production. Part of the process of writing this dissertation involved the creation of the primary document collections necessary to undertake the research. The author was involved in the acquisition of all the company collections cited in the bibliography except those housed at the University of British Columbia and the British Columbia Sugar Company.

¹² G.W. Taylor, *Builders of British Columbia: An Industrial History* (Victoria: Morriss Publishing Ltd., 1982). Taylor mainly writes about resource extraction, transportation and energy, but does spend a few pages on secondary manufacturing, pages 154-157, for example. John Schreiner, *The Refiners: A Century of BC Sugar* (Vancouver: Douglas & McIntyre, 1989). John Sutton Lutz, "Losing Steam: Structural Change in the Manufacturing Economy of British Columbia, 1860-1915" (MA Thesis, Department of History, University of Victoria, 1988). Robert McDonald wrote an excellent study on early Vancouver

emergence of engine building in nineteenth century British Columbia and its decline in the early twentieth century.

One of the issues this dissertation particularly addresses is the contention that little secondary manufacturing existed in twentieth century British Columbia.¹³ Plywood manufacturing provides a case study illustrating the growth of a secondary manufacturing industry. Most softwood plywood, for example, did not receive further processing once it left the plywood plant. As well, several industries emerged to support plywood production, especially glue and machinery manufacture. In part, the assumption that there was a lack of secondary manufacturing is the result of dependence on global statistics and a comparative lack of studies documenting the history of manufacturing in British Columbia. This dissertation will demonstrate that explanations suggesting the failure of British Columbia manufacturing in the twentieth century are simplistic and that a complex network of provincial manufacturers and wholesalers existed.

Research into industrial development, outside British Columbia has focused primarily on how individual firms have responded to their environment, while much less common are studies of particular industrial sectors, especially when they are only components of a larger industry. Richard Nelson recently argued that research into industries and industrial sectors is absolutely necessary if we are to increase our

business leadership which has not been improved upon. Robert A. J. McDonald. "Business Leadership in Early Vancouver, 1886-1914" (Ph.D. dissertation, Department of History, University of British Columbia, 1977). His study of early Vancouver also includes considerable data on economic activity. Robert A.J. McDonald, *Making Vancouver: Class, Status, and Social Boundaries, 1863-1913* (Vancouver: UBC Press, 1996). A variety of other theses and articles cover a range of business topics relating to British Columbia, as well.

¹³ See for example Lutz, "Losing Steam," 2. He cites several authors who argue this point.

understanding of business activity.¹⁴ This dissertation accepts Nelson's arguments while rejecting a current notion that there is limited use in studying the sub-units of different companies in combination with stand-alone components of an industrial sector.¹⁵ This dissertation, instead, demonstrates that the interactions within product groups are as important as the interactions between the internal divisions within one company. This is particularly important given the once prevalent business view that the sub-units of a multi-division company should each be individual profit centres and that competition should exist between the sub-units of a conglomerate.¹⁶

The arguments brought to bear in this dissertation are based on two distinct but related approaches to business activity. Evolutionary economic theory suggests that we cannot understand an organisation and its actions without understanding the environment in which it operates. The past from which an organisation emerges is especially critical if we are to understand the organisation's current situation.¹⁷ It is only by understanding the past of an organisation that we can determine why certain strategies have been chosen. The findings of business histories must be examined if we are to understand how business operates and especially if we are to highlight the interaction between diversity

¹⁴ Richard R. Nelson, "Economic Growth via the Co-evolution of Technology and Institutions," in Loet Leydesdorff and Peter Van den Besselaar, ed., *Evolutionary Economics and Chaos Theory: New Directions in Technology Studies* (London: Pinter Publishers, 1994), 22.

¹⁵ Terry L. Amburgey and Hayagreeva Rao, "Organizational Ecology: Past, Present, and Future Directions," *Academy of Management Journal* 39 (January 1996), 1279.

¹⁶ Ghoshal Sumantra and Peter Moran, "Bad Practice: A Critique of the Transaction Cost Theory," *Academy of Management Review* 21 (January 1996), 29.

¹⁷ See Langlois and Everett in Magnusson for an overview. Richard Langlois and Michael Everett, "What is Evolutionary Economics?" in Lars Magnusson, ed. *Evolutionary and Neo-Schumpeterian Approaches to Economics* (Boston: Kluwer Academic Publishers, 1994), 11-48. We must be extremely careful not read more biology into these approaches than is really the case, as some authors have done, despite the use of biology terms as metaphors. The organisation of the firm cannot be compared to a biological community. For example, Richard Nelson in an article on evolutionary theory attempted to draw too close an analogy with biological evolution. He seems at times to be attempting to create an evolutionary theory that will not only form another general theory of activity, but also include biology. Richard R. Nelson, "Evolutionary

and pattern. Each business is unique, as is the information that guides its strategy. But at the same time seemingly different businesses can respond in a fashion that is comparable to other businesses over time.¹⁸

Business historians over the last fifteen years have been greatly influenced by Alfred Chandler Jr.'s publications, and his arguments remain an essential starting point for any study of business evolution.¹⁹ However, it is now widely accepted that his view of past business practice is only a starting point. Chandler articulated the importance and shape of mass production in defining the economic structure of the United States. He demonstrated the importance of organisation to business history and he made business history part of the framework of business and economics. He also highlighted the role of managers in his concept of managerial capitalism and of the role of the visible versus the invisible hand of these managers in the co-ordination of the distribution of goods. Recent business historiography, however, partly rejects the global view of Chandler, and focuses on understanding the diversity of business history and business activity.

The most recent and influential study amending Chandler's arguments, regarding the dominance of mass production, is Phillip Scranton's study of American business practice between 1865 and 1925.²⁰ Scranton suggests that Chandler's argument is only one of many ways to approach business evolution and that mass production was not the

Theorising about Economic Change," in Neil J. Smelser and Richard Swedberg, ed. *The Handbook of Economic Sociology* (Princeton: Princeton University Press, 1994), see page 113.

¹⁸ John F. Wilson, *British Business History, 1720-1994* (Manchester: Manchester University Press, 1995). Wilson provides an overview of the approaches adopted by British business history.

¹⁹ Alfred D. Chandler, Jr., *Strategy and Structure: Chapters in the History of the American Industrial Enterprise* (Garden City: Doubleday & Company, 1962, 1966). Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 1977). Alfred D. Chandler, Jr., with Takashi Hikino, *Scale and Scope: The Dynamics of Industrial Capitalism* (Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 1990).

most important form of organisation.²¹ Scranton recognises business diversity and articulates the emerging view of business historians that stresses the importance of variation within businesses and their organisation.²² What Judith McGaw noted about nineteenth century business -- “there is certainly no such thing as a ‘typical’ nineteenth-century business” -- holds equally true for the twentieth century.²³ The result of recent discussion is a new understanding of business, a view that is not overwhelmed by huge conglomerates and mass production.

Business historians are often reluctant to be explicit in articulating their interpretative framework. It is essential that the reader, however, understand the perspective of the author, even when the results simply document the history of one company. Such frameworks are no easy task and are fraught with the danger of misinterpretation. This is especially true when drawing on the work of other disciplines where no consensus exists, such as is the case of economics in the 1990s. A recent volume intended to provide historians with an overview of economics, and largely written by economists, for example, fails to deal adequately with the new approach of evolutionary economics.²⁴ In order to demonstrate the interpretative framework used in this study the two central interpretative threads, evolutionary economics and business history will be discussed in turn. A combination of the two approaches forms the

²⁰ Philip Scranton, *Endless Novelty: Speciality Production and American Industrialization, 1865-1925* (Princeton: Princeton University Press, 1997).

²¹ Scranton, *Endless Novelty*, 7.

²² Scranton, *Endless Novelty*, 8.

²³ McGaw, *Most Wonderful Machine*, 7.

²⁴ Thomas G. Rawski et al. *Economics and the Historian* (Berkeley: University of California Press, 1996). For example Jon Cohen's discussion of the firm only mentions neo-classical, Marxist and transaction cost approaches, but does not include recent discussion about evolutionary economics, 79-83. A whole chapter of the book is devoted to neo-classical supply and demand, 122-158, which many historians have found inadequate as an explanatory tool. Eric W. Sager with Gerald E. Panting, *Maritime Capital: The*

foundation for the subsequent discussion of the history of British Columbia's plywood industry.

Evolutionary Economics

The underlying premise of evolutionary economics is an important assumption for every business historian; the assumption that "history matters." Langlois and Everett highlight its importance in business interaction: "History matters in the evolution of industry structure, where particular past events (indeed, even accidental ones) cast shadows into the present."²⁵ The underlying framework of evolutionary economics is, of course, more complicated, but this basic premise is critical to understanding the changes that occurred in British Columbia's plywood industry. An obvious example is provided by the plywood industry's adoption of the view in the late 1970s that plywood was a sunset industry when alternative products began to replace plywood in the marketplace.²⁶ The plywood industry created sales by product substitution and the arrival of new substitutes for plywood suggested to producers that plywood's day was over. The prevalent view of business theorists, that industry reaches maturity and then declines, reinforced company executives' belief that plywood was a sunset industry and several producers promoted the alternative products.

Shipbuilding Industry in Atlantic Canada, 1820-1914 (Montreal: McGill-Queen's University Press, 1990), provide such an example, although they develop a neo-classical context for their study, see page 11.

²⁵ Langlois and Everett in Magnusson, *Evolutionary and Neo-Schumpeterian Approaches*, 30.

²⁶ Watts' provides a brief overview of the concept of product life-cycle, the concept of obsolescence equals that of a sunset industry. H.D. Watts, *Industrial Geography* (Burnt Hill, Harlow, Essex: Longman Scientific Technical, 1987), 79-85.

Evolutionary theory, while not new to economics, has taken on a new life, primarily due to its articulation by Richard Nelson and Sidney Winter.²⁷ A critical feature of their work and most subsequent research is the notion that the diversity of industry is as important as pattern.²⁸ These scholars disregard neo-classical explanations that focus on generalised models, but the concept of choice remains central to their work.²⁹ Instead, evolutionary economics argues that each industry or business is unique in its approach to meeting its goals and coping with its environment. The central goal of evolutionary economics is to explain why these differences exist.³⁰ Nelson and Winter decided the key was in what they called routines, that is the “regular and predictable behavior patterns of firms.”³¹ They suggested that past routines, knowledge and resources are critical to understanding the present, a singularly attractive concept for historians.³² According to Nelson and Winter’s approach the firm’s decision makers respond to circumstances based on past experience. The authors propose a new behavioural theory of economic activity, one that requires understanding how an individual firm reached a specific point in time in order to understand its business

²⁷ Richard Nelson and Sidney Winter, *An Evolutionary Theory of Economic Change* (Cambridge: The Belknap Press of Harvard University Press, 1982).

²⁸ Chandler and Scranton, both impose order on their study groups, but their work is also a catalogue of diversity. Scranton, for example, describes the tendency of historians to see industry in terms of homogenisation on in this fashion: “the prevailing narrative minimises the situational and processual diversities of the leading institutions...” *Endless Novelty*, 8.

²⁹ See Douglas Greenwald, ed. *Encyclopedia of Economics* (New York: McGraw-Hill Book Company, 1982), 699.

³⁰ Cynthia A. Montgomery, ed. “Introduction,” *Resource-Based and Evolutionary Theories of the Firm: Towards a Synthesis* (Boston: Kluwer Academic Publishers, 1995), 3.

³¹ Nelson and Winter, *An Evolutionary Theory*, 14.

³² See for example Daniel A. Levinthal, “Strategic Management and the Exploration of Diversity,” in Montgomery, *Resource-Based and Evolutionary Theories*, 24.

activity. Christian Knudsen stated it thus: we must "reconstruct the firm's accumulation of capabilities" and only in this way will future activities be understandable.³³

The notion of the past influencing the present provides a framework in which relationships can be examined. Nelson and Winter did not furnish an overall compilation of their routines but suggested that routines can be divided into three classes reflecting the firm's activities. First, they note the day to day routines of operating a business. Secondly, they suggest another set of routines relate to strategy, decision-making, and to the success and failure of a firm. Finally, they point to a third element, the methods used to modify routines.³⁴ The main factors influencing the firm's activities are acknowledged to embody a wide range of conditions in which diversity increases in importance as an explanatory concept. The routines include both learning experience, internal capabilities, and environmental factors such as resources, markets, government, and transaction costs. Transaction costs, for example, can no longer be applied as an explanation alone, but are part of a group of factors that influence a firm's behaviour. Jay Barney provides a clear statement of the approach adopted by evolutionary economics. "As firms evolve, they pick up skills, abilities, and resources that are unique to them, reflecting their particular path through history. These resources and capabilities reflect the unique personalities, experiences, and relationships that exist in only a single firm."³⁵

Langlois and Everett argued that the development of a dynamic theory of the firm, from an evolutionary perspective, must include examination of knowledge changes and what the firm does with the new knowledge it acquired. They argued that "the evolution

³³ Christian Knudsen, "Theories of the Firm, Strategic Management, and Leadership," in Montgomery, *Resource-Based and Evolutionary Theories*, 203.

³⁴ Nelson and Winter, *An Evolutionary Theory*, 16-17.

of industry structure is, therefore, the evolution of the organisation of knowledge and capabilities.” Business activity, thus, is based on two elements: first, the knowledge a firm’s decision-makers possesses; and, secondly, the capabilities at the firm’s disposal. Knowledge, under evolutionary theory, is accumulated learning over time. New knowledge is acquired by the firm’s interaction with its current environment and is based on capabilities derived from past activities.³⁶ Capabilities result from learning. They are the resources accumulated by knowledge on how to make a product and how to sell it at a profit.³⁷ Recently, the growing convergence between resource and evolutionary economics has broadened the definition of capabilities to include all resources available to the firm, not just its learned knowledge.³⁸ A firm’s capabilities could, therefore, include raw materials, technology, transaction cost savings, or any associated tangible, as well as, the knowledge of how to utilise the available resources.

Capabilities played a critical role in British Columbia’s plywood industry’s early development and in the subsequent decline of coastal production. The availability of the required resources, the need to fill an established product role, and management’s experiences in the forest products industry established the place of plywood production within the forest product hierarchy. Following changes in leadership experience that were associated with changes in the resource base, coastal plywood production nearly disappeared. The industry realigned along a new organisational framework and into a different geographical setting, British Columbia’s interior.

³⁵ Jay B. Barney, "Looking Inside for Competitive Advantage," *The Academy of Management Executives* 9 (November 1995), 49-61.

³⁶ Langlois and Everett in Magnusson, *Evolutionary and Neo-Schumpeterian Approaches*, 28, 29, 38.

³⁷ Sidney G. Winter, "Four Rs of Profitability,: Rents, Resources, Routines, and Replication," in Montgomery, *Resource-Based and Evolutionary Theories*, 149.

The Nature of Business

History matters and it is business history that provides the empirical key to unlock our understanding of business interactions. Alfred Chandler, Jr.'s body of work remains an essential point for most business historians. Chandler's three major publications each appealed to individual audiences. His first volume, *Strategy and Structure*, particularly interested theorists of business management and the firm, while his second volume, *The Visible Hand*, engaged business historians. His third volume, *Scale and Scope*, continued his analysis of managerial capitalism in the United States and imposed his perception of business evolution on England and Germany. Chandler's analysis of Britain, in particular, was met by considerable criticism.³⁹

Nevertheless, the strength of Chandler's arguments mean that North American business historians cannot ignore his work. His analysis of the development of American business enterprise captured the most readily discernible element, the rise of mass production and the large corporation. Chandler used the emergence and apparent dominance of big business to change the historian's perspective on how businesses organise. Chandler in fact is very much in tune with evolutionary theorists by arguing that 'history matters'.⁴⁰ In *Strategy and Structure* Chandler examined several large corporations in detail and then used a more cursory survey of other firms to support his conclusions. He determined that a number of organisational structures came into

³⁸ Nicolai Juul Foss, Christian Knudsen and Cynthia A. Montgomery, "An Exploration of Common Ground: Integrating Evolutionary and Strategic Theories of the Firm," in Montgomery, *Resource-Based and Evolutionary Theories*, 37.

³⁹ See Peter Wardley, "The Anatomy of Big Business: Aspects of Corporate Development in the Twentieth Century," *Business History* 33 (April 1991), 269, 282-4. Leslie Hannah, "Scale and Scope: Towards a European Visible Hand?," *Business History* 33 (April 1991), 299 and 304-305.

existence in order to facilitate the effective administration of the larger corporations. Few will argue with the results of his study. His work, however, does rest on certain assumptions including a belief that diversification was the best corporate policy and that large corporations were the most effective business organisation. His argument that a strong relationship existed between business strategy and corporate structure remains convincing.⁴¹

Chandler also created an interpretation that merged mass production technologies with mass distribution techniques under the guiding hands of middle managers rather than owners. The key, in Chandler's view of American business enterprise, was the rise of a managerial hierarchy, and it was in the large mass production and distribution industries that the managerial hierarchies had their greatest influence. His reliance on these large companies for his evidence resulted, at least from the perspective of most counter-arguments, in a distorted view of business activity. Critics argued that Chandler placed too great an emphasis on the dominance of mass production industry and technology and on the new power of middle managers to manipulate economic strategy from within their corporate hierarchies.⁴²

Chandler's work has been frequently acknowledged and then modified by his followers. Charles Cheape, in his study of the Norton Company, acknowledges

⁴⁰ Chandler, *Strategy and Structure*, 3.

⁴¹ A very good recent review of Chandler is Richard R. John, "Elaborations, Revisions, Dissents: Alfred D. Chandler, Jr.'s, *The Visible Hand* after Twenty Years," *Business History Review* 71 (Summer 1997), 151-200.

⁴² John K. Brown, *The Baldwin Locomotive Works, 1831-1915* (Baltimore: The Johns Hopkins University Press, 1995), and Mansel G. Blackford and K. Austin Kerr, *BF Goodrich: Tradition and Transformation, 1870-1995* (Columbia: Ohio State University Press, 1996), clearly show that senior management, i.e. company presidents, and often the owners established corporate strategy not middle management, see Brown, 306 note 3 and Blackford and Kerr, 148-152, for their discussion of change implemented by John Collyer. Chandler suggests that middle management exerted a major decision making role, *Visible Hand*, 411.

Chandler's influence, but also provides a partial counter-argument to aspects of Chandler's theories.⁴³ The Norton Company was an extremely successful family firm, which only became public in the 1960s when it was turned into "a modern managerial enterprise."⁴⁴ Control of the firm in the 1970s was relinquished to non-family leadership. Cheape supported Chandler's contention that in the modern mass market sector, family firms were a drag on the economy. According to Cheape the results of family control were lost opportunities and people.⁴⁵ The decades of success at Norton tend to counter this contention. Chandler also placed much of the blame for the decline of British industry on family control.⁴⁶ British historians have demonstrated that this is not necessarily the case.⁴⁷

Modifications to Chandler's work have appeared regularly as researchers continue to find data that substantially revises the business pattern Chandler proposed. John Brown's *The Baldwin Locomotive Works* provides an explicit alternative to Chandler. Brown argued, for example, that the Baldwin Locomotives Works, a firm outside Chandler's mass production group, used systematic management techniques twenty years prior to its use by Chandler's study group.⁴⁸

Philip Scranton's recent influential study of American business practice between 1865 and 1925 provides a new approach and radically alters the business world Chandler described. Scranton suggested that Chandler's work represented only part of a much broader business realm that included a variety of production patterns and interaction,

⁴³ Charles W. Cheape, *Family Firm to Modern Multi-national: Norton Company, a New England Enterprise* (Cambridge, Massachusetts: Harvard University Press, 1985), 7.

⁴⁴ Cheape, *Norton Company*, 295.

⁴⁵ Cheape, *Norton Company*, 152.

⁴⁶ Alfred D. Chandler, Jr. with Takashi Hikino, *Scale and Scope*, 390-391.

⁴⁷ See for example, Roy Church, "The Family Firm in Industrial Capitalism: International Perspectives on Hypotheses and History," *Business History* 35/4 (October 1993), 17-43.

particularly specialist strategies of batch and custom production.⁴⁹ According to Scranton, relatively small-scale production of speciality items, ranging from watches to machine tools and furniture, contributed more to the economic health of the United States before 1925 than the gigantic agencies of mass production.⁵⁰ Scranton, although much less dogmatic about form and pattern than Chandler, nonetheless remains wedded to a concept of overall business evolution and categorisation.

Two points stand out in both Chandler's and Scranton's theories of business evolution. First, both imposed order by creating categories of industrial activity. Secondly, both authors demonstrated the diversity of business activity, while they looked for pattern. Chandler's objective was to show pattern within industrial development. Scranton, however, also intended to show that business activity was diverse and that business responded to situations in a myriad of ways.

The diverse nature of business activity is a constant theme in business history. Susan Strasser, for example, in her study of mass marketing, illustrated a general pattern within mass marketing, while at the same time illustrated the diverse ways in which companies approached the promotion and sale of their products. Waterman carefully trained its salesmen for neatness and handling, while Hires Root Beer focused on maintenance of trademark purity by prosecuting imitators.⁵¹ Such variations in approach to advertising and product promotion are scattered throughout her work. In each company and industrial situation we find striking differences and similarities.

⁴⁸ Brown, *The Baldwin Locomotive Works*, 93.

⁴⁹ Scranton, *Endless Novelty*, 10-11, 17.

⁵⁰ Scranton, *Endless Novelty*, 16.

⁵¹ Susan Strasser, *Satisfaction Guaranteed: The Making of the American Mass Market* (New York: Pantheon Books, 1989), 106-109 and 86.

The growth strategy of several firms: the Baldwin Locomotive Works, Norton Company, R. J. Reynolds (now RJR-Nabisco), Platt Brothers and BF Goodrich will be briefly examined to illustrate that diversity, not just similarity, must be used as an essential element when investigating business evolution. These companies adopted very different strategies to achieve success. Each company used the name of the founder as part of the company name, although in the case of RJR-Nabisco this is almost lost. R. J. Reynolds and BF Goodrich are companies that met Chandler's view of a modern mass production company.

The R. J. Reynolds Company began as a small tobacco company that used successful marketing, specialisation, and judicious acquisitions to become a major tobacco processor and distributor. Initially the firm manufactured plug tobacco and only expanded into mass-produced goods, such as cigarettes, decades after its formation. The company joined the American Tobacco Trust reluctantly when it found itself in the position of join or be forced into bankruptcy. Revived as an independent company following the break-up of the Tobacco Trust, it became one of America's largest corporations. Advertising and product promotion played a large part in its success. The tobacco companies fought in the market place with catchy slogans and rumours, as they contended for sales.⁵²

The Norton Company chose a different strategy for growth. The individual after whom the company was named had little interest in the company. Frank Norton operated both a pottery company and a related emery wheel company, but he considered himself a potter. In 1885 he sold the emery wheel business to seven partners and from this

⁵² Nannie M. Tilley, *The R.J. Reynolds Tobacco Company* (Chapel Hill: The University of North Carolina Press, 1985), 223.

transaction emerged the highly successful Norton Company. Good timing and skilled management brought success. The use of grinding in industry expanded and the Norton company dominated the grinding wheel market, a position it continues to hold. It undertook minimal market development and still expanded. Company management successfully focused on vertical and horizontal integration rather than diversification.⁵³ Careful service and a better quality product was the key to their success.⁵⁴

Among the five firms discussed in this chapter the Baldwin Locomotives Works was the one company that failed. Like Henry Ford, who did not realise that the automobile market had changed, the Baldwin Locomotive Works could not cope with the transformation from steam to diesel power.⁵⁵ Unlike Ford, Baldwin did not have the resources to survive this setback. In contrast to most of the firms examined here, Baldwin's production was based on piecework; new designs were as much the result of customer input as of company proposals. Little promotion was required. The company provided a high quality specialised service and once the demand for that service declined it could not cope with its environment and rapidly went out of business.⁵⁶ Baldwin was an early innovator in management techniques that were as important as any of the changes made in the firms studied by Chandler, but the company still remained under the control of a partnership.

BF Goodrich, cited by Chandler as an example of a multi-division company, began as a tire manufacturer. The company diversified.⁵⁷ It decided it no longer could

⁵³ Cheape, *Norton Company*, 9.

⁵⁴ Cheape, *Norton Company*, 45.

⁵⁵ Richard S. Tedlow, *New and Improved: The Story of Mass Marketing in America* (Boston: Harvard Business School Press, 1990, 1996), 159. Brown, *The Baldwin Locomotive Works*, 232.

⁵⁶ Brown, *The Baldwin Locomotive Works*, 35, 42, 210.

⁵⁷ Chandler, *The Visible Hand*, 367 and 375. Blackford and Kerr, *BF Goodrich*.

compete against the larger tire manufacturers and shifted its assets into the industries developed as part of its diversification strategy.⁵⁸ Diversification strategies, however, probably had little to do with the development of managerial hierarchies in the sense Chandler wanted to convey. Rather, as one executive noted, in the 1960s the financial people argued in favour of diversification and so companies diversified. In the 1970s and later the message was “stick to your knitting,” and many companies divested themselves of all but core activities.⁵⁹ BF Goodrich decided its core activity was no longer tire manufacturing.

Platt Brothers provides an alternative approach to business organisation. Matthew Roth took up Scranton’s challenge and examined a comparatively small speciality company. Platt was a successful firm which remained family-controlled for most of its existence. Even when Platt changed strategy, it did not change in order to pursue “absolute growth,” but instead, sought to adapt to a changing world.⁶⁰ It started as a general brass firm, moved into button manufacturing, and subsequently found a specialist niche making zinc products. Eventually, one of their major products was electrical fuse components. Roth suggested that his approach was directly opposed to Chandler’s and that he sought to reinstate the role of small business and to “highlight the diversity of business institutions, values and practices.”⁶¹

Each company’s strategy was different. Baldwin specialised and focused production on a single, if varied product, and failed when it attempted to move to a new

⁵⁸ Blackford and Kerr, *BF Goodrich*, 383.

⁵⁹ Sharon M. Oster, *Modern Competitive Analysis*, second edition (New York: Oxford University Press, 1994), 183.

⁶⁰ Matthew W. Roth, *Platt Brothers and Company: Small Business in American Manufacturing* (Hanover: University of Connecticut, University Press of New England, 1994), 168.

⁶¹ Roth, *Platt Brothers*, 3 and 210.

technology. Norton specialised but integrated vertically and horizontally. Reynolds created a gradually expanding network of plants and products and eventually diversified. Platt Brothers undertook change for survival, not growth, and remained small when compared to the other firms discussed.

Each of these firms also encountered success and failure. Baldwin moved from the leading locomotive manufacturer to bankruptcy, while Norton poured millions on an "ill-advised venture into tape manufacture."⁶² Reynolds, early in the twentieth century, nearly disappeared into the all-consuming American Tobacco Company only to be rescued by anti-trust action.⁶³ BF Goodrich made a number of strategic errors before finally exiting from tire production, while the family controlled Platt Brothers faced issues relating to control that included a partial break up of the firm.

These firm summaries focus on diversity because it is diversity, as much as pattern, which illustrates response to the economic environment. Using the same business histories a case could be made for pattern, and Chandler saw that pattern when he examined the mass production and distribution industries of the United States. But the diversity shown above must also be a valid representation of business activity. Scranton and others have shown that this diversity existed and it is only by articulating the individual history of firms, people, and events that we can strive for understanding. Further, as proposed by evolutionary economics, we must also articulate the interplay of the social forces that encourage homogeneity in conjunction with those promoting diversity. An important objective of this study is to understand the dynamic interaction

⁶² Cheape, *Norton Company*, 291.

⁶³ Tilley, *R J Reynolds*, 95.

between an environment that supported homogenisation, but in actuality created diversity in British Columbia's softwood plywood industry.

Chapter II **Beginnings**

Introduction

British Columbia's plywood industry between 1913 and the late-1930s portrays the early development of a new industry formed as a secondary sector of a larger industry. Plywood manufacturers shared common resources with British Columbia's forest industry, such as raw materials and labour, but in other areas, including promotion and sales, operated independently of the larger industry. The strategies used by plywood manufacturers in the pre-World War II period to make plywood profitable were different from the strategies employed in the post-World War II period. The foundations of the post-war plywood strategies were, however, those established during its early history. Plywood manufacturers choose profit strategies based on their pre-World War II experience.

Three firms dominated the plywood industry until 1935: the Canadian Western Lumber Company, Laminated Materials Company (Lamatco) and British Columbia Veneer Works Limited. In 1935 the H. R. MacMillan Export Company began production and subsequently reshaped British Columbia's plywood industry to suit its own strategy for profit and success. The origin and evolution of these four firms illustrate industrial change and the transition from a rudimentary to a more complex industrial environment. The story begins with the Canadian Western Lumber Company as the only British Columbia plywood producer and ends with the H. R. MacMillan Export Company assuming leadership of a changed industry.

Veneer and plywood are not new products. Veneer is a single thin slice of wood,

while plywood is made of laminated and glued sheets of veneer. Centuries ago the Egyptians and other early peoples made extensive use of veneering techniques. Eminent English furniture builders such as Andrew Sheridan used both veneer and to a lesser extent plywood in their work.¹ Harrison Parker established the earliest known veneer mill in the eastern United States at Reading, Massachusetts in 1833.² Veneer plants operated on the West Coast of North America as early as 1868 and by 1890 a veneer plant operated in Washington State.³ In 1901 production of softwood veneer for the manufacture of fruit boxes began at Portland, Oregon. The veneer plant was followed four years later by the opening of the first Douglas fir plywood plant, also in Portland.

The production of Douglas fir plywood by the Portland Manufacturing Company in 1905 began the shift of veneer use from fruit boxes and as a furniture overlay to plywood. Instigated by Nathaniel J. Bailey, the plant superintendent, the first plywood was produced for display at Portland's 1905 Lewis & Clark Exposition. His experience in the eastern hardwood veneer industry suggested that Douglas fir plywood would make excellent door panels.⁴ He also knew that demand for plywood as door panels was increasing.⁵

British Columbia's plywood industry began at Fraser Mills when the Canadian Western Lumber Company opened the first British Columbia plywood plant in 1913. The company operated the plant in association with its new door plant, similar to the

¹ See for example Cour, *The Plywood Age*, 3-9.

² Callahan, *The Fine Hardwood Veneer Industry*, 23.

³ "Early Day Pacific Coast Veneer Plants," *The Timberman* 58 (December 1931), 19.

⁴ A door panel was usually a sized piece of plywood intended to fit on or into a door. A plywood panel or a panel as the term is used in this dissertation was usually a sheet of plywood 4 feet by 8 feet and used in non-door applications, such as a wall covering and sheathing.

⁵ "Early Day Pacific Coast Veneer Plants," *The Timberman* 58 (December 1931), 19. Some plywood may have been manufactured in 1904 at this plant. "Birthplace of Fir Plywood," *The Timberman* 75 (October 1949), 86.

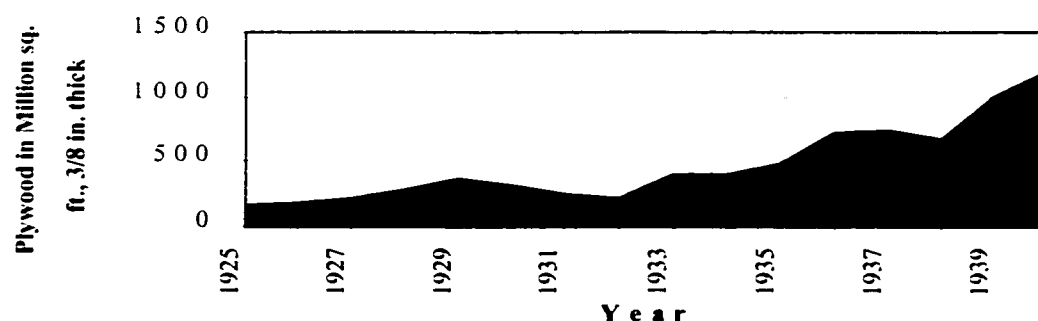
earlier plywood plant in Portland. Table II-1 shows the British Columbia plywood plants operating prior to World War II. Five British Columbia mills produced plywood prior to World War II but none initially produced Douglas fir panels for the open market.

Table II-1: British Columbia Plywood Panel Producing Plants Prior to World War II.⁶

Company	Location	Start	Product
Canadian Western Lumber Company	Fraser Mills	1913	Douglas fir
Laminated Materials Company	New Westminster	1916	Cottonwood
British Columbia Veneer Works	Nelson	1926	Cottonwood
H.R. MacMillan Export Company	Vancouver	1935	Douglas fir
Pacific Veneer Company	New Westminster	1938	Hardwood

Three of these plants were hardwood plywood producers, while the other two mills supplied plywood to associated door manufacturing plants. As the British Columbia

Graph II-1: Softwood Plywood Production, British Columbia and the Pacific Northwest, 1925-1940.⁷



industry grew the Douglas fir producers also sold fir panels to other customers. Growth of the Douglas fir plywood industry happened much faster in the United States, but even so, not until 1921 did the Elliott Bay Mill Company of Seattle produce most of its plywood solely for the panel market and not for use in door manufacturing.

⁶ File information History Section, Royal British Columbia Museum (hereafter RBCM). There at least two other plywood makers in British Columbia but these were speciality furniture manufacturers producing small quantities.

⁷ *The Timberman* 72 (January 1945), 34.

Until 1936 British Columbia plywood filled a niche or speciality market, a market that flourished as long as production was kept modest and competition limited. The three firms (Canadian Western Lumber, Laminated Materials Company, and British Columbia Veneer) remained small, obtained sufficient capital to minimise debt and located specialised market niches. They operated in a manner that met the conditions necessary for their survival and once they moved outside these constraints two of the firms failed.

The Early Plywood Producers

The Canadian Western Lumber Company originally produced Douglas fir panels for its door plant. Observing the growing demand in the United States for plywood in non-door uses it began selling plywood for interior siding or panelling.⁸ The initial production capacity, starting in March 1913, was four million square feet per year and door production was at one thousand per day, but as demand grew so did production capacity.⁹

Canadian Western in 1913 was one of the oldest and largest lumber manufacturers in British Columbia. The first plant was constructed in 1889 and went into production in 1890. The operation struggled financially for approximately fifteen years until reorganised in 1905 as Fraser River Sawmills. Reorganised again in 1910, the firm became the Canadian Western Lumber Company and with a new infusion of capital entered a period of growth. The new capital was used to expand its logging operations and to construct a cedar mill, a door plant and the veneer/plywood operation. The new facilities made the company the largest and most integrated forest product manufacturer in British Columbia. The sawmill gained a reputation as the largest sawmill in the British

Empire.¹⁰

Canadian Western was in an ideal position to introduce softwood plywood to Canadians. The company logged one of the largest and most magnificent stands of Douglas fir on the West Coast, near Comox on Vancouver Island. At the time of plywood production start-up in 1913 it controlled about two hundred retail outlets, under several different names, across the Prairies (see Table II-2).¹¹

**Table II-2: Canadian Western Lumber Company
Retail Lumber Yards in 1913.¹²**

Subsidiary Company	Head Office Location	# of Yards	Net Sales
Western Canada Sawmill Yards	Saskatoon	38	\$1,252,576.88
Coast Lumber Yards	Winnipeg	3	\$551,195.43
Crown Lumber Company	Calgary	60	\$1,413,130.55
Security Lumber Company	Moose Jaw	56	\$1,396,213.88
Lumber Manufacturers	Regina	42	\$1,318,571.60
Coast Lumber & Fuel	Vancouver	2	\$126,225.69
Total		206	\$6,057,914.03

The retail outlets were sometimes wholly-owned and sometimes jointly-owned. The Security Lumber Company, for example, was owned in association with the Victoria Lumber and Manufacturing Company, which operated a large sawmill on Vancouver Island.¹³ Each retail outlet carried a full range of building materials, including plywood, but Canadian Western emphasised the sale of lumber, not the sale of plywood. Canadian

⁸ Advertisement, *British Columbia Lumberman* 11 (August 1927), 71.

⁹ Plywood production is calculated on a 1/16th inch thick basis.

¹⁰ John Reay Stewart, Notes compiled in 1954. Copy obtained from Interfor - Fraser Mills sawmill office, Canadian Western Lumber Company file, History Section, RBCM, 1-27.

¹¹ Lumber company owned retail yards were not a new business practice. The Laird Norton Lumber Company of Wisconsin operated eighteen yards in South Dakota during the mid-1880s, for example. John N. Vogel, *Great Lakes Lumber on the Great Plains: The Laird, Norton Lumber Company in South Dakota* (Iowa City: University of Iowa Press, 1992), 92.

¹² "Report of the Board of Directors of the Canadian Western Lumber Company, as at December 31, 1913," RBCM, n. p.

¹³ J.W. Hamilton, "History of the Security Lumber Company," Files History Section, RBCM.

Western, despite being the sole manufacturer in Canada of softwood plywood and in control of a major chain of retail outlets, did not create a sizeable market for Douglas fir plywood.

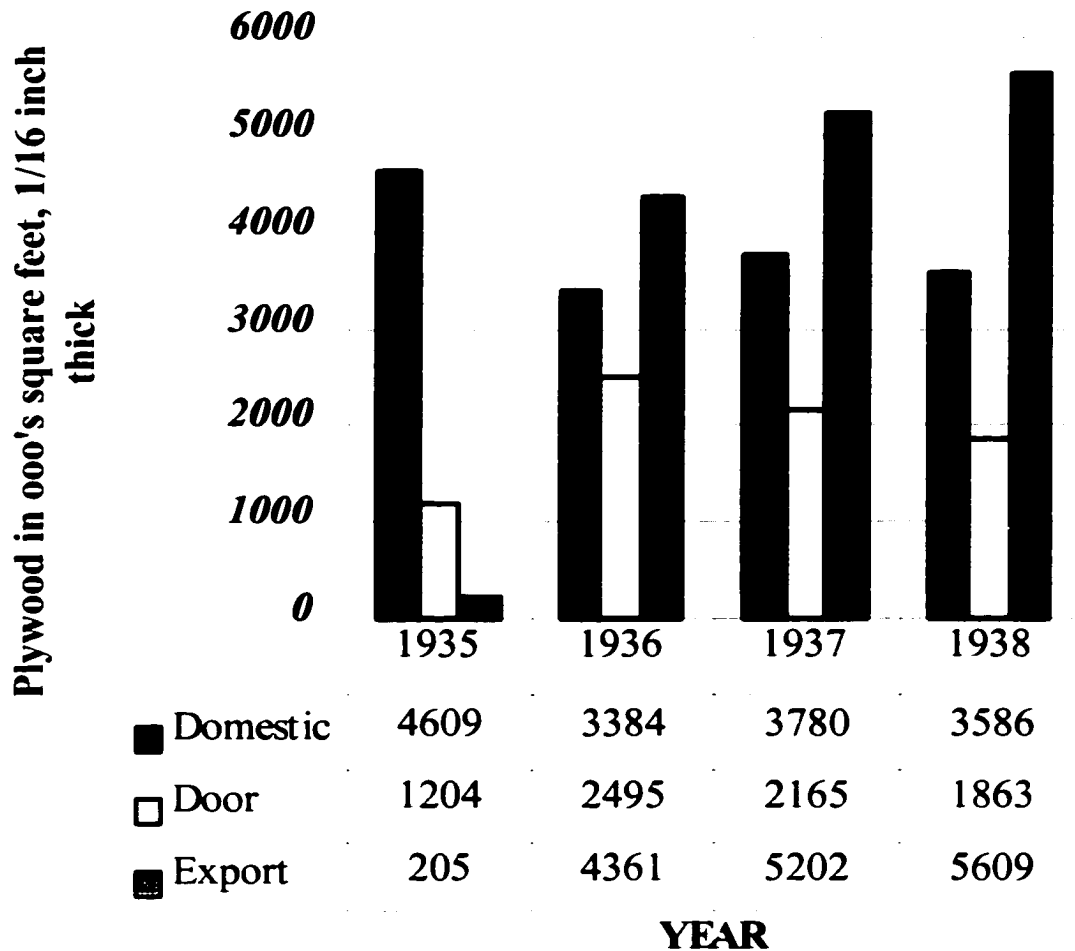
Canadian Western advertised plywood's superior qualities, but the company's campaign was ineffective. Manufacturers, wholesalers and retailers, not the consumers needing to be convinced of plywood's superiority, read the *British Columbia Lumberman*. Company advertising in the *British Columbia Lumberman*, for example, promoted plywood panels as "pre-eminently suited for fine wall panel finish in the home." Canadian Western pointed out the use of plywood in hotels, restaurants and other business environments and promoted its advantages: panels "are clean to handle, easy to put on, and cut to convenient sizes, so that there is no waste."¹⁴ The Prairie retail yards carried plywood as a matter of course, but, lacking a promotion effort aimed at the plywood user, sales remained relatively small. Canadian Western was not interested in making plywood an important part of its product line.

Canadian Western investigated exporting plywood. At this time business was generally confined to the United Kingdom because plywood was largely excluded from the United States' markets due to high tariffs and competition from larger and more productive American mills. Much of the exported plywood was also used in door production.¹⁵ Plywood exports abruptly rose during the late-1930s when Canadian

¹⁴ *British Columbia Lumberman* 11 (August 1927), 71.

¹⁵ *The Timberman* 53 (August 1926), 28. "Vancouver Exporting Doors to U.K.," *The Timberman* 60 (August 1933), 37.

**Graph II-2: Canadian Western Lumber Company
Plywood Sales, 1935 to 1938.¹⁶**



Western began to sell plywood overseas under the auspices of the newly formed British Columbia export organisation, the Seaboard Lumber and Shipping Company. It in turn sold the plywood to established wholesale dealers in the United Kingdom.¹⁷

¹⁶ Data from financial Reports 1935-1938, Canadian Western Collection, Port Moody Historical Society. Domestic (Canada), Door Production and Export Plywood are in square feet, 1/16th inch thick basis

¹⁷ E.G. Perrault, *Wood and Water: The Story of Seaboard Shipping and Lumber* (Vancouver: Douglas & McIntyre, 1985), 107-109.

Plywood, however, remained a peripheral part of its operations, despite the doubling of production in 1926.¹⁸ Canadian Western remained focused on what it considered its main product, lumber. Its apparent lack of interest in plywood production is reflected in its annual report. No mention of plywood production was made prior to the plant expansion in 1935, but detailed information on lumber production was included each year.¹⁹ The company, for example, also made no attempt direct surplus plywood to Vancouver's burgeoning door industry during the early-1930s, a time when plywood plant production was reduced.²⁰ In 1937 the Nicoli Door Manufacturing Company of Vancouver had to curtail production due to a lack of door components.²¹ Canadian Western certainly faced a number of problems, including difficulty in finding large clear logs for veneer production.²² It is also evident that the H. R. the MacMillan Export Company's new plywood plant built in 1935 caused Canadian Western to reconsider its approach to selling plywood.

The two major British Columbia manufacturers producing plywood for panel sales before World War II, were the Laminated Materials Company (Lamatco) and the British Columbia Veneer Works, both hardwood panel producers. These two firms, despite the proven suitability of British Columbia softwood logs for plywood, used cottonwood, a tree otherwise considered economically valueless.²³ The first of these plants went into operation in 1916 in an abandoned match factory along the Brunette

¹⁸ *The Timberman* 53 (July 1926), 76.

¹⁹ Report of the Board of Directors of the Canadian Western Lumber Company Limited, 1913 to 1953, photocopy on file at the History Section, RBCM.

²⁰ *The Timberman* 58 (January 1931), 161. *The Timberman* 60 (August 1933) 58.

²¹ *The Timberman* 64 (June 1937), 78.

²² R. J. Filberg (logging manager at Comox) to H. J. Mackin (General Manager at Fraser Mills), October 30, 1930, Comox Logging Collection, Courtenay Museum. "Yes, it is sure getting tough to find big clear logs and as I have told you before it will get harder as time goes on to get that class of log."

River in New Westminster. The Laminated Materials Company was a good-sized operation for its time. Financed by capital, primarily from the Boston area, the company operated for some fifteen years and created a successful market for its products.

The Boston businessmen controlled several patents for the manufacture of a three-ply cottonwood panel and decided that British Columbia's under-exploited cottonwood stands were ideal for their venture.²⁴ Production facilities for plywood, similar to what Duncan McDowell found in steel, require proximity to the source of raw materials if the operation is to be successful, and the stands of cottonwood along the Fraser River drew the company to New Westminster.²⁵

The close association with Boston continued throughout the life of the firm. In 1925, for example, it acquired additional timber supplies, on the Skeena and Nass Rivers, from another Boston investor. These stands of cottonwood had been of interest to veneer manufactures for several years prior to the establishment of Lamatco, but Lamatco's Boston connection provided significant competitive advantage over potential rivals.²⁶ The Boston connection contributed manufacturing process patents and a raw material base, both of which figured prominently in a successful start-up.²⁷ Control over these resources prevented the emergence of any serious local competition.

The Lamatco factory, with thirty-five men, began by building salmon boxes of

²³ Cottonwood was cheaper to purchase than Douglas fir, but it was also frequently located in difficult harvesting areas.

²⁴ Canadian Patents numbered 147,885 "Process of Compounding Material," and 147,886, "Laminated Material," *Canadian Patent Office Record*, May 1913, 1534. *West Coast Lumberman* 42 (January 15, 1915), 25. *Canada Lumberman* 49 (October 1, 1929), 62.

²⁵ Duncan McDowell, *Steel at the Sault; Francis H. Clergue, Sir James Dunn, and the Algoma Steel Corporation, 1901-1956* (Toronto: University of Toronto Press, 1984), 8.

²⁶ *The Timberman* 50 (May 1923), 187.

²⁷ Richard N. Langlois and Paul L. Robertson, *Firms, Markets and Economic Change: A Dynamic Theory of Business Institutions* (London: Routledge, 1995), 19.

three-ply cottonwood plywood.²⁸ It expanded into other box production such as berry boxes and established a small export trade with England, New Zealand and Australia. By 1921, Swedish competition eroded the English trade, which was mainly in soapboxes. The company did not stand still, and in 1926 again sold all the plywood it manufactured.²⁹ This prosperity so encouraged the company directors that in 1926 the company tripled plywood production.³⁰

The rebuilt New Westminster plant included a large lathe, two clippers, five presses, and five sanders. The equipment used in the rebuilding was largely built or rebuilt in the company's own shop and sometimes to their own design.³¹ The production increase from four million to twelve million square feet meant that the company was producing significantly more cottonwood plywood than Canadian Western was producing softwood plywood.

During the late 1920s Lamatco mainly sold its panels as wallboard. However, sales of plywood in the United States demonstrated to consumers and manufacturers in Canada that plywood was usable in a variety of ways, including furniture manufacture. Lamatco took advantage of this new awareness and secured orders for panels to be used in radio cabinets, as well as a large contract from Canadian Steamship Lines for interior furnishings.³² The product was considered very advanced, hot pressed with relatively waterproof glue, at a time when most softwood producers, including Canadian Western,

²⁸ *Industrial Progress & Commercial Record* III/3 (September 1915), 72. *Canada Lumberman* 49 (October 1, 1929), 62.

²⁹ *The Timberman* 48 (July 1921), 71. *Western Lumberman* 23/1 (January 1926), 38.

³⁰ *The Timberman* 55 (February 1928), 25. *Western Lumberman* 23/6 (June 1926), 7. *The Timberman* 56 (September 1929), 92.

³¹ "Appraisal of The Laminated Materials Co. Ltd.," by General Appraisal Company, Vancouver, July 8, 1930, Files MacMillan Bloedel, History Section, RBCM.

³² *The Timberman* 54 (February 1927), 206. *The Timberman* 54 (August 1927), 22. *British Columbia Lumberman* 11 (September and October 1927), 28 and 30 respectively.

used cold presses and sold non-water proof panels.

Lamatco created a stable sales network across western Canada with sales arrangements in place in all the major Prairie cities.³³ Business also increased in eastern Canada and the company extended its distribution network by linking with dealers in Toronto, Montreal, and Kitchener.³⁴ The company even secured contracts from General Motors and Ford to supply panels for truck bodies.³⁵ Logs supplied from the north, although more expensive than the Fraser Valley supplies, were of satisfactory quality.³⁶ Lamatco even considered constructing a second plant at Bellingham, but it was never built.³⁷

Table II-3 lists the company's sales agencies in 1927, and shows a sales network that spread across Canada, but Lamatco depended on its wholesalers for successful product promotion.

**Table II-3: Laminated Materials Company
Sales Agencies in 1927.³⁸**

Sales Agency	City
General Sales Office, Lamatco	Vancouver
The Edmonton Paint & Glass Co.	Edmonton
Frank Barker & Co.	Calgary
Imperial Lumber Yards Ltd.	Moose Jaw
The Western Manufacturing Company Ltd.	Regina
North Battleford Manufacturing Co. Ltd.	Saskatoon
Turnbull & McManus, Ltd.	Winnipeg
J.P. Dupuis, Ltd.	Montreal
Haley Brothers	St. John
Laminated Materials Co. Ltd.	Toronto

During the late 1920s and early 1930s, however, Lamatco, faced hard times.

³³ *Western Lumberman* 23/6 (June, 1926), 7.

³⁴ *Canada Lumberman* 51 (March 1, 1931), 56.

³⁵ *The Timberman* 56 (November 1929), 212.

³⁶ *The Timberman* 56 (May 1929), 26.

³⁷ *The Timberman* 44 (January 1917), 23.

Competition in eastern Canada, especially from the United States, undermined eastern markets, which only revived in late 1930 when the Canadian government improved tariff protection.³⁹ Lamatco's irregular efforts to maintain its export market also resulted in a poor market balance.⁴⁰ Lamatco neglected export opportunities when the Canadian market was good and so frequently lost potential long-term customers.⁴¹ In an effort to increase Canadian market share and hoping to create a new market, in 1929 Lamatco began producing a new plywood panel that used imported Philippine mahogany on the panel face. This rotary cut mahogany panel was highly praised in the industry and was described as the saviour of the company.⁴² The new panel, however, was not enough to counter the 1930s business downturn and, despite loans from the Bank of Commerce and the appearance of activity, in 1931 the company permanently closed its plant.⁴³ In early 1932 the company declared bankruptcy.⁴⁴

The Lamatco firm was not in a good financial position during the late 1920s. The expense of the additional timber acquisition, building the new plant, and higher production costs strained the company's financial resources. The only year for which a financial statement is available is 1925 and it seems to show a relatively good financial situation, especially when accounts receivables are contrasted to accounts payable: \$79,899.73 versus accounts payable of \$20,923.94. The more general picture in 1925

³⁸ *British Columbia Lumberman* 11 (January 1927), 9.

³⁹ *The Timberman* 57 (October 1930), 20.

⁴⁰ Neglect of long term markets, especially export for short term gain in local sales was also typical of the British Columbia lumber industry. David H. Cohen, "A History of the Marketing of British Columbia Softwood Lumber," *The Forestry Chronicle* 70/5 (September/October 1994), 580.

⁴¹ *The Timberman* 55 (June 1928), 18. This is also typical of the British Columbia Lumber industry.

⁴² *Canada Lumberman* 50 (June 15, 1930), 67. *The Timberman* 58 (January 1931), 162.

⁴³ Laminated Materials Company, 5256, Companies Office Records, microfilm reel B5182, British Columbia Archives and Records Service (hereafter BCARS). *Canada Lumberman* 50 (June 15, 1930), 67. *Canada Lumberman* 51 (April 15, 1931), 49.

⁴⁴ Laminated Materials Company, 5256, Companies Office Records, GR microfilm reel B5182, BCARS.

was not as bright for the company's future. Total liabilities were significantly higher than total assets, \$218,940.92 for liabilities, against assets of only \$172,141.95.⁴⁵ This was not a catastrophic picture, but it does indicate the company's narrow financial margin, certainly too narrow to survive an economic upheaval like the Great Depression. The machinery sat idle for four years and was acquired in 1935 by the H. R. MacMillan Export Company.

The failure of Lamatco in the early 1930s, while the British Columbia Veneer Works at Nelson continued to operate throughout the depression suggests that Lamatco reached and exceeded the limits of its capabilities. Lamatco could no longer keep costs at a level that allowed it to recover a satisfactory profit in a limited market. The company found that its northern cottonwood logs were too far away and the logs, while being towed from Prince Rupert, absorbed water and many sank.⁴⁶ Lamatco's sales were too limited for its production capacity and adequate returns to investors were no longer possible. In effect Lamatco expanded beyond the limits imposed by its resources and market.⁴⁷ This is in contrast to Ohanian's study of pulp mills where she found that small size contributed to firm failure.⁴⁸

British Columbia Veneer Works in Nelson adopted a different strategy and did not expand, it remained in business and profitable throughout the Depression. The British Columbia Veneer Works was British Columbia's third plywood plant to go into production. It may have been inspired by the success of Lamatco, whose business was booming when the British Columbia Veneer Works was conceived in 1926.

⁴⁵ Laminated Materials Company, 5256, Companies Office Records, microfilm reel B5182, BCARS.

⁴⁶ J. E. Roy, interviewed by P. Roy, 1 November 1999.

⁴⁷ Langlois and Robertson, *Firms, Markets and Economic Change*, 31.

⁴⁸ Nancy Kane Ohanian, *The American Pulp and Paper Industry*, 149

Incorporated in 1927, the first shipment left the plant on January 28, 1928.⁴⁹ The first president was Dr. W. O. Rose of Nelson, but the driving force behind this operation was George Dvorjetz who built and managed the plant. Dvorjetz's decision to keep the facility relatively small contributed greatly to the company's survival.⁵⁰

Growth in a company has been attributed to many factors, from transaction costs to the assumption that a large company has a competitive advantage over a small one.⁵¹ Deciding how to grow is crucial to the strategy and success of a firm. Langlois and Robertson suggest that growth strategies are based on the decision-maker's vision of a company's future prospects and that their vision of the future is based on past learning.⁵² It is uncertain what motivated Dvorjetz to remain small, although certainly Frank Leland's decision, as managing director of Laminated Materials Company, to expand the Lamatco operation already showed negative consequences by 1927. Whatever the reason, Dvorjetz's decision in this regard fostered company survival. The firm employed only twenty-three men in the plant, but Dvorjetz maintained relatively steady production.⁵³ He experimented with species other than cottonwood and sought new customers. The relative small size and close raw material supply, however, enabled the company to operate throughout the Great Depression.

Dvorjetz manufactured plywood at the Nelson plant by a relatively crude process, even for the time. He copied Lamatco in the use of glues and a hot press; and the veneer was peeled on a modern Merritt lathe and dried in a Coe dryer. However, the panels

⁴⁹ Henry Stevenson, Nelson to Richard Pinton, Delta, October 14, 1988, Pinton Collection (hereafter PC), RBCM.

⁵⁰ "Hot Pressing Cottonwood Plywood," *The Timberman* 63 (August 1936) 38.

⁵¹ Egbert Weaver, "ccFriesland: Spatial Dynamics within a Dynamic Company," in Marc de Smidt and Egbert Weaver, ed. *The Corporate Firm in a Changing World Economy: Case Studies in the Geography of Enterprise* (London and New York: Routledge, 1990), 120.

⁵² Langlois and Robertson, *Firms, Markets and Economic Change*, 17.

were laid-up by hand, with cross-banding, in three or four ply. The assembled sheets were stacked into a pile of fifteen panels, each with a board between. Each panel was subsequently loaded into the five opening Seimpkamp Press with three panels going into each opening and being pressed for three minutes at two hundred pounds pressure. They were then removed and allowed to dry for up to twenty-four hours, prior to reinsertion into the press for another twenty minutes. After cooling the panels were ready for shipment. This was a far cry from the much more sophisticated and extensive operations at Lamatco with automatic lay-up equipment and five large presses and dryers.⁵⁴

Most of the capital for the British Columbia Veneer Works was raised locally, however, one major shareholder was James Richardson, a Winnipeg financier with connections to the Canadian Pacific Railway and other large enterprises. Richardson joined the company before it opened and continued to increase his investment. It was possibly Richardson's influence that induced the company to locate its main sales agency in Winnipeg.⁵⁵ The guarantee for the company's bonds, in the amount of \$50,000, by the City of Nelson, must also have assisted the company's establishment on a relatively sound financial footing.⁵⁶

George Dvorjetz's extensive experience with plywood production was certainly a major contributing factor to the operation's success.⁵⁷ Dvorjetz worked in the Russian plywood industry prior to moving to England where he bought and sold plywood. Later he moved to the United States where he first managed a plywood plant for the Utility

⁵³ Notes compiled by Richard Pinton, 1988, PC, RBCM.

⁵⁴ *The Timberman* 54 (June 1927), 133. Notes compiled by Richard Pinton. 1988, PC, RBCM.

⁵⁵ British Columbia Veneer Works Limited, Companies office files, British Columbia, microfilm reel 5215, BCARS. *British Columbia Lumberman* 12 (March 1928), 33.

⁵⁶ British Columbia Veneer Works Limited, Companies office files, British Columbia 8739, microfilm reel 5215, BCARS. *British Columbia Lumberman* 11 (September 1927), 30.

Manufacturing Company at Goldsboro, North Carolina, and later the plant of the Fiona American Plywood Company at Portland, Oregon. He went to India, returned to England where he was in the plywood department of Vickers, and finally came to Canada to work for the Development Branch of the Canadian Pacific Railway before taking the position of manager of the British Columbia Veneer Works. He is credited with introducing waterproof plywood to the United States. While with the Fiona American company he reportedly handled the largest contract placed to that time for waterproof plywood.⁵⁸

Throughout the depression Dvorjetz maintained sales at approximately \$70,000 per year and usually achieved a small profit. Understandably, during the first year of operation in 1928 the company operated at a loss, but 1933 was the only other year in which a further loss occurred.⁵⁹ Maintaining profitability was not an easy task, despite the plant's small size. Fortunately, Dvorjetz had allowed for production from species other than cottonwood. This diversity contributed to the firm's stability, although cottonwood remained the company's main product. Dvorjetz indicated to the *Western Lumberman* that start-up went well, and that several eastern distributors were interested in the firm's production of about thirty carloads of plywood per year.⁶⁰ He increased sales in 1930 and maintained them in 1931. The company primarily distributed its plywood throughout the Prairies and to Ontario, its largest market. Competition from eastern birch by 1932 caused Dvorjetz to introduce larch and birch panels. Shipments at this time, however, were well below capacity; only about ten carloads had been shipped

⁵⁷ Judith McGaw confirms the importance of industry experience in her study of Berkshire paper mills. McGaw, *Most Wonderful Machine*, 238-9.

⁵⁸ "Dvorjetz will be Manager of Veneer Works," *Nelson Daily News* (March 15, 1927), 5. All the early biographical information comes from this article.

⁵⁹ British Columbia Veneer Works Limited, Companies office files, A8739, microfilm reel 5215, BCARS. 1933 was also the low point of the depression.

⁶⁰ "New Veneer Plants Starts Operation," *Western Lumberman* 25/2 (February 1928), 643.

by September 1932 including birch panels. Dvorjetz hoped that larch would act as an alternative for cottonwood and birch, and he endeavoured to use larch to create new sales. The panels, however, could not profitably compete with eastern birch plywood, although an order for larch-faced plywood from England offered an incentive to continue production. Improved conditions in 1933 gave the company more flexibility and once more cottonwood became the company's mainstay. Conditions continued to improve. In 1937, for example, numerous sales were made around the Nelson area and to the United States. A few orders were even sent to New Zealand.⁶¹

Surviving the Depression was not necessarily an assurance for long-term survival and World War II spelled the end for the British Columbia Veneer Works. In January 1942 record sales of cottonwood plywood were reported through their pre-war outlets, however, the plant gradually shifted its production to birch for aircraft manufacture, away from its usual outlets and traditional product.⁶² By 1943, seventy-five percent of its business was war work. Dvorjetz reported that the permanent closure of the plant in 1945 was due to a lack of cottonwood logs. This certainly must have been a factor and it was accepted in Nelson as justification for the plant's closure. The shift to war production, however, must have disrupted market connections and Dvorjetz, at the age of fifty-four, seems to no longer have been willing to re-establish them.⁶³ Certainly at various times he had proven that the company could use alternative types and supplies of logs. Logs had also been brought to the plant from a considerable distance over the years. The

⁶¹ *The Timberman* 55 (June. 1928), 132. *The Timberman* 57 (October 1930), 105. *British Columbia Lumberman* 15 (August 1931), 23. *The Timberman* 59 (December 1932), 41. *British Columbia Lumberman* 16 (September 1932), 22. *British Columbia Lumberman* 17 (January 1933), 18. *The Timberman* 60 (May 1933), 62. *British Columbia Lumberman* 22 (February 1938), 26.

⁶² "Nelson Veneer Plant Reports Biggest Season in History," *British Columbia Lumberman* 26 (January 1942), 26.

largest and closest supply had been in the Lardeau, but logs had also been acquired from the Salmo area, Grand Forks, and Idaho.⁶⁴ The issue was certainly more complex than simply a lack of timber. The most obvious explanation was an unwillingness by Dvorjetz to step into the new world of plywood production that came with the end of World War II; at least he was unwilling to undertake such an initiative in Nelson. Following his departure from Nelson he managed Skyline Manufacturing, a small hardwood producer in Vancouver, for several years. New coastal mills were built or planned, and evidence from the United States showed the future for production was in Douglas fir plywood, a softwood, rather than cottonwood, a hardwood.

The 1945 closure of the British Columbia Veneer Works provided an opportunity for a new firm, Western Plywood of Vancouver, to begin production. John Bene, founder of Western Plywood was quite familiar with the operation at Nelson and acquired much of his first equipment from the closed plant. Bene had worked for the Pacific Veneer Company (Canadian Forest Products) in New Westminster when it shipped birch plywood along with the British Columbia Veneer Works during World War II.⁶⁵ He also wanted to enter the cottonwood manufacturing business, and used the opportunity provided by the British Columbia Veneer Works closure to establish himself.

Canadian Western, Lamatco and the British Columbia Veneer Works were the major pre-1935 producers of plywood in British Columbia. Veneer also had other applications, such as packaging for food products. Several companies, including Pacific Wood Products using two veneer lathes (a Merritt and a Coe) and British Columbia

⁶³ *British Columbia Lumberman* 25 (March 1941) 32. *British Columbia Lumberman* 27 (March 1943), 43. *British Columbia Lumberman* 28 (February 1944), 44.

⁶⁴ *British Columbia Lumberman* 12 (March 1928), 33. *British Columbia Lumberman* 16 (April 1932), 25.

⁶⁵ *British Columbia Lumberman* 27 (March 1943), 43. *British Columbia Lumberman* 29 (August

Manufacturing Company in Vancouver, produced veneer for the food packaging industry.⁶⁶ Several interior companies also produced veneer, such as the Western Canada Pad and Drum Company in Vernon. Small quantities of hardwood plywood were also manufactured for local furniture makers. Hammond Furniture in Vancouver, for example, used alder veneer and after the closure of the British Columbia Veneer Works opened a small cottonwood plywood plant.⁶⁷ Evans Products Company Limited acquired a plant in Vancouver in 1931 to produce battery separators made out of yellow cedar, although after 1954 it produced fir plywood. These companies, however, except perhaps the furniture manufacturers, are peripheral to the plywood panel industry.

From Doors to Panels

The H. R. MacMillan Export Company in 1935 at its new plywood plant on Marine Drive in Vancouver inaugurated a change in the British Columbia plywood industry. Hardwood plywood never again played a large role in British Columbia's plywood mills. Coastal Douglas fir plywood dominated the province's output for the next forty-five years. Canadian Western's salesmen created a small export and domestic market for their softwood plywood production, but their efforts had barely tapped potential plywood sales. H. R. MacMillan, well aware of the trends in the United States, realised that similar possibilities existed in Canada, but that the possibility still had to be turned into reality.

Plywood in the United States had assumed a new and broader role; it was used

1945), 38. *British Columbia Lumberman* 31 (May 1947), 56.

⁶⁶ *The Timberman* 56 (December 1929), 132.

⁶⁷ *British Columbia Lumberman* 20 (May 1936), 68. *British Columbia Lumberman* 30 (August 1946), 57.

for concrete forms by the early 1930s and an awareness of other uses rapidly spread.⁶⁸ At the Chicago exhibition in 1933, several model homes were constructed using plywood sheathing, and generated considerable interest.⁶⁹ By the time the H. R. MacMillan Export Company's plant went into production, the United States softwood plywood industry was well established and was even making inroads into European markets. The Portland-based Douglas Fir Plywood Association developed and distributed promotional literature. The Douglas Fir Plywood Association also sought acceptance of plywood in building codes and established a plywood standard.⁷⁰

The H. R. MacMillan Export Company's entry into plywood production, like that of Canadian Western, was closely linked to the demand for doors. Coast Sawmills, an export subsidiary of the H. R. MacMillan Export Company, developed an export door market with Britain during the 1930s by taking advantage of tariff preference. In order to secure enough doors for their needs, the company bought plywood from Canadian Western and imported plywood from the United States. One of the key players in this operation was Blake Ballentine, manager of Coast Sawmills. Ballentine approached MacMillan with idea of building a plywood plant on vacant land the company owned next to its Vancouver sawmill upon Canadian Western's refusal to supply further door plywood to its competitor Coast Sawmills.⁷¹

MacMillan looked into the possibility and sent one of his senior sales managers, Al Johansson, to investigate. Johansson decided that potential sales looked good. On a visit to the Revelstoke Lumber Company's Calgary office, for example, Johansson

⁶⁸ I. F. Laucks, "Spirit of Progress in Plywood Industry," *The Timberman* 60 (December 1933), 38.

⁶⁹ *Ibid.*, 60.

⁷⁰ "Problems of the Plywood Industry," *West Coast Lumberman* 64 (December 1937), 52.

⁷¹ Interview with Harold Brand by R. Pinton, 1984, PC, RBCM.

discovered that that company was prepared to purchase at least a carload as soon as the plywood was available.⁷² Construction commenced on the new plant, with equipment from the closed Lamatco plant in New Westminster. The first sheets were slid from the cold press in December 1935.

Canadian Western had already initiated the marketing strategy adopted by its later competitors, including the H. R. MacMillan Export Company. The objective was to convince builders to use plywood instead of lumber in specific construction areas. In 1937, for example, a Canadian Western advertisement in the *British Columbia Lumberman* pointed out that plywood saved the builder twenty to sixty percent in the time required to sheath a house, and that comparatively little waste resulted.⁷³ Canadian Western commonly placed such advertisements in trade periodicals. Another in July 1937 listed common uses and provided twelve advantages. This same advertising message was used throughout the 1940s, 1950s, and 1960s.⁷⁴

The H. R. MacMillan Export Company adopted Canadian Western's advertising approach, but it was the H. R. MacMillan Export Company that developed substantial demand for plywood, despite installing its hot press a year and a half after Canadian Western.⁷⁵ The H. R. MacMillan Export Company announced, for example, that "SYLVAPLY is ENGINEERED LUMBER... Here is plywood that defies the elements... sun, rain, snow, and ice."⁷⁶ These approaches became the post-war standard and sales to builders became the first of two major markets, the other being the retail homeowner

⁷² Most of this information is based on an interview transcript made by Tom White with Joe and Al Johansson, nd. PC, RBCM.

⁷³ *British Columbia Lumberman* 21 (May 1937), 59.

⁷⁴ *British Columbia Lumberman* 21 (July 1937), 54-58. Another example 22 (July 1938), 79-80.

⁷⁵ A hot press was required to make water proof exterior panelling and plywood suitable for other exterior uses such as concrete forming.

⁷⁶ *Western Business and Industry* 18/1 (March 1944), 25.

trade. The H. R. MacMillan Export Company redirected its advertising campaign and created the demand that Canadian Western had failed to build.⁷⁷

Canadian Forest Products was the only other pre-World War II plant to begin plywood production in British Columbia. It started producing hardwood plywood in 1938, primarily birch for furniture manufacturers. The owners expected to begin fir plywood production as early as 1942 but demand for birch during World War II was so great that the equipment purchased for fir production was used to increase birch production.⁷⁸ Not until late 1944 did Canadian Forest Products begin producing fir plywood.⁷⁹ Company actions were in keeping with its environment, it shifted from hardwood production to softwood production as did the British Columbia plywood industry.

Conclusion

Plywood production in British Columbia prior to World War II was of comparatively little economic importance.⁸⁰ Plywood generally was not a value-added ancillary to the Douglas fir lumber industry, as was the case in later years, but instead was separate from the rest of the solid wood products sector with two of the three plants processing an otherwise largely unutilised species.⁸¹ The plants used logs as raw material, but the logs were considered valueless by the rest of the solid wood products

⁷⁷ A more complete discussion of how this was achieved is found in Chapter III.

⁷⁸ John Bene, Vancouver to George Wright, London, April 30, 1942. Leary File, Box 9B Weldwood Collection (Hereafter WC), RBCM.

⁷⁹ John Bene, Vancouver to Norman Wright, London, February 18, 1944. Leary File, Box 9B, WC, RBCM.

⁸⁰ Unfortunately, statistics of production and employment in the British Columbia plywood industry are not available prior to the late 1930s, however, between 1913 and 1935 when plywood plants in British Columbia employed between 25 and 150 workers, British Columbia sawmills employed between 9,000 and

industry. Despite fifteen years of production Lamatco, the larger of the two cottonwood producers, could not withstand the depression of the 1930s. The conservative approach of Dvorjetz enabled the British Columbia Veneer Works to survive the Great Depression and World War II, but he did not believe the Nelson plant could compete in the post-war plywood industry. Canadian Western had the opportunity to dominate British Columbia plywood production but yielded its leadership to the H. R. MacMillan Export Company during World War II. The entry of the H. R. MacMillan Export Company prompted Canadian Western to expand its softwood plywood production and promotion, but the H. R. MacMillan Export Company's aggressive program overwhelmed the conservative approach adopted by Canadian Western's management.

The limited size of the pre-1935 industry suggests that, despite rapid growth in the United States, Canadian investors clearly did not see plywood production as a worthwhile investment. Several reasons caused this including the simple explanation that other investments were more attractive. Lumber production, for example, expanded rapidly during the 1920s and was more profitable than plywood. The marketing campaign of the Douglas Fir Plywood Association in the United States gradually expanded the market for plywood in certain applications, and the H. R. MacMillan Export Company capitalised on the growing awareness of plywood as an alternative product replacing lumber. The introduction of waterproof glues during the late-1930s broadened the alternatives for plywood use and MacMillan shifted its expanded marketing campaign into promoting waterproof plywood suitable for exterior construction. World War II, however, checked the growing domestic market for plywood.

15,000 employees. "Statistics of Industry in British Columbia: 1871-1934," Research Department, Economic Council of British Columbia, Provincial Library, Victoria, 1935.

British Columbia's early plywood industry established certain conditions which influenced post-war development. The availability of the cottonwood resource attracted new capital for plywood production, and acted as a catalyst for industrial change. Cottonwood was available for the new industry and the familiarity of investors and plywood manufacturers with hardwood production suggested hardwoods were the best source of fibre. The perceptions held by industry leaders played a critical role in determining the directions each change took. The creation of two cottonwood mills emerged from the experiences of the promoters whose background in hardwood plywood led them to use cottonwood as their primary raw material. Canadian Western, on the other hand, viewed lumber as the primary product of its integrated complex and failed to develop plywood as an important market commodity. A new and significant industry based on coastal Douglas fir plywood emerged from a new player, the H. R. MacMillan Export Company, which perceived the opportunity from a different perspective, that of a market agent, not a producer. H. R. MacMillan, however, developed the plywood market in the direction already established by American producers and Canadian Western.

The small plywood industry that grew in the pre-war years bore little relationship to the relatively huge plywood manufacturers that appeared in the post-war period. Cottonwood was eclipsed by softwood Douglas fir panel production following World War II, and doors became a speciality product. However, the organisation of the industry in the pre-war period carried over into the organisation of the British Columbia plywood industry in the post-war period. Softwood plywood never escaped from being viewed as a secondary product. Just as Canadian Western relegated plywood to a secondary position, so too would most of the large producers in the post-war period.

⁸¹ A small amount of cottonwood was utilised by the Westminster Paper Company in pulp production.

Chapter III **Organising an Industry**

Introduction

The business organisation adopted by British Columbia's plywood industry was not new or innovative. But the use of certain organisational techniques was distinctive to the industry. In common with other businesses during the 1940s and 1950s, when business leaders believed that each operating facility should be incorporated as a separate company, the plywood industry adopted the practice of doing so. During the 1950s and 1960s when best business practice changed, generally based on the advice of accountants, British Columbia's plywood managers and owners transformed their operations into a divisional management system. Under this system, in keeping with the mass production firms studied by Chandler, each production facility operated as a distinct division and each plant was expected to make a profit on its own merits.¹ The plywood industry, however, combined these standard business practices in innovative ways based on its perception of how the plywood industry should complement the forest industry in British Columbia. The role of plywood varied from company to company and can only be understood by examining each company's power structure and distinctive strategy for growth and profit.

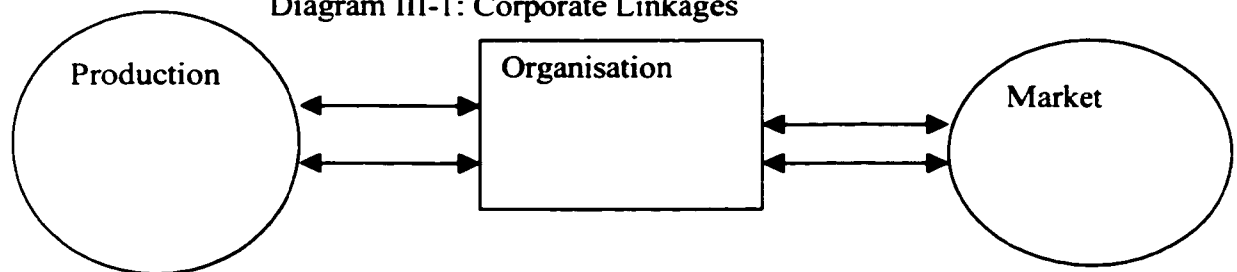
The British Columbia plywood industry did not operate in isolation, and general patterns within the industry are readily discernible. Government regulation, the overall Canadian economic situation, and world trade influenced plywood manufacturers and the health of the plywood industry. Patterns of exit, of structural reorganisation at the sector level, and of changing resource values are readily apparent. All the industry's

manufacturers saw their primary goal as firm growth and increased profit. But, underneath this general worldview existed a network of diverse strategies that each decision-maker thought would help them achieve growth and profit.

British Columbia's five largest plywood producers - MacMillan Bloedel, Canadian Forest Products, Weldwood of Canada, Crown Zellerbach Canada and British Columbia Forest Products - were important players in the forest industry as a whole.² Each company used plywood differently in its strategy to achieve corporate success. It is here that "history matters" for, as Langlois and others contend, it is only by charting the individual agendas of each company that we can perceive how the entire plywood industry functioned and how it interacted with other segments of British Columbia's forest industry.

Functioning as a control structure, the firm -- whether through an individual, an executive committee, a board of directors, or other co-ordinating group -- shapes its production to meet what it conjectures the market will be. The firm is the agency that responds to environmental change, and it is the organising agency that operates as an interface between production and the customer. Understanding how firms acted as

Diagram III-1: Corporate Linkages



¹ See for example, Chandler, *Strategy and Structure*, 379, and Chandler, *Visible Hand*, 457.

² The H. R. MacMillan Export Company will usually be called MacMillan Bloedel hereafter, even though the Bloedel name was not added until 1951. Pacific Veneer and Canfor will be called Canadian Forest Products hereafter.

co-ordinating agencies is vital for understanding the activity of an industrial sector.

This simple diagram illustrates the situation described above, but it does not represent the myriad of activities that occurred. Each symbol includes an extensive series of networks that are too complicated to be shown in clear diagram. Feeding into the organisation are the different factors of production such as raw materials, technology, skills, and past experience in the utilisation of such skills. Costs, product, and profit all interact to shape the strategy the organisation generates to co-ordinate its production and sales activities. The role each factor plays varies in importance according to its organiser's perception at any given time. Each firm, using exactly the same information, but understanding the information in a different way, draws different conclusions that will result in a different strategy.³ Phillip Scranton, for example, argues that an analysis of Cincinnati's machine tool industry demonstrates that diversity in organisation, not uniformity, is a much more reasonable way of looking at its business activity.⁴

In his study of mass production, Alfred Chandler examined industry from the opposite point of view. He found considerable diversity but sought patterns and a unified theory of business evolution. Certainly, Chandler's findings are a plausible representation of business activity. His arguments regarding the influence of managers, for example, are persuasive. This chapter, however, argues that it is equally important to reverse Chandler's approach if we are to understand business activity. We must also look at strategy differences between firms, including managerial organisation, as well

³ Langlois and Robertson provide several examples, Columbia and RCA's strategy in long play record development and marketing and IBM and Apple strategies in regard to their operating systems, Langlois and Robertson, *Firms, Markets and Economic Change*, 82-84 and 90-95.

⁴ Scranton, *Endless Novelty*, 196-210.

as resources and markets. Chandler's "Visible Hand" is only one aspect of a complicated series of activities within the diverse structures and strategies that are business activity.

Evolutionary theory suggests that the shape and behaviour of the firm was largely based on past practice within the organisation. Resource economics suggests that the firm's behaviour and business structure are based on the resources the firm has at its disposal. These resources include raw materials, labour, technology, markets, competition, government regulation, and talent within the organisation. A third factor concerns the people involved. Some authors have suggested that "the entrepreneur imbues his impression with meaning and through this act of imagination he perceives the potential of the situations and of the resources at his disposal and characteristically gambles on his imagination."⁵ Such activity can be accounted for in both evolutionary and resource economics, but it seems to be a much larger factor than either evolutionary or resource economics currently suggest. It is contended in this dissertation that all these factors operate to produce a business strategy and guide economic change within the business sector.⁶ Thus the changing and differing resources and visions means that diversity is inherent in any business activity.

I am not suggesting that the overall trends, such as the merger and acquisitions movement in the 1960s, did not affect the plywood sector. Instead, what is argued is that the ways individual firms, and the actors within them, approached these trends varied over time and from firm to firm. This is in accordance with the recent work by Richard N. Langlois and Paul L. Robertson, who argue that no single approach to understanding

⁵ Elizabeth Chell, Jean Haworth, and Sally Brearley. *The Entrepreneurial Personality: Concepts, Cases and Categories* (London & New York: Routledge, 1991), 23.

⁶ See Montgomery, who contends such a convergence is occurring within economics, *Resource-Based and Evolutionary Theories of the Firm*, 15.

business activity is the correct approach. They point out, for example, that Alfred Chandler's study, while "a shrewd and balanced account of large firms," is only a partial analysis of economic interaction.⁷ Scranton agrees with this contention and suggests that the "other side of the industrial revolution," that is the non-mass production component, was "complex and diverse" and not "tidy nor reducible to formulas."⁸ Langlois and Robertson made their point about the diversity of industry by simply stating that "many different ways of combining capabilities may be appropriate depending on the environment under consideration."⁹ A rider must be added to their definition, however, for Scranton and most business historians have demonstrated that choosing a business strategy was not the mechanistic process they imply. Instead, the choice was based on the perception of that environment, not necessarily on its reality. As a result, even when conditions should homogenise industrial production, diverging perceptions result in considerable variation.¹⁰

British Columbia's coastal plywood industry virtually disappeared because of internal cost and production factors, but these problems were intensified by the industry's perception of what should be plywood's role in the marketplace. The continued viability of British Columbia interior plywood plants rests on the same factors and particularly the continued perception of the producers that plywood manufacturing is a profitable industry. Langlois and Robertson contend that changes within a firm's capabilities cause industrial change.¹¹ This study supports Langlois and Robertson's contention, but suggests that equally critical is how a firm's decision-makers perceived those

⁷ Langlois and Robertson, *Firms, Markets and Economic Change*, 146.

⁸ Scranton, *Endless Novelty*, 3.

⁹ Langlois and Robertson, *Firms, Markets and Economic Change*, 144.

¹⁰ I am not suggesting that the perception and reality may not coincide, merely that they do not have to.

capabilities.¹²

An examination of British Columbia's plywood industry as an industrial sector, followed by the examination and comparison of the sector's major producers will demonstrate the ways in which industrial strategy diverges, despite operating conditions that seem to promote homogenisation of structure within the industry. The position each company gave plywood within its industrial structure varied and affected the manner in which each company operated as part of British Columbia's forest sector.

An Overview of British Columbia's Plywood Industry, 1945-1999

The British Columbia plywood industry was oligopolistic in nature, and dominated by four large production and wholesale companies (MacMillan Bloedel, Weldwood, Canadian Forest Products and Crown Zellerbach/Fletcher Challenge) and one additional large production firm, British Columbia Forest Products. During most of the 1930s and into the 1980s, these companies controlled between seventy and one hundred percent of British Columbia softwood plywood production. During the same period over ninety percent of all softwood plywood in Canada was manufactured in British Columbia. A range of smaller firms produced plywood, sometimes acting in concert with the larger firms and sometimes in opposition, but always eclipsed by the large producers during the 1950s, 1960s, and 1970s. The structure and strategy of each firm was different; no two firms operated in exactly the same way, but certain environmental factors, technology, raw materials, and markets, exerted pressure for homogeneity in the

¹¹ Langlois and Robertson, *Firms, Markets and Economic Change*, 43.

British Columbia plywood industry. The diverse nature of the industry, however, suggests that additional factors also influenced corporate strategy.

The solid wood product manufacturers primarily viewed British Columbia softwood plywood as a value-added product. The best Douglas fir logs had a greater market value as plywood than they did as lumber. Initially plywood supplemented door production and subsequently increased in importance when used as a substitute for lumber in certain construction applications such as wall, roof, and floor sheathing. The Canadian Western Lumber Company built British Columbia's first plywood plant to assist in the production of a high return product, interior doors. When Blake Ballentine convinced H. R. MacMillan to build a new plant it was for the same purpose, to acquire panels for door production. MacMillan, however, knew of the rapid growth in demand in the United States created by substituting plywood for certain lumber applications. MacMillan created new demand in association with Canadian Western and the Plywood Manufacturer's Association of British Columbia (PMABC). As a result, rapid expansion of the industry occurred in the 1950s and 1960s, which in turn changed the structure of the industry.

Table III-1 provides the start-up date of the individual British Columbia softwood plywood plants and their subsequent disposition.¹³ The name listed is the name each plant operated under for the longest time period. The smaller producers, except for Murray, began to appear in the late 1950s. It should also be noted that the only interior

¹² Langlois and Robertson, *Firms, Markets and Economic Change*, 1 and 3. Langlois and Robertson define capabilities as productive routines which are "a habitual pattern of behavior embodying knowledge that is often tacit and skill-like."

¹³ Laminated Materials Company and British Columbia Veneer Works are considered hardwood plywood plants. Three hardwood plants that opened in the post-war period (Skyline Manufacturing, Beaty Laminated, and Hardply) are not listed in this table.

softwood plant in production prior to 1952 was Weldwood's plant at Quesnel.

**Table III-1: Softwood Plywood Plants
in British Columbia, 1913-1999.¹⁴**

PLANT	START UP	DISPOSITION
Canadian Western, New Westminster	1913	Purchased by Crown Zellerbach in 1953, Closed 1989.
MacMillan Bloedel, Vancouver	1935	Closed 1983.
Canadian Forest Products, New Westminster	1938	Converted to softwood 1944, closed 1985.
MacMillan Bloedel, Alberni	1942	Closed 1991.
Weldwood, Kent Avenue, Vancouver	1945	Purchased by Weldwood from Western Plywood in 1961, sold to West Coast Plywood 1990, closed 1995.
Weldwood, Ash Street, Vancouver (Murray Plywood)	1945	Purchased by Western Plywood in 1955, closed 1978.
Weldwood, Quesnel	1951	Purchased by Weldwood from Western Plywood in 1961, operating in 1999.
British Columbia Forest Products, Victoria	1952	Closed 1983.
Victoria Plywood, Victoria	1954	Sold to Pacific Forest Products, sold to a Co-operative, closed 1995.
Evans Products, Vancouver	1955	Closed 1973.
Evans Products, Savona (King Lumber Co)	1955	Purchased by Evans Products in 1969, purchased by Evans Forest Products in 1986, sold to Ainsworth Forest Products in 1986, operating in 1999.
Crown Zellerbach, Kelowna (Simpson Lumber Company)	1956	Sold to Crown Zellerbach in 1965, sold to Riverside Forest Products in 1991, operating in 1999.
Canadian Collieries Resources, Surrey	1956	Sold to Weldwood in 1964, closed in 1987.
Richmond Plywood, Richmond	1957	Co-operative, operating in 1999.
Douglas Plywood, Richmond	1962	Sold to British Columbia Forest Products, burned 1971.
Canim Lake Sawmills, 100 Mile House	1965	Sold to Weldwood in 1965, closed 1984.
Kootenay Forest Products, Nelson	1966	Closed 1978.
Federated Co-operative, Canoe	1967	Co-operative, operating in 1999.
Canadian Plywood, Richmond	1967	Closed 1971, sold to British Columbia Forest Products, rebuilt into Delta Plywood, closed 1991.
Balco Forest Products, Hefley Creek	1971	Sold to Canadian Forest Products in 1978, sold to Tolko in 1987, operating in 1999.
Evans Products, Golden	1971	Sold in 1986 to employees, sold to Louisiana Pacific in 1999, operating in 1999.
Crown Zellerbach, Armstrong	1971	Sold to Riverside Forest Products in 1991, operating in 1999.
British Columbia Forest Products, Delta Plywood, Richmond	1972	Sold to Fletcher Challenge, closed 1991.
North Central Plywood, Prince George	1972	Sold to Northwood in 1980, operating in 1999.

¹⁴ The table is developed from a variety of sources including directories, company newsletters and annual reports and articles in lumber journals and newspapers.

Cantree, Richmond	1974	Closed 1998.
Integrated Wood Products, Merritt	1977	Sold to Balco, closed 1977.
Weldwood, Williams Lake	1978	Operating in 1999.
Tackama, Fort Nelson	1985	Sold to Slocan in 1987, operating in 1999.

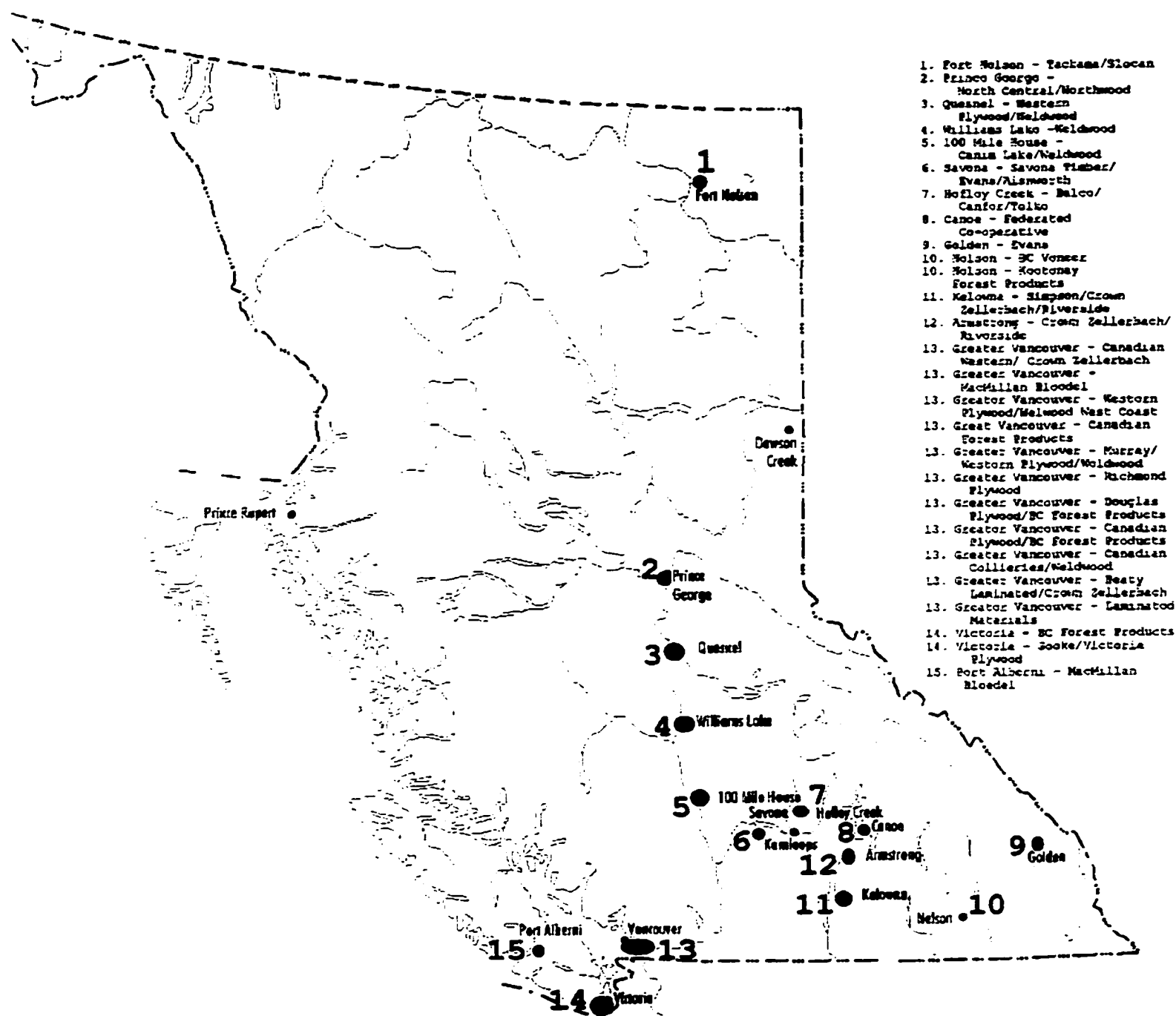
Initially, the larger firms, except Canadian Western, operated their production plants as separate companies. Western Plywood continued this strategy longer than its rivals, incorporating each successive plant as a separate company reducing taxes and limiting labour disruption. Each company was a subsidiary of the parent company. Throughout the 1950s and 1960s when it became more advantageous to operate as a single corporation, the separate companies were merged into the parent company and formed divisions of the parent company.¹⁵

The plywood industries growth differed from British Columbia's long established lumber industry. The lumber industry's post-World War II growth strategy was to concentrate smaller operations into larger operations closely tied to timber resources. The expanding lumber companies entered plywood production because of high profit returns. There was no set pattern either for entry or growth within the plywood industry of these large lumber producers, but all the largest plywood producers, until the 1980s, entered prior to 1952. Expansion in the coastal lumber industry was primarily by acquisition of existing facilities; plywood growth was by the construction of new plants. The pulp and paper producers, in contrast, acquired lumber production facilities and did not specifically seek to acquire plywood plants.¹⁶

¹⁵ See Secretary's files, Boxes 11 A & B, WC, RBCM for information relating to corporate structure of Western Plywood and see Chandler, *Strategy and Structure*, for a view of branch plant organisation. The labour advantage disappeared in the 1960 when strikes could be conducted against any operation owned by the parent firm regardless of corporate name. Federal tax and other regulations also changed giving the financial advantage to a unified corporate structure.

¹⁶ The large lumber producers are MacMillan Bloedel, Canadian Western, Canadian Forest Products, British Columbia Forest Products. Two exceptions are Bloedel Stewart and Welch, who intended to build a

Map 1: Plywood Plants Locations, British Columbia, 1913-1999.



plywood plant but before this happened merged with H. R. MacMillan Export and Alaska Pine, who probably did not enter plywood production due to limited access to suitable Douglas fir. The two largest pulp and paper producers merged or acquired lumber and plywood production facilities subsequently. The Powell River Company (with MacMillan Bloedel) and Crown Zellerbach (with Canadian Western).

The success of the large, integrated manufacturers caused a number of smaller operators to begin plywood production. The small operators ranged from small, partially integrated and foreign-owned firms such as Evans Products, to single plant partnerships such as Douglas Plywood. The significance of the small companies relates primarily to their impact on the larger operations until the 1980s when the large coastal producers began to exit from the industry.

Plywood was a secondary, although important, product for the large integrated producers. The significant economic contribution made by the plywood industry during the 1950s and 1960s was overshadowed in the 1970s and 1980s by looming industry problems, and plywood was viewed as a drag on each company as profits declined. Production peaked in 1978, but in that year MacMillan Bloedel announced the closure of the largest plywood plant in British Columbia, its Vancouver Plywood Division.¹⁷ The major coastal stakeholders and some of the interior operators saw plywood as a sunset industry. It was a product that would be replaced by other cheaper substitute products such as oriented strand board, a composite board of wood chips and strands glued into a panel.¹⁸ The value of coastal Douglas fir also shifted. Lumber could now be sold for more than a plywood panel relative to the cost of production.

The larger softwood plywood producers in the 1980s and 1990s all exited from coastal production until only Weldwood remained as an interior plywood producer. The plywood industry underwent a radical transformation and in 1999 only Richmond Plywood continued production in the once dominant coastal region. Several interior plants also closed but most remained in production. The ownership of the interior plants

¹⁷ Vancouver Plywood did not actually close until 1983.

changed, however, and during the late 1980s and early 1990s a new and restructured industry operated most of the plywood mills of British Columbia.

The examination of each of the largest plywood manufacturers - MacMillan Bloedel, Canadian Forest Products, British Columbia Forest Products, Crown Zellerbach Canada and Weldwood - will demonstrate the diversity of growth and the strategy for success used by each company. Change in British Columbia's plywood industry was a highly individualistic process. Each company's position within the plywood industry was the result of independent factors and no two companies adopted the same strategy or chose a strategy for the same reasons. Plywood production, for the large producers, was usually a small production component within a large, integrated forest products firm. MacMillan Bloedel, the largest producer and market leader, will be examined first and provide a standard against which the other companies can be discussed. Weldwood chose to remain a large British Columbia plywood producer and will be studied in greater detail than the other large firms. Weldwood's corporate transformations will illustrate the role of changing power relationships and strategies within a company structure and how these influenced corporate strategy within the plywood industry.

MacMillan Bloedel¹⁹

MacMillan Bloedel dominated British Columbia's forest industry following World War II. The strategies for growth adopted by the company's owners and managers were unique to MacMillan Bloedel. Plywood production played a special role within the

¹⁸ British Columbia's largest softwood plywood producer, MacMillan Bloedel, also operated North America's first successful waferboard plant at Hudson's Bay, Saskatchewan in 1965.

¹⁹ The information in each section on the companies is derived from *Annual Reports*, held at the Legislative Library, Parliament Buildings, Victoria and files on each company maintained at the History Section, RBCM. Footnotes have only been provided when the information falls outside these sources or requires special note.

company's strategy, but it was a role that evolved as MacMillan Bloedel changed its strategy for success between 1950 and 1999. Success for H. R. MacMillan and his successors meant growth and increased profit.

MacMillan Bloedel led plywood production and dominated the marketplace for nearly fifty years, but despite this long history the company's decision-makers did not see themselves as plywood producers, but as wood product producers. Executives within MacMillan Bloedel were determined to lead British Columbia's forest industry and to compete on equal footing with forest products manufacturers throughout North America. Their growth strategy focused on achieving this status. The company used plywood profits as a means of furthering their forest industry leadership in British Columbia. Plywood production, however, rapidly became a small component in a large forest industry complex as the firm evolved into British Columbia's largest integrated forest products company. MacMillan Bloedel not only led British Columbia's forest industry in plywood panel production, but the company's emphasis on new industry and product lines meant that the company also started the exodus from coastal plywood production. MacMillan Bloedel changed from being a plywood producer into a panel producer and finally into a company that considered plywood as part of its past and non-plywood panels as the future. No other British Columbia plywood producer adopted this strategy to supply the panel market.

MacMillan Bloedel's corporate growth and subsequent divestment strategy is illustrated in Table III-2. The table illustrates the three predecessor companies (H. R. MacMillan Export Company, Bloedel Stewart and Welch and Powell River Company) until they merged in the 1950s into a new consolidated organisation. The panel

producing plants, including non-plywood plants, are in bold. The acquisition of non-plywood panel plants and their spread into the United States and across Canada is readily apparent in the later years.

**Table III-2: MacMillan Bloedel,
Company Growth, 1909-1999²⁰**

MacMillan Bloedel, New Facilities, 1909-1999			
	H.R. MacMillan Export Company	Bloedel, Stewart and Welch	Powell River Pulp and Paper
1909			Powell River Pulp and Paper formed.
1912		Bloedel, Stewart and Welch, formed, logged at Myrtle Point.	
1919	H. R. MacMillan Export Company formed.		
1920		Logged at Union Bay.	
1922	Purchased Bluebird Sawmill.		
1923		Purchased Red Band Shingle mill.	
1925		Logged at Menzies Bay	
1925		Build Great Central Sawmills.	
1926	Purchased Pacific Cedar Co., renamed Canadian White Pine.		
1928	Operated tie mills on Malahat, Vancouver Island.		
1933	Purchased Dominion Mills		
1934		Built Somass sawmill at Alberni.	
1935	Built Vancouver Plywood.		
1935	Purchased Alberni Pacific sawmill.		
1940	Purchased Thompson & Clark loggers.		
1942	Built Alberni Plywood.		
1946	Purchased Victoria Lumber & Manufacturing Co.	Built Pulp mill at Alberni.	

²⁰ The data for this table is taken largely from Company *Annual Reports* and Donald MacKay, *Empire of Wood: The MacMillan Bloedel Story*, (Vancouver: Douglas & McIntyre, 1982). Note: not every company acquired by MacMillan Bloedel is listed; all the larger companies acquired a large number of small loggers during the process of developing their resource base. Panel plants are in bold.

1940-1950	Purchased mainly for timber includes - Straits Lumber Company, the Shawnigan Lake Lumber Company, Wellburn Timbers.	.	Purchased Kelly Logging Company, Kelly Spruce Company, Alice Lake Logging Company, Bell and Campbell, Aero Timber, Broughton Timber Company, Knight Inlet Logging Company, and O'Brien Logging.
1950	Built Harmac Pulp Mill on Vancouver Island.		Purchased, after 1950, Westminster Shook Mills, British Columbia Manufacturing Company, Maple Ridge Lumber Company, and the Salmon River Logging Company.
1951	Acquired Bloedel Stewart and Welch.	Merged with H. R. MacMillan Export Co	
1954	Martin Paper purchased.		
1959	Merged with Powell River Company.		Merged with MacMillan Bloedel.
1960	Purchased linerboard plant in Burnaby.		
1962	Built hardboard plant in Vancouver.		
1963	Purchased plants in Britain (Hygrade Corrugated Cases Ltd and Cooks Corrugated Cases Ltd).		
1963	Constructed new corrugated plant in Winnipeg.		
1963	Purchased Alberta Timberlands.		
1963	Constructed new sawmill, Woodroom # 3 Harmac.		
1964	Purchased mills in Holland and Belgium.		
1965	Purchased waferboard plant at Hudson's Bay, Saskatchewan.		
1965	Constructed mills at Pine Hill, Alabama, includes plywood plant.		
1965	Purchased Kingsway Lumber Company in Ontario.		
1965	Purchased Blanchard Lumber Company of Massachusetts.		
1966	Constructed sawmill at Powell River.		
1966	Purchased packaging plants in Baltimore and Jersey City.		
1967	Purchased interests in a Spanish Paper mill.		
1967	Invested in Southeast Asia.		
1968	Constructed new plywood plant at Pine Hill, Alabama.		
1968	Constructed container plant in United Kingdom.		
1969	Purchased R. Laidlaw, an Ontario distributor.		
1969	Purchased 65% interest in New Brunswick pulp mill.		
1970	Purchased real estate in Australia.		
1971	Sold Burnaby linerboard plant.		
1973	Purchased container board plants in the United States.		
1973	Constructed aspenite plant at Thunder Bay, Ontario.		
1974	Expanded operations into South America.		
1974	Purchased Multiply Plywood Ltd., plywood plant in Nipigon, Ontario.		

1974	Purchased Walpole Woodworkers in Massachusetts and North Carolina.
1974	Purchased Scotpack Ltd in Scotland.
1974	Purchased Urban Fisher Industries in California.
1974	Purchased Plastic Products in Alberta.
1974	New packaging plant in Los Angeles.
1974	New packaging plant in Edmonton.
1974	Constructed sawmill in Queensborough (New Westminster).
1974	Expanded Alabama operations, particle board mill.
1975	Increased diversification including Dominion Aircraft of Renton, Washington.
1975	Built plant at Thunder Bay, Ontario, particle board.
1975	Purchased Robert Osgood in California.
1975	Purchased Habitant Shops Inc. in Massachusetts.
1975	Purchased Unicoding Systems.
1976	Constructed a second Sawmill at Harmac.
1979	Purchased Corrugated plant at Sturgeon Falls, Ontario.
1979	Purchased in Ontario and Quebec - 4 container board plants.
1980	Sold 3 container board plants in the United States.
1981	Sold 65 percent interest in MacMillan Rothsay, New Brunswick pulp mill.
1982	Built new container board Plant at Pine Hill.
1983	Entered joint ventures with England and United States container board Plants.
1983	Closed Vancouver Plywood
1984	Purchased two container board plants in the United States.
1988	Closed Thunder Bay waferboard plant.
1990	Built Parallam plant in Georgia.
1991	Built PSL300 plant in Deerwood, Minnesota.
1991	Closed Alberni Plywood
1992	Joint agreement, Trus joist, United States, 14 plants.
1992	Purchased 30 percent of Field Sawmill in Courtenay.
1993	Purchased 81 percent of American Cemwood.
1993	Sold joint venture container operations in United Kingdom.
1993	Sold 50% ownership of Island Paper, Queensborough.
1994	Purchased new linerboard plant in Kentucky.
1995	Built MDF panel plant at Pembroke, Ontario (joint venture).
1998	Sold pulp and paper plants.
1999	Weyerhaeuser acquires remaining assets.

MacMillan Bloedel began operations in 1919 as a trading company. H. R.

MacMillan used his World War I experience and connections, working for the Imperial Munitions Board securing spruce for aeroplane construction, to establish a market niche and successfully built British Columbia's largest wholesale lumber marketing firm.

MacMillan, in keeping with the entrepreneurs of the 1920s, noted by Chandler and others, did not want to remain solely a merchant. Perhaps he used George Weyerhaeuser as his model as Ken Drushka has suggested. Regardless, he began a process of building

an integrated forest enterprise.²¹ He purchased several small operations and then his first large sawmill in 1926, later called Canadian White Pine.²² Seaboard Lumber and Shipping Company, an export consortium of lumber manufacturers, formed in 1935, was intended to "freeze MacMillan out." The growing scarcity of both open market logs and lumber and the actions of Seaboard convinced MacMillan of the need to increase the size of his manufacturing interests.²³ MacMillan, however, even prior to Seaboard's formation, sought further expansion into production and considered a merger with Bloedel, Stewart and Welch as early as 1929. The formation of Seaboard forced him to place greater priority on the expansion of his production capability.²⁴ H. R. MacMillan, in fact, initiated the reorganisation of British Columbia's forest industry that culminated, following World War II, with integrated forest producers and large companies dominating British Columbia's forest products sector.

The role of plywood in MacMillan Bloedel's expansion program is illustrated by Graph III-1, which shows profits made at Alberni Plywood between 1955 and 1975. The high profits of the 1950s partially provided MacMillan with the capital needed to continue expansion. A study commissioned by Bloedel, Stewart and Welch in 1950, just prior to merging with the H. R. MacMillan Export Company, found that a sixty-nine percent greater profit was recovered by turning peelers, No. 1 Douglas fir logs, into plywood instead of lumber.²⁵ The high profits of the 1950s, however, were followed by

²¹ Ken Drushka, *HR: A Biography of H.R. MacMillan* (Madeira Park: Harbour Publishing, 1995), 137.

²² Donald MacKay, *Empire of Wood*, 106-108.

²³ E.G. Perrault, *Wood & Water: The Story of Seaboard Lumber and Shipping* (Vancouver: Douglas & MacIntyre, 1985), 93. Perrault cites a *Vancouver Sun* Article of May 1966. Seaboard did not appear suddenly but was developed from a prior export association, Astexo, see Drushka, *HR*, 165-168.

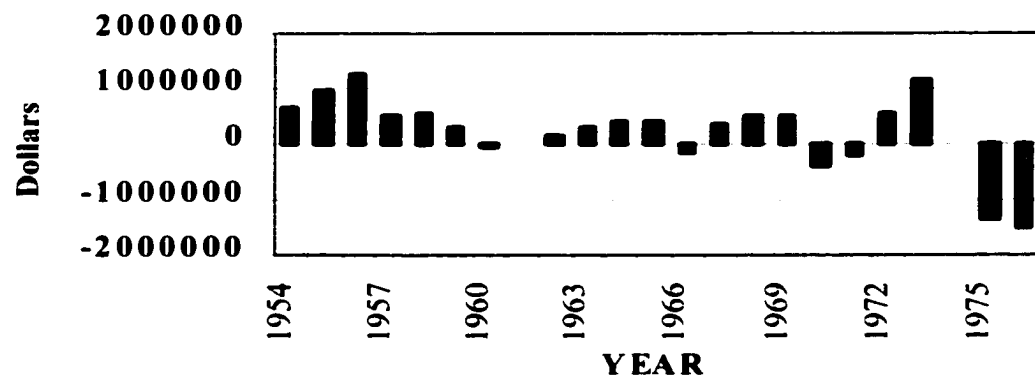
²⁴ Drushka, *HR*, 142-3, 168-169.

²⁵ G. Bowell, "Report on Plywood Project," Oct 20, 1950, File 854-2, MB, UBCSC.

the erratic but satisfactory profits of the 1960s, while the losses that occurred in the 1970s foreshadowed the company's plywood mill closures in 1983 and 1991.

MacMillan Bloedel's expansion program resulted in the company's domination of every British Columbia forest products industry sector, including plywood production.

Graph III-1: Profit and Loss, Alberni Plywood Operations, 1955-1976.²⁶



H. R. MacMillan, unlike the other large plywood plant owners, while unwilling to relinquish control, was willing to risk it to further his objectives. His merger of the H. R. MacMillan Export Company with Bloedel, Stewart and Welch, the province's largest logging company, and later the Powell River Pulp and Paper Company illustrate his desire for growth, his willingness to take risks, and his desire to retain control. A brief recapitulation of the development of MacMillan Bloedel will demonstrate that plywood

²⁶ Monthly financial reports, MacMillan Bloedel Collection, Alberni Valley Historical Society. Negative numbers represent losses. The 1965 loss is probably a result of plant upgrading.

production declined in importance until it was of little import in the company's overall objectives.²⁷

H. R. MacMillan's desire for continued expansion was the central reason for his merger with the province's largest logging company, Bloedel Stewart and Welch, in 1951. A number of other elements, however, influenced the merger. Prentice Bloedel, Bloedel, Stewart and Welch's president, had no third generation to assume command of the family firm, this meant that H. R. MacMillan acquired control of a major timber base but did not risk his corporate control.²⁸ The merger with Bloedel provided MacMillan with the resources he needed to assure his dominance of British Columbia's forest industry. The merger united in one company several of the province's largest sawmills, the province's largest shingle mill, two of the largest plywood plants, two pulp mills and one paper mill, along with some of the finest timber on the coast. MacMillan did relinquish some control to the Bloedel family, but he still dominated the firm. Certainly, as Drushka notes, Bloedel's reassurances that he had no desire to head the merged firm helped MacMillan decide to merge the two firms.²⁹

MacMillan Bloedel continued its British Columbia expansion by merging in 1959 with the Powell River Pulp and Paper Company, the last major policy decision made by H. R. MacMillan. Despite the appearance that it was a merger of equals, it was not. The Powell River Pulp and Paper Company on paper acquired MacMillan Bloedel and each

²⁷ See the following studies for a more complete study of this topic. R. Schwindt, Royal Commission on Corporate Concentration. Study No 15: *The Existence and Exercise of Corporate Power; A Case Study of MacMillan Bloedel Ltd.* (Ottawa: Minister of Supply and Services, 1977), 12-30. MacKay, *Empire of Wood*, 164-244. Ken Drushka, *HR*, 296-341. Roger Hayter, "Corporate Strategies and Industrial Change in the Canadian Forest Product Industries," *The Geographical Review* 66/2 (April 1976), 219-221.

²⁸ Schwindt, *The Existence and Exercise of Corporate Power*, 12-13.

²⁹ Drushka, *HR*, 297. Drushka quotes Bloedel as saying "...I (Bloedel) told him (MacMillan) I had no ambition to be head of it...."

group was promised equal shareholders. H. R. MacMillan, however, made it clear to Harold Foley of the Powell River Company that he intended control to remain with MacMillan Bloedel and indeed MacMillan succeeded in his objective. J. V. Clyne, MacMillan's successor as chief executive officer, forced the Foleys out of the combined company.³⁰

The company's move to acquire assets outside British Columbia, by the new chief executive officer J. V. Clyne, was as much an attempt to break MacMillan's influence on the company as it was an attempt to follow current trends into diversified investment. H. R. MacMillan vehemently opposed company expansion outside British Columbia.³¹ J. V. Clyne subsequently appointed chief executive officers who were interested in continuing his expansion program rather than MacMillan's. Clyne saw himself as escaping MacMillan's influence, but he merely shifted the focus of H. R. MacMillan's vision of success by expansion into the international arena.³²

MacMillan Bloedel's early domination of Canadian softwood plywood production resulted from swift initial action. The company maintained their lead by constructing a second large plant at Alberni and by controlling the production of another large producer, British Columbia Forest Products. The early erection of two of British Columbia's largest plywood plants meant that by the early 1950s, when the rest of the industry was just beginning, MacMillan Bloedel largely supplied the plywood market and had established networks throughout the marketplace. During the 1960s and early 1970s, the company controlled nearly forty percent of British Columbia's softwood plywood

³⁰ Drushka, *HR*, 334-335. Schwindt, *The Existence and Exercise of Corporate Power*, 15-17.

³¹ Drushka, *HR*, 330

³² Drushka, *HR*, 368; J. V. Clyne, *Jack of All Trades: Memories of a Busy Life* (Toronto: McClelland and Stewart Limited, 1985), 227, 228.

production and continued to dominate the market until the 1980s.³³ The company maintained its lead by increasing capacity at its two existing operations rather than by acquiring new facilities or purchasing competitors. In 1966, for example, the Alberni Plywood plant increased production capacity by thirty-three percent.³⁴ Plywood production continued to rise at the company's two British Columbia plants until 1969 when the company began reducing plywood capacity, believing that plywood was no longer a viable product. Such reductions did not occur in other product areas.

Despite the relatively limited place of plywood in overall corporate objectives, MacMillan Bloedel created a separate division to promote, warehouse, and sell plywood. This increased the prominence of the role plywood played in the company's fortunes. The company-owned distribution network grew. In 1952, for example, the addition of three warehouses brought the total in the chain to eight.³⁵ The importance of plywood to MacMillan Bloedel is also evident during the 1950s and 1960s by the company's continued expansion of its plywood plants. A new sheathing plant was added in Vancouver in 1956, for example.³⁶ Company strategy was, however, to shift from plywood and lumber into new fields. In 1956 MacMillan Bloedel committed far more resources to expanding its pulp and paper facilities than to expanding plywood production.³⁷ Pulp and paper production was capital intensive but generated

³³ MacMillan Bloedel, *Annual Report*, 1954. In 1967 Weldwood surpassed MacMillan Bloedel's production, however, when MacMillan's production was combined with British Columbia Forest Products production, for whom MacMillan acted as sales agent, MacMillan Bloedel still sold more plywood.

³⁴ MacMillan Bloedel, *Annual Report*, 1966.

³⁵ MacMillan Bloedel, *Annual Report*, 1952 see Chapter IV for a more complete discussion of this aspect.

³⁶ MacMillan Bloedel, *Annual Report*, 1956, 7.

³⁷ MacMillan Bloedel, *Annual Report*, 1956, 11.

comparatively large profits. Following the merger with Powell River, over fifty percent of company profits were being generated by pulp, paper, and associated products.³⁸

Plywood production declined in importance as a major product line. Plywood was under attack on two strategy fronts. First, the growing prominence of pulp, paper, and related products reduced the value of plywood within the company's financial framework (see Table III-3). Secondly, particleboard and fibreboard replaced

**Table III-3: MacMillan Bloedel,
Percent of Total Revenue by Product, 1960-1995.³⁹**

Year	Lumber	Plywood	Panels	Pulp & Paper	Containers	Other	Total Sales Millions \$*
1960	36	12		39	12	1	305.3
1965	Not available						437.1
1970	44	23	With plywood	17	10	6	651.1
1975	33	With lumber		42	16	9	1,297.5
1980	27	5	3	35	20	10	2,456.2
1985	31	4	2	40	17	6	2,335.4
1990	33	5	1	38	15	8	3,003.2
1995	33	With panels	10	17	20	33	5,043.0

* unadjusted

plywood in interior applications while waferboard and oriented strand board replaced plywood in exterior applications. Table III-4 shows very clearly the company's shift from a reliance on plywood to other panel products. MacMillan Bloedel intended to remain an industry leader but its management perceived the plywood sector as a sunset industry and so focused on the production of alternative panels, such as oriented strand board, which were viewed as a cheaper substitute for plywood in most applications. Since plywood's main advantage over lumber was price MacMillan Bloedel's

³⁸ MacMillan Bloedel, *Annual Report*, 1960.

management expected that plywood would virtually disappear from the market place, replaced in turn by the cheaper non-plywood panels.

**Table III-4: MacMillan Bloedel Panel
Production, 1948-1997⁴⁰**

Year	Plywood, Million sq. ft 3/8"	Particle Board	Waferboard	Total panel production	Percentage plywood	Percentage produced in B.C.
	NA				100	100
1948	133				100	100
1949	140				100	100
1950	NA				100	100
1951	NA				100	100
1952	147			147	100	100
1953	197			197	100	100
1954	186			186	100	100
1955	233			233	100	100
1956	277			277	100	100
1957	279			279	100	100
1958	NA				100	100
1959	272			272	100	100
1960	299			299	100	100
1961	348			348	100	100
1962	357			357	100	100
1963	372			372	100	100
1964	374			374	100	100
1965	386	38		424		100
1966	406	69		475	85.4	100
1967	417	90		507	82.2	100
1968	478	82		560	85.3	
1969	535	133		668	80	
1970	450	70	74	594	75.7	
1971	512	82	114	708	72.3	
1972	500	80	128	708	70.6	
1973	521	60	130	711	73.2	
1974	410	76	133	619	66.2	
1975	379	140	152	671	56.4	
1976	453	195	191	839	53.9	
1977	467	200	223	890	52.4	
1978	480	247	258	985	48.7	
1979	410	250	286	946	43.3	
1980	380	148	233	761	49.9	67.3
1981	357	82	259	698	51.1	
1982	413	70	114	597	69.1	61.5
1983	384	40	182	606	63.3	58
1984	239	34	257	530	45	46.4

³⁹ MacMillan Bloedel, *Annual Reports*, 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995. All figures except the final column are percentages, the final column is in dollars.

⁴⁰ MacMillan Bloedel, *Annual Reports*, 1948-1997.

1985	250	45	273	568	44	52
1986	243	32	333	608	39.9	39.9
1987	312	30	376	718	43.4	50.9
1988	265	42	326	633	41.8	44.1
1989	240	49	205	494	48.5	45
1990	233	41	192	466	50	39.9
1991	151	44	152	347	43.5	13.9
1992	159	44	158	361	44	0
1993	174	113	192	479	36.3	0
1994	189	101	210	500	37.8	0
1995	181	152	210	488	37	0
1996	176	169	212	492	35.7	0
1997	75	258	652	855	8.7	0

Production of non-plywood panels began with the K3 particleboard plant opening in Vancouver in 1962, but most production was developed outside British Columbia. In 1965 the company purchased a waferboard plant in Hudson's Bay, Saskatchewan; that plant became the first commercially successful waferboard plant.⁴¹ Non-plywood panel growth continued with the construction of a particleboard plant in 1974 in Alabama, a year later at Thunder Bay, Ontario, and the 1979 acquisition of a hardboard plant at Sturgeon Falls, Ontario.⁴² The company expanded production of non-plywood panels even as it shut its plywood plants during the 1980s and 1990s (see Table III-5). What the table does not show, however, is the rebuilding at existing plants. The rebuilt Alberni plywood plant in 1979-80 is included because this was largely a new plant and the construction cost was equivalent to the cost of a new plant.

⁴¹ MacMillan Bloedel, *Annual Report*, 1965, 1968, 1973 and 1974.

⁴² MacMillan Bloedel, *Annual Report*, 1975 and 1980.

**Table III-5 MacMillan Bloedel Panel
Plants, with start date.⁴³**

Plywood Plants (includes closure date)	Other Panel Plants*
Vancouver (1935-1983)	K3 – Vancouver (1962)
Port Alberni (1942-1980)	Waferboard - Saskatchewan (1965)
Alabama (1968-1996)	Waferboard - Alabama (1974)
Ontario (1973-)(hardwood)	Particleboard - Ontario (1975)
Alberni rebuilt (1980-1991)	Hardboard - Ontario (1979)
Hudson's Bay (1995-)	Hardboard - Ontario (1984)
	Waferboard - Mexico (1994)
	Waferboard - Ontario (1996)
	Waferboard - New Brunswick (1996)
	Waferboard - Pennsylvania (1996)

*Waferboard includes oriented strand board.

MacMillan Bloedel did not completely eliminate plywood from its expansion strategy. In 1967, it included a plywood plant in the Pine Hill, Alabama development and in 1973 it acquired a hardwood plywood plant in Ontario. The company's Alberni plant was also one of the last large British Columbia coastal plywood plants to close its doors. MacMillan Bloedel apparently hoped that by rebuilding the plant in 1979 and 1980 to use smaller logs it might maintain profitable operations. By 1990, however, the company decided it could not be operated at a profit. Greater emphasis was placed on non-plywood panels. In 1991 MacMillan Bloedel eliminated itself as a British Columbia softwood plywood producer.⁴⁴

Interestingly enough, the company's lumber product lines followed a similar though less dramatic pattern of decreased production after 1980. Table III-6 illustrates the decrease in numbers of plants and the volume of production of lumber between 1976 and 1995. It is contrasted with the same information regarding panel plants.

⁴³ MacMillan Bloedel *Annual Reports*, various years.

⁴⁴ The factors causing the decline in coastal production and the continued success of the interior production are dealt with extensively in chapters IV and V.

**Table III-6: MacMillan Bloedel Lumber
and Panel Production⁴⁵**

Facilities**	#	1976*	#	1980*	#	1985*	#	1990*	#	1995*
Sawmills, B.C.	9	1469	8	1522	10	1073	8	952	7	766
Sawmills, other	2	120	1	75	1	65	1	70	1	98
Plywood plants, B.C.	2	408	2	357	1	150	1	168	0	
Plywood plants, other	2	126	2	159	2	159	2	163	2	183
Waferboard plants, other	2	265	2	278	2	363	1	191	1	210
Particle board plants, BC	1	108	1	108	1	54	1	57	1	100
Particle board plants, other	1	150	1	150	1	47	1	47	1	73

*column indicates year and total capacity.

** speciality facilities including parallam are not listed.

MacMillan Bloedel followed very traditional strategies of industrial growth. Like John Deere or R. J. Reynolds, MacMillan Bloedel began operations as an individually controlled firm, which converted to shareholder equity and subsequently transformed itself into a modern corporation run by managers with limited equity in the company. The company created divisional structures and used these to control operations. Each division, whether by product line or by region, operated as an independent profit centre.

MacMillan Bloedel saw itself in terms of a modern corporation, much as Chandler defined the mass production enterprise of the twentieth century. H. R. MacMillan himself saw it in these same terms; to him the company was not a family firm but a business enterprise.⁴⁶ Profit and shareholder equity were the overriding criteria and when operating divisions became unprofitable they needed to be closed. The company, however, for most of its operating life, was committed to expansion not retrenchment. Even the economic downturns of the 1980s only delayed expansion. The company's president noted that in 1981 the company intended "to liquidate and divest assets and

⁴⁵ MacMillan Bloedel, *Annual Reports*. lumber in mmbf, plywood and panels in mmsf.

⁴⁶ Drushka, *HR*, 252. Although if MacMillan had had a son the outcome might have been different, 253-254.

businesses that are not expected to produce a satisfactory return on assets...."⁴⁷ The only plant permanently closed at this time, however, was Vancouver Plywood.⁴⁸ Instead, MacMillan Bloedel met the challenge of the 1980s by reorganisation, not by plant closure. MacMillan Bloedel was not ready to divest wholly owned assets except in areas it perceived as being no longer viable, that is, plywood manufacturing in coastal British Columbia.

In 1983 the company reorganised and shifted reporting relationships from product lines to geographical regions. The regions now included pulp and paper production units together with building materials units, including plywood. Marketing remained a separate section. The company operated on a branch plant philosophy in which facilities competed against each other. The regions also competed with each other for customers.⁴⁹ The economic revival of the mid-1980s returned MacMillan Bloedel to its expansion program but the company strategy was now much more selective and plywood had little role to play in the revised company strategy.

The strategies adopted by MacMillan Bloedel, however, were based on the company's perception of how best to achieve growth. H. R. MacMillan risked control, but refused to relinquish that control when he merged with other large and powerful companies. Company strategists used plywood to secure this growth but when management decided that substitutes for plywood were more profitable; they generally eliminated plywood from their profit strategy. Comparison of MacMillan Bloedel with

⁴⁷ MacMillan Bloedel, *Annual Report*, 1981, 3.

⁴⁸ MacMillan Bloedel also sold some of its joint ownership companies. See Trevor J. Barnes, Roger Hayter, and Eric Grass, "MacMillan Bloedel: Corporate Restructuring and Employment Change," in Marc de Smidt and Egbert Wever, eds., *The Corporate Firm in a Changing World Economy: Case Studies in the Geography of Enterprise* (New York and London: Routledge, 1990), 153-154.

⁴⁹ MacMillan Bloedel, *Annual Report*, 1983, 8-17.

the other major plywood producers will demonstrate the individualistic pattern of development in each company, and illustrate the influence of plywood production on that development.

Canadian Forest Products

In 1960 Canadian Forest Products was the second largest producer of plywood after MacMillan Bloedel, and it operated the second largest plywood plant in British Columbia. Canadian Forest Products saw its primary objective as profit and growth, like all the major manufacturers. Its strategy, however, differed significantly from that of MacMillan Bloedel, despite the apparent similarities. Canadian Forest Products used plywood as a base to expand into other forest product areas and it grew into a fully integrated forest industry business. It also followed MacMillan Bloedel's strategy of company-owned wholesale warehousing to distribute its plywood production. Canadian Forest Products, however, adopted a different company ownership structure and operated in different geographic regions than MacMillan Bloedel. A comparison of MacMillan Bloedel and Canadian Forest Products suggests that companies often adopted a different means of achieving success, even when faced with similar conditions. It is a variance, as suggested by evolutionary theory, based upon the perceptions and the experience of the company's decision network.

Canadian Forest Products started operations in 1938 producing hardwood veneer and plywood for use in furniture manufacture. John Prentice and Poldi Bentley, who were textile mill owners in Austria, and their families escaped from Vienna prior to the Nazi occupation. Prentice had visited British Columbia the previous year and on this basis these friends decided to move to Vancouver where they sought a good investment

for the capital remaining from their textile mills. They were introduced to John Bene, another recent escapee from Europe, and an experienced plywood man. The joining of Bentley and Prentice's capital with Bene's experience, combined with exceptional timing, led to the creation of one of British Columbia's most successful enterprises.⁵⁰

The greatest difference between MacMillan Bloedel and Canadian Forest Products was in its corporate organisation. Canadian Forest Products remained a family company even when forced to become a public company due to a need for additional funds. Successful family management confirms recent challenges posed to Chandler's contention that personal management of the firm is a handicap.⁵¹ In the case of Canadian Forest Products, family control resulted in a more varied and irregular growth strategy than existed in the public, stockholder-controlled plywood companies. If anything, Canadian Forest Products' followed a too venturesome strategy rather than showing the hesitation that Chandler suggests is typically the case.⁵²

Canadian Forest Products' plywood plant opened in New Westminster in 1938. The choice of location was based on a special tax reduction received from the City. The first plant was small, consisting of a lathe, slicer, and dryer, and twenty-eight employees. The plant initially cut Philippine mahogany and African Zebra wood for use in furniture manufacturing. The partners quickly realised the limitations of the hardwood market, but

⁵⁰ The information in this paragraph is from "Fifty Years of Growth: The Canfor Story," *Canfor News* 16/1 (February 1988), 4 and *A Tribute to the Founders*, Canadian Forest Products, n. d.

⁵¹ Alfred D. Chandler, Jr., *Scale and Scope*, 294. Roy Church, "The Family Firm in Industrial Capitalism: International Perspectives on Hypotheses and History," *Business History* 35/4 (October 1993), 25. Duncan McDowall notes, for example, that in the case of Algoma Steel a trend toward family or individual ownership occurred when Sir James Dunn acquired control and transformed a failing industry into a successful operation. McDowall, *Steel at the Sault*, 152-3.

⁵² Other authors counter Chandler's point, as well. They suggest that family controlled firms make rapid decisions and are quicker to take advantage of opportunities than companies controlled by shareholder appointed boards. Cheape, *Norton*, provides a supporting example, 120-121, "the short ranged response

before shifting to softwood plywood, they rapidly and fully committed the plant to the war production of birch and spruce plywood for aircraft construction. Late in 1943, in expectation of the Timber Controller reducing orders for birch and spruce, the company considered converting to Douglas fir softwood production for which it had installed the necessary machinery.⁵³ Even though profits were satisfactory from war work, Douglas fir softwood production required forward thinking since it took more than a year to secure and install the sander needed to produce sanded plywood, the most saleable product. The plant finally converted to softwood production in late 1944.⁵⁴ Bentley and Prentice, like H. R. MacMillan, realised that expansion and the acquisition of timber limits and the control of log supplies, would play a crucial role in post war success. Using profits from the plywood plant they began an aggressive program of growth.

Plywood, despite its initial importance to the company and the company's importance in the plywood market, played an ever decreasing role in company strategy. Canadian Forest Products' growth strategy is charted in Table III-7.

**Table III-7: Canadian Forest Products,
Company Growth, 1938-1999.⁵⁵**

1938	Built Pacific Veneer in New Westminster.
1943	Purchased Eburne Sawmills in Vancouver.
1943	Purchased Vedder Logging in the Fraser Valley.
1943	Purchased Consolidated Timber in the Fraser Valley.
1943	Purchased Spring Creek Logging in the Fraser Valley.
1943	Purchased Stave Lake Cedar Ltd. in the Fraser Valley.
1944	Purchased Beaver Cove Timber Company on Vancouver Island.
1947	Purchased Hunting-Merritt Shingle Company in Vancouver.
1947	Purchased M&M Logging on Cracroft Island.
1948	Built hardboard plant in New Westminster.

was ruthless paring." Also Cheape, *Norton*, 10 & 109-110, for example. The partners of Norton "quickly passed a series of challenges that tested their ability and the viability of family management."

⁵³ John Bene to George Wright, London, April 30, 1942, File Leary, Box 9B, WC, RBCM.

⁵⁴ John Bene to Norman Wright, London, November 4, 1943, File Leary, Box 9B, WC, RBCM.

⁵⁵ Table is based on information from *Annual Reports*, *Canfor News*, Directories and periodical literature. Panel plants are indicated in bold.

1951	Purchased Howe Sound Pulp, pulp mill at Port Mellon.
1954	Purchased Regent Plywood, Ontario distributor.
1955	Purchased 50 percent of Northern Plywoods at Grand Prairie, Alberta, 100 percent by 1960.
1961	Purchased Grand Prairie Lumber Company, Grand Prairie Sawing Ltd and Grand Prairie Planing Mill, Sawmills and Planers in Alberta.
1963	Purchased Fort St. John Lumber Company in northern British Columbia
1964	Purchased Ottawa Valley Lumber company, distributor in Ontario.
1965	Established through joint venture Takla Holdings, sawmill and veneer plant at Fort St. James,
1966	finalised in 1969.
1966	Built through joint venture Prince George Pulp and Paper mill, pulp mill at Prince George.
	Built through joint venture BC Chemicals in Prince George.
1968	Built through joint venture Intercontinental Pulp at Prince George.
1969	Purchased Grant Brothers Lumber at Hines Creek, Alberta.
1973	Purchased West Coast Cellulofibre, chipping plant in Vancouver.
1973	Purchased Balco Industries Ltd. with sawmill and plywood plant at Hefley Creek.
1974	Purchased Cornat Industries, diversified company, non-forest industry.
1976	Purchased Yorkshire Trust, non-forest industry company.
1977	Purchased Integrated Wood Products, Merritt.
1978	Purchased Reed interest in joint enterprises (Prince George Pulp and Takla).
1979	Purchased Gilbert Smith Forest Products.
1981	Purchased Sawnsen Lumber.
1983	Closed two of Chandler's plants.
1983	Sold Stave Lake Cedar.
1984	Purchased outstanding 25 percent in Intercontinental Pulp.
1985	Sold Yorkshire Trust.
1985	Sold Versatile Corporation (Cornat).
1985	Purchased oil and gas holdings.
1985	Closed New Westminster plywood.
1986	Several division of Chandler Corporation closed and sold.
1986	Sold Balco.
1988	Closed Hunting Merritt Shingle Mill.
1988	Sold 50 percent of Westcoast Cellulofibre.
1988	Sold 50 percent of Howe Sound Pulp operation.
1989	Merged Building Materials Sales Division with Weldwood.
1989	Purchased Balfour Forest Products.
1990	Sold High Level sawmill.
1991	Closed Grand Prairie plywood mill.
1991	Constructed wood fibre plant.
1997	Closed speciality plant in Vancouver.
1998	Closed Eburne sawmill.
1998	Closed Netherlands sawmill.

In order to build the necessary timber base Bentley and Prentice purchased a series of coastal operations, the most important being the timber limits at Beaver Cove on Vancouver Island. It was one of the last remaining large, accessible and generally untouched stands of prime Douglas fir on the south coast and was the basis of the

company's coastal timber supply over the next fifty years. It also included a company named Canadian Forest Products, the name that was adopted for the growing enterprise. Several processing plants were purchased including the sawmill at Eburne, which was an old mill in South Vancouver in need of a major rebuild but cheap and strategically located. Over the next years the company expanded by acquisition when possible and only built new plants when purchase was not possible. One of the most daring steps was taken in 1948 when a hardboard plant was constructed next to the plywood plant. The company also created a distribution system across Canada, frequently by purchasing existing warehouse networks and then supplementing these by the construction of new facilities.

In 1951 and 1953 the company changed strategy. The objective for most of British Columbia forest companies was to integrate into pulp and paper production. The acquisition of the pulp mill at Port Mellon shifted Canadian Forest Products toward dependence on pulp revenue. Bentley and Prentice also realised early on that British Columbia's interior forests and Alberta's forests possessed tremendous potential and, unlike MacMillan Bloedel, expanded there. The company initially focused on Central and Northern British Columbia, around Chetwynd, then it looked further north at Fort St. James and Fort St. John, and finally southward into the Prince George area. Canadian Forest Products entered into separate partnerships with two European companies, Reed Paper and Feldmeuhle A.G., to construct two pulp mills at Prince George. Takla Holdings was organised to manage the timberlands and sawmills associated with the pulp mills. Canadian Forest Products, as part of this consolidation program, erected a veneer plant at Fort St. James, but increased plywood production was clearly not a priority. The

company remained a plywood producer although management's emphasis was on expansion in lumber and pulp and paper.

Table III-8: Canadian Forest Products, Percent of Total Revenue by Product, 1980-1995.⁵⁶

Year	Lumber & Shingles	Plywood & Hardboard	Pulp & Paper	Other	Total sales, Millions \$
Prior years not available					
1980	22	11	43	24	730.1
1985	28	7	24	41	1,083.8
1990	33	2	29	36	1,179.3
1995	33	1	40	26	1,931.7

Canadian Forest Products generally expanded plywood production by increasing the capacity of its Vancouver plant, not by purchasing or building new coastal production facilities. It did acquire additional capacity with the purchase of Northern Plywood's plant at Grand Prairie, Alberta in 1955 and Balco Industries' Hefley Creek plant in 1973.

Table III-9: Canadian Forest Products Panel Plants, 1999.⁵⁷

Company Panel Plants	Opened or acquired	Closed or sold
New Westminster – Plywood	1938	1986
New Westminster – Hardboard	1948	Operating
Grand Prairie – Plywood	1955	1991
Hefley Creek – Plywood	1973	1986

Table III-10: Canadian Forest Products Panel Production, 1952-1990.⁵⁸

Year	Plywood Production	Hardboard Production	Year	Plywood Production	Hardboard Production
Prior years not available					
1952	86	NA	1972	248	34
1953	105	39	1973	259	36
1954	120	39	1974	NA	NA

⁵⁶ Canfor *Annual Report*, 1980, 1985, 1990, 1995.

⁵⁷ Information from *CANFOR News*, *Annual Reports* and *Directories*.

⁵⁸ Compiled from *Canfor News*, various tables and *Canfor Annual Reports*, 1980-1991. Plywood in MM square feet 3/8th thick, hardboard in MM square feet 1/16th thick.

1955	136	39	1975	198	31
1956	159	39	1976	253	35
1957	150	NA	1977	357	36
1958	161	NA	1978	NA	NA
1959	147	NA	1979	365	58
1960	169	NA	1980	307	58
1961	177	NA	1981	283	55
1962	196	NA	1982	223	43
1963	201	NA	1983	298	58
1964	NA	NA	1984	293	57
1965	198	NA	1985	281	60
1966	196	NA	1986	109	35
1967	205	NA	1987	69	36
1968	205	NA	1988	68	35
1969	NA	NA	1989	69	36
1970	260	NA	1990	No plywood production	36
1971	260	NA			

In contrast to MacMillan Bloedel, Canadian Forest Products continually sought to acquire the most profitable plants and eliminate marginal operations. Considerable corporate restructuring occurred as a result and the sale and closure of its plywood plants was part of this process. Even when it was clear economic times were changing during the 1970s and 1980s, Canadian Forest Products did not change its approach to business and sought to expand. First, Canadian Forest Products sought and lost a bid for additional timber in Alberta to British Columbia Forest Products. Canadian Forest Products proposed to rebuild its Alberta sawmill and plywood facilities at Grand Prairie, while British Columbia Forest Products offered to build a new pulp mill.⁵⁹ Subsequently Canadian Forest Products tried to sell its Alberta holdings despite the fact that several other British Columbia forest companies were at this time increasing their Alberta

⁵⁹ *Canfor News* 7/3 (May 1979) and 8/1 (July 1980). The Alberta government was determined to increase pulp and paper production. Pratt and Urquhart in their study clearly suggest this was counter productive behaviour by the Alberta government. See Larry Pratt and Ian Urquhart, *The Last Great Forest: Japanese Multinationals and Alberta's Northern Forests* (Edmonton: NeWest press, 1994), 55 or 208, for example.

holdings. In order to overcome this setback the company attempted to move into a new growth area by purchasing a pulp mill in Saskatchewan, but this also was unsuccessful.⁶⁰

Canadian Forest Products' rapid expansion program of the 1970s, which included pulp mill developments at Prince George, expansion in Alberta and northern British Columbia sawmills, and the purchase of Balco Industries in 1973, resulted in severe financial problems by the early 1980s. Company president Peter Bentley wrote in the *Canfor News* as early as 1981 that cutbacks were going to happen.⁶¹ The problem was initially controlled through curtailment of production, but soon the company took more drastic actions. Operations were closed, offered for sale, and acquired all within a short period. In February 1982, the company acquired the Chandler Corporation in Boise, Idaho. In July 1983 it closed its Stave Lake shingle mill, while in February 1984 the company bid on a Tree Farm Licence in the Peace country.⁶² In 1985 Canadian Forest Products closed the New Westminster plywood plant, despite cost savings during the plant's final year, and sold its interests in Balco and the Chisholm Lumber Company in Alberta. The company increased its holdings in Intercontinental Pulp and acquired oil and gas lands in Alberta.⁶³ Canadian Forest Products financial situation deteriorated to such an extent that prior to 1988 rumours of bankruptcy circulated.⁶⁴ Over the space of ten years the family controlled company sold one interior empire (Balco, 1986), tried to sell another (Alberta, 1990), purchased another (Balfour-Guthrie, 1989) and tried to

⁶⁰ "Canfor Buys into Prince Albert Pulp," *Journal of Logging* 11/10 (October 1980), 2813.

⁶¹ "Tough Times Make Cutbacks Unavoidable," *CANFOR News* 9/6 (October 1981), 1.

⁶² *CANFOR News* 10/1 (February 1982); 11/4 (July 1983); 12/1 (February 1984).

⁶³ CANFOR, *Annual Report*, 1985, 2-3.

⁶⁴ "Canfor Celebrates 50th Anniversary with Return to Better Times," *Canadian Forest Industries* 108/6 (June 1988), 10.

acquire another (Slocan, 1997). The company in 1999 returned to a process of consolidation and downsizing.⁶⁵

The closure of Canadian Forest Products' New Westminster plant removed the company from coastal Douglas fir production.⁶⁶ The sale of Balco in 1986 removed it from British Columbia interior plywood production. The closure of the Alberta plant eliminated plywood production from the company's product line. In order to support its warehouse system, which depended on company plywood production, the distribution system was merged with Weldwood who continued to produce plywood.

Canadian Forest Products' growth strategy was clearly different from that of MacMillan Bloedel. It chose to expand by purchase rather than construction. Canadian Forest Products invested in British Columbia and Alberta, not in eastern Canada and the United States like MacMillan Bloedel. Canadian Forest Products, probably because of family control, easily left the plywood field and turned to what management perceived as greener pastures. MacMillan Bloedel, in contrast, expressed great reluctance in closing its Vancouver plant and continued to operate the Alberni plant until it decided there was no alternative but closure; MacMillan Bloedel also did not sell its operations piecemeal in order to finance new opportunities or to reduce debt.

Plywood had no deep roots despite its use as a catalyst for the company. The early partners came from a textile manufacturing tradition and rapidly expanded Canadian Forest Products into a general forest products company. The first generation perceived of themselves as general manufacturers and merchandisers who entered forest

⁶⁵ "Balfour Welcomed into Canfor Family," *CANFOR News* 17/3 (July 1989), 1. "Canfor has Announced a Major Restructuring of its British Columbia Operations," Northern Forest Products Association News, June 22, 1998 <<http://www.nfpa.bc.ca/tremends/index.html>> (August 1999), 2.

products when it was the province's growth industry. The management that closed the plywood plants saw itself more closely connected to lumber and pulp and paper production than to plywood. The attitude and strategy of changing corporate directions in keeping with the prevalent economic climate resulted in a series of erratic changes for the company as a whole and for its involvement in plywood production.

British Columbia Forest Products

British Columbia Forest Products was one of the larger plywood producers in British Columbia. In categorising the differences between each of the five largest producers, British Columbia Forest Products especially stands out. Unlike MacMillan Bloedel and Canadian Forest Products, during its early years it was organised by a holding company, Argus, but operated with an independent board of directors.⁶⁷ The company, although one of the province's largest producers of lumber, plywood and pulp and paper, sold its production through MacMillan Bloedel. In a sense the company links MacMillan Bloedel and Canadian Forest Products with the two companies discussed next, Crown Zellerbach and Weldwood. MacMillan Bloedel and Canadian Forest Products for most of their existence were Canadian controlled. British Columbia Forest Products progressed through stages of ownership until it finally became foreign-controlled, while Crown Zellerbach and Weldwood were generally foreign-controlled companies.

⁶⁶ B. R. Adams, memos, June 12, 1985, June 13, 1985, June 26, 1985, Files Canfor, History Section, RBCM. Each memo notes record production levels.

⁶⁷ It could be argued of course that E. P. Taylor dominated Argus. The way he organised British Columbia Forest Products meant that, while Argus had considerable influence, it did not completely control the company.

British Columbia Forest Products began as a proposal from H. R. MacMillan to Toronto financier E. P. Taylor and his Argus Corporation. Taylor had expressed an interest in investing in the British Columbia forest products industry; and as a result MacMillan developed a proposal that amalgamated a number of sawmills and logging operations into one company.⁶⁸ Taylor initially turned over management of this company to MacMillan Bloedel and employed MacMillan Bloedel as sales agent for many years. This enhanced MacMillan Bloedel's position in both the lumber and plywood markets.⁶⁹

Argus, the founding corporation, was essentially a financial corporation. It merged four of the province's larger sawmills and a variety of small, independent logging operations into one corporate unit. In keeping with current trends, the company built a substantial plywood plant in Victoria in 1952, and constructed a pulp and paper mill at Crofton on Vancouver Island in 1958. After opening the Crofton pulp mill it consolidated and improved capacity at existing plants, before expanding into the central northern interior of British Columbia in 1967 and subsequently into Alberta. Table III-11 charts the growth of British Columbia Forest Products until 1986 when it was sold to Fletcher Challenge.

**Table III-11: British Columbia Forest Products,
Company Growth, 1946-1986.⁷⁰**

1946	British Columbia Forest Products organised. Purchased Sitka Spruce Lumber in Vancouver, Cameron Lumber Company in Victoria, Hammond Lumber Company in Hammond, Industrial Timber Mills in Youbou,

⁶⁸ MacMillan was appointed to the Argus board of Directors in 1945. See Drushka, *HR* 363-365.

⁶⁹ Sue Baptie, ed., *First Growth: The Story of British Columbia Forest Products Limited* (Vancouver: J.J. Douglas, 1975), 21-25.

⁷⁰ Table based on company *Annual Reports*; Baptie, *British Columbia Forest Products*; Files BCFP, History Section RBCM. Panel plants are in bold.

	Hemmingsen-Cameron Company Limited, Osborne Bay Timber Buyers Limited, Renfrew Holdings Limited, San Juan Bay Logging Company, Malahat Logging Company, Blackstock Logging, and Oscar Niemi Company.
1948	Purchased Jervis Inlet Timber Company.
1952	Built Victoria Plywood plant.
1958	Built Crofton Pulp and Paper mill.
1959	Purchased Kapoor Sawmills Limited.
196-	Purchased Point Ellice Sawmill.
1965	Purchased F & R Logging Company.
1966	Purchased Calvin Logging Company.
1967	Purchased Alexandra Forest Industries; build sawmill at Mackenzie.
1967	Purchased Swiftsure Towing.
1967	Purchased Northern Cedar Company.
1970	Purchased F. Sing Ltd. and Cataract Lake Logging.
1971	Purchased Cattermole-Tretheway Company includes Nalos sawmill and Douglas Plywood in Vancouver.
1971	Closed Point Ellice Sawmill.
1972	Purchased Canadian Plywood Corporation, built Delta Plywood, purchased 50 percent of Pinette and Therrien sawmill at Williams Lake and Takla Lake.
1972	Built Pulp mill at Mackenzie.
1972	Closed Nalos Sawmill in Vancouver.
1974	Purchased Acorn Forest Products.
1975	Purchased Hampton Lumber Mills Limited at Boston Bar.
1975	Built Joint venture pulp mill in Quebec, 40% interest, Start-up 1978.
1977	Purchased Blandin Paper at Grand Rapids, Minnesota, and Fraser River Pile Driving.
1979	Purchased Elk River Timber Company.
1979	Bid on Alberta Timberlands accepted.
1979	Purchased Part interest in Finlay Forest Products at Mackenzie.
1980	Purchased Jointly, assets of Rayonier Inc.
1982	Built Sawmill at Grand Cache, Alberta.
1983	Closed Victoria plywood plant.
1984	Cancelled Remainder of Alberta agreement.
1984	Purchased Remaining 50 percent of Pinette and Therrien.
1986	Purchased by Fletcher Challenge.

In British Columbia Forest Product's industrial strategy, plywood was one product from an integrated complex. After becoming well established as a lumber producer, it observed that plywood production was profitable.⁷¹ The company then opened its first plywood plant. The company expanded the Victoria plant over the next decade. In 1970 it considered building an additional plywood plant at Mackenzie, the centre of the company's British Columbia interior operations, where it had a sawmill and

⁷¹H. G. Munro to H. E. Hobson, June 21, 1951, Circular No 26, Caycuse Collection, Kaatza Historical Society.

pulp mill complex. An economic downturn delayed construction and the company finally cancelled the project.⁷²

**Table III-12: British Columbia Forest Products
Sales in Percentage by Product, 1960-1985.⁷³**

Year	Lumber & Shingles	Plywood & Waferboard	Pulp	Newsprint & Paper	Other	Revenue, Millions \$
1960	40	18	34	-	8	50.9
1965	35	11	33	15	7	87.0
1970	39	8	25	23	5	114.7
1975	25	8	43	19	5	273.4
1980	23	6	26	38	7	850.3
1985	31	9	18	51	9	1,140
Purchased by Fletcher Challenge						

A new plywood plant was constructed on the coast in 1972. In 1971 British Columbia Forest Products purchased the logging company of Cattermole-Tretheway and as part of the acquisition they acquired Douglas Plywood, formerly a small independent producer in Richmond. The Douglas plant burned shortly after, and as the company had an established customer list, British Columbia Forest Products decided to rebuild the plant and purchased the bankrupt Canadian Plywood Corporation to facilitate this project. This was the last entirely new plant, dependent on coastal timber, built in the coastal British Columbia region.⁷⁴ In retrospect the decision was poorly thought out, because over the twelve year period from 1973 to 1984, excluding the years 1977 and 1978 for which data are not available, the plant had a net loss of nearly four and a half million dollars. Increased raw material cost, which British Columbia Forest Products failed to anticipate, combined with the company's failure to seek its own markets, meant little

⁷² "Veneer Plant Expansion at MacKenzie," *British Columbia Lumberman* 54 (January 1970), 56.

⁷³ From *Annual Reports*, 1960, 1965, 1970, 1975, 1985.

⁷⁴ Cantree was built after this plant in 1974 but depended on interior veneer.

chance for profit. It continued to operate until 1991 and was one of the most modern and efficient plants on the coast, but it was not a success.

**Table III-13: British Columbia Forest Products,
Plywood Production 1952–1987.⁷⁵**

Year	Plywood	Year	Plywood	Year	Plywood
1952	21	1964	111	1976	190
1953	51	1965	109	1977	201
1954	61	1966	111	1978	213
1955	78	1967	111	1979	205
1956	87	1968	111	1980	206
1957	82	1969	114	1981	162
1958	92	1970	110	1982	104
1959	81	1971	134	1983	73
1960	93	1972	125	1984	73
1961	99	1973	194	1985	69
1962	103	1974	164	1986	54
1963	109	1975	134	1987	90

British Columbia Forest Products, in contrast to the other large plywood producers which marketed their own production, saw itself as a producer. The company expanded slowly and conservatively. Each expansion was followed by a long period of consolidation and retrenchment. Even the Delta plywood plant was only rebuilt because an established customer list existed. British Columbia Forest Products more than any other provincial plywood producer showed a lack of entrepreneurship and in this instance counters Chandler's contention that managerial hierarchies played significant role in initiating aggressive growth.⁷⁶ MacMillan Bloedel and Canadian Forest Products were dominated by individuals or families, and both were more aggressive and played a larger role in plywood production and in British Columbia's forest industry. British Columbia Forest Products was a follower, not a leader. It was the last major plywood producer to begin plywood production and to move production away from coastal British Columbia.

⁷⁵ Information from company *Annual Reports*. British Columbia Forest Products did not manufacture non-plywood panels in Canada. The plywood is in MBF, 3/8 inch thick.

In 1983 British Columbia Forest Products closed its Victoria plywood plant following the current trend to downsize plywood production. The company subscribed to the view that plywood was a sunset industry.⁷⁷

The demise of the company was also in keeping with its conservative policy and its corporate structure. British Columbia Forest Products was created by Argus, an investment company, in 1946. Argus sold it to several forest products companies in 1969, Scott, Mead, and Noranda. British Columbia Forest Products had no strong voice arguing for its survival as an independent entity. In 1981 Noranda sold its interest to the Alberta Energy Company Limited. When British Columbia Forest Products decided to delay its Alberta developments due to the economic recession of the early 1980s, Alberta Energy sold its share to Fletcher Challenge in 1986 and opened the door that led to the disappearance of British Columbia Forest Products as an operating company.

British Columbia Forest Products operated in a style different from the other major plywood producers. It followed a growth strategy that was similar to Canadian Forest Products but it was neither random nor aggressive. Nor did it seem to access the considerable capital and expertise that its association with other large forest industry corporations should have granted. Plywood played a small role in the company's strategy and was simply a high revenue product to be exploited and then discarded. The company as a whole was viewed in the same light by its owners, who discarded it once they realised British Columbia's forest industry had entered a difficult period. British Columbia Forest Products, unlike Weldwood of Canada, was never built into an essential component of its owners' profit strategies.

⁷⁶ Chandler, *Visible Hand*, 8.

⁷⁷ British Columbia Forest Products, *Annual Report*, 1983, 1.

Crown Zellerbach Canada Limited

Crown Zellerbach Canada's history shifts the shape of corporate organisation in a new direction. The company was a major producer of British Columbia softwood plywood, but Crown Zellerbach's organisation and strategy illustrate a fourth alternative in plywood production. Crown Zellerbach targeted very specific areas for exploitation and built a company to exploit the selected geographical regions. The company made no attempt to operate outside of British Columbia except to sell its production. As well, Crown Zellerbach Canada and its predecessor companies, Pacific Mills and Canadian Western, for nearly all their operating existence, were foreign owned.

The origins of Crown Zellerbach Canada lie in the union of two long established companies. Crown Zellerbach operated a pulp mill at Ocean Falls and was owned by American capital, while the Canadian Western Lumber Company operated a sawmill and plywood plant and was financed by eastern Canadian capital. Canadian Western, as discussed in Chapter II, was the first softwood Douglas fir plywood producer in British Columbia. Even more so than MacMillan Bloedel, it was in a position to be the province's leading forest product company and was nicely placed to dominate the plywood market. Early in its history, and certainly long before MacMillan was in a position to act, the company undertook limited expansion by acquiring the Columbia River Lumber Company at Golden. This seems to have been an isolated instance and when the timber supply for the sawmill was destroyed by fire in 1926, no follow up occurred and the sawmill was simply closed. The company also established a series of retail yards across the Prairie Provinces to distribute lumber, but made no concerted effort to expand into the larger eastern markets. Canadian Western appears to have been

content to operate its large facility on the Fraser River using the high quality logs produced by its Courtenay-Comox operation on Vancouver Island. It was not until the 1950s that Canadian Western expanded and joined with Crown Zellerbach to establish a new pulp mill on Vancouver Island. Crown Zellerbach acquired the company within a very short time. Company growth is illustrated in Table III-14.

**Table III-14: Crown Zellerbach,
Company Growth, 1889-1980.⁷⁸**

	Crown Zellerbach	Canadian Western	S.M. Simpson
1889		Canadian Western Lumber company organised.	
1909	Oceans Falls Company organised.		
1910		Purchased Security Lumber, retailer.	
1911		Purchased Columbia River Timber Company, sawmill at Golden.	
1911		Opened Crown Lumber Company, lumber retailer.	
1913		Built plywood plant.	S.M.Simpson Lumber Company organised in Kelowna.
1914	Acquired by Crown Willamette.		
1921		Purchased Western Canada Lumber Yards, lumber retailer.	
1925		Purchased Lumber Manufacturers Yards Ltd, lumber retailer.	
1928	Crown Willamette and Zellerbach merged.		
1930	Constructed paper converting plant in Vancouver.		
1931			Built veneer plant.
1937	Purchase Hudson Paper Company.		
1939			Purchased Kelowna Sawmill.

⁷⁸ The information for this table was compiled from company *Annual Reports* and unpublished company histories, Files Canadian Western/Crown Zellerbach, History Section, RBCM. As in the case of all the majors not every company acquired is listed. Panel plants are in bold.

1944	Purchased Canadian Boxes.		
1946	Purchased Northern Pulpwood.		
1950	Constructed Elk Falls Pulp Mill.	Constructed Elk Falls Pulp Mill.	
1953	Purchased Canadian Western Lumber.	Sold to Crown Zellerbach.	
1955			Purchased Trautman & Garroway sawmill at Peachland.
1955			Purchased Peachland Sawmill and Box Co.
1956	Built converting plant in Richmond.		Built Plywood plant.
1957			Purchased McLean Sawmill at Malakawa.
1958	Purchase Bridge Lumber Company, sawmill in Richmond		
1959	Purchased Clarks papers, paper wholesaler; Columbia Paper Company, paper wholesaler; Plywood Supply Company, plywood wholesaler.		Purchased Lumby Sawmill.
1962	Purchased Beaty Laminated.		
1965	Purchased S.M. Simpson.		Sold to Crown Zellerbach.
1966	Purchased Smith Lumber Company at Armstrong.		
1969	Purchased Armstrong Sawmills at Armstrong, Enderby and Falkland.		
1970	Purchased Ponderosa Pine Lumber Company at Monte Lake.		
1970	Purchased Seaforth Plastics at Richmond and Winnipeg.		
1971	Closed Peachland sawmill.		
1971	Build New plywood plant at Armstrong.		
1980	Purchased H. Buff Lumber Company at Monte Lake.		
1983	Sold to Fletcher Challenge.		

The second operation that merged into Crown Zellerbach Canada, the Ocean Falls pulp and paper mill went into production in 1909, but almost immediately was in such serious financial difficulty that it closed. It was acquired and rebuilt by Crown Willamette in 1918. Crown Willamette was an American company with its main pulp mill operation at Camas, Washington. The merger of two companies in the United States in 1928 resulted in a new controlling company but brought little change to its Canadian subsidiary.

Canadian Western joined with Crown Zellerbach to build a pulp and paper mill on Vancouver Island in the late 1940s and by 1953 Crown Zellerbach had acquired Canadian Western and renamed its Canadian operations Crown Zellerbach Canada.

Further expansion was slow and it was not until the early 1960s that Crown Zellerbach began to look for new expansion opportunities. The company developed a strategy of conservative but steady growth and acquired several paper converters, the Bridge River Lumber Company in Richmond and Beaty Laminated, a hardwood plywood producer, also in Richmond. A study initiated to look for growth alternatives in the interior revealed that a major producer in the Okanagan was available, so in 1965 the company purchased the S.M. Simpson operations at Kelowna.

The company's decision to base its expansion program in the Okanagan was certainly a good choice. The interior was booming, but by 1965 most regions had a major player in place. Crown Zellerbach faced the choice of developing completely new facilities in the far north, as British Columbia Forest Products did in 1967, or acquiring existing operations in the south central region of the Province. When the Simpson Lumber Company in Kelowna became available, Crown Zellerbach decided to use Simpson as a base for a regional expansion program. Simpson had already initiated such a program by consolidating several local sawmill operations.⁷⁹ The Simpson acquisition also increased the importance of plywood in Crown Zellerbach's expansion strategy. Simpson operated a plywood plant at Kelowna and as Crown Zellerbach Canada continued to add to its interior holdings, the company built a new plywood plant at Armstrong. This new plant went into production in 1971, and made Crown Zellerbach Canada the second largest interior plywood producer and third largest producer in British Columbia.⁸⁰

⁷⁹ Mike Halleran, *Loggers and Lumberman: The Evolution of the Forest Industry in the Southern Interior of British Columbia* (Kelowna: Interior Lumber Manufacturers' Association, 1994), 32.

⁸⁰ Statistical Reports, Council of Forest Industries, 1975, Canadian Plywood Association.

The corporate product mix of pulp and paper from Elk Falls, lumber from their Fraser River plant and interior operations and plywood from Fraser Mills, Kelowna, and Armstrong resulted in a stable financial condition, even during the economic turbulence of the late 1970s and early 1980s. Graph III-2 shows that the company was still profitable or absorbing relatively small losses, during a time when the other major plywood producers were in serious financial difficulty. Unfortunately the financial strength of the Canadian company was not reflected by its San Francisco-based American

**Graph III-2: Crown Zellerbach Canada,
Net Earnings, 1972-1982.⁸¹**



parent. In a desperate and unsuccessful bid to salvage the parent company, the Canadian operations were sold to Fletcher Challenge of New Zealand in 1983.

Fletcher-Challenge was a New Zealand based company of relatively recent origin, although the predecessor companies each had a long history. It was formed in 1981 with the merger of three companies: the Fletcher group, the Challenge group and the Tasman Lumber Company. This merger brought the company onto the international stage, both

Fletcher and Challenge groups had international connections, mainly in Australia, while the Tasman Company contributed four sawmills and a pulp mill to the group. The acquisition of Crown Zellerbach Canada immediately made Fletcher Challenge a major player in British Columbia's forest industry. The Company's role was further enlarged by its acquisition of British Columbia Forest Products in 1986. The company's early strategy was very much in keeping with past practice of both Fletcher Challenge and Crown Zellerbach Canada. Expansion and diversification, within the forest products sector, were achieved by acquisition. The purchase of British Columbia Forest Products made Fletcher Challenge British Columbia's second largest plywood producer. The company, however, was not in a good financial situation and almost immediately began a program of rapid closure and divestment of its plants.

Table III-15: Crown Zellerbach/Fletcher Challenge, Percent of Total Revenue by Product, 1960-1998.⁸²

Year	Wood %	Pulp & Paper %	Other %	Total Sales Million \$
1960	NA	NA	NA	109.9
1965	NA	NA	NA	164.6
1970	37	47	16	192.9
1975	34	36	30	296.4
1980	33	42	25	661.5
1985	NA	NA	NA	853.0
1990	38	62	-	1160.0
1995	26	74	-	2154.0
1998	-	100	-	284.0

In less than ten years Fletcher Challenge removed itself from the solid wood business and caused the dismemberment, closure or redistribution of some of British

⁸¹ *Annual Reports* 1972 to 1984, named changed to Crown Forest in 1983.

⁸² From *Annual Reports*, 1960,1965,1970,1975,1980,1985,1990,1996,1998. Plywood is included with Wood.

Columbia's oldest solid wood manufacturing plants. The company's decline is charted in Table III-16.

Table III-16: The Restructuring of Fletcher Challenge.⁸³

1983	Purchased Crown Zellerbach Canada.
1986	Purchased British Columbia Forest Products.
1989	Closed Victoria sawmill (BCFP). Closed Fraser Mills plywood plant (CZ). Sold Vancouver sawmill (BCFP). Sold Delta sawmill (BCFP). Closed one sawmill at Williams Lake (BCFP). Closed Sawmill at Lumby (CZ). Sold sawmill at Grand Cache (BCFP). Sold Grand Rapids waferboard mill (BCFP). Sold shares in Western Forest Products (BCFP).
1990	Purchased United States packaging firm.
1991	Close Delta Plywood plant (BCFP). Sold Hammond sawmill (BCFP). Sold Fraser Mills sawmill (CZ).
1992	Sold interest in Donahue-St.Felician (BCFP). Sold 50 percent interest in Findlay Forest Products (BCFP). Sold packaging operations (CZ).
1993	Sold Kelowna plywood plant (CZ). Sold Kelowna sawmill (CZ). Sold Armstrong plywood plant (CZ). Sold Armstrong sawmill (CZ).
1993	Transferred Youbou Sawmill to TimberWest (BCFP). Transferred Elk Falls sawmill to TimberWest (CZ).
1996	Transferred Williams Lake sawmill to TimberWest (BCFP). Transferred MacKenize Sawmills to TimberWest (BCFP).
1997	Sold TimberWest.
1997	Sold Williams Lake and Mackenzie operations, by TimberWest (BCFP).
1997	Sold Blandin Paper at Grand Rapids (BCFP).
1998	Fletcher Challenge continued to operate pulp and Paper mills at Elk Falls (CZ), Crofton (BCFP) and MacKenzie (BCFP). TimberWest operated sawmills at Youbou (BCFP) and Elk Falls (CZ).

In 1989 Fraser Mills, the oldest plywood plant in the province, was closed, and coastal operations were consolidated at the former British Columbia Forest Product's Delta plant. Delta was subsequently closed in 1991. The remaining two interior plywood plants were sold to Riverside Forest Products, along with much of the remainder of the company's interior solid wood operations. Fletcher Challenge, without strong connections to the British Columbia forest industry's past, reverted to its New Zealand

roots and became a pulp and paper producer. This is in contrast to MacMillan Bloedel which reverted to solid wood products, not pulp and paper.

Weldwood

The final large producer under consideration is Western Plywood, later Weldwood. This company adopted a unique approach to organising itself as a plywood producer and marketer. Western Plywood's owner, John Bene, saw the company as a plywood producer and remained committed to it. Subsequent managers also saw Weldwood as a plywood manufacturer and not as a manufacturer of panels or forest products. The unique history of the firm and its growth as a plywood producer suggest that an understanding of Weldwood's lead in softwood plywood production in the 1990s must be based on understanding the company's history.

Weldwood changed operating strategies more radically and more often between the 1940s and the 1980s than any other British Columbia plywood producer. In a very real sense Weldwood tried each strategy until it found one that suited both the vision and the aspirations of the firm. In this respect, Weldwood, more than any of the other large producers represents the varied nature of British Columbia plywood production. The company began operation as a small public company, Western Plywood. The owner transformed the company into a major producer and marketer of plywood in Canada, but in so doing the company came under ownership of an American plywood manufacturer. It continued to grow and acquired several other firms. Weldwood's growth and profit strategies evolved differently than those of the other major producers, but in keeping with industry practice, Weldwood reflected the strategies current in each of the other

⁸³ *Annual Reports*, 1989-1998. Panel plants in bold.

companies considered here. Table III-17, for example, shows the growing shift from a dependence on plywood to other forest products with pulp and paper increasingly becoming the largest revenue generator.

Table III-17: Sales by Product Line, by Percent of Sales and Total Sales in Dollars, 1965-1997.⁸⁴

Year	Pulp	Lumber	Plywood	Other panels	Other	Total Sales \$
1965	0	28	51		21	93.9
1970		30	48		22	119.7
1975	12	27	40		21	261.1
1980	13	26	33		28	467.9
1985	8	33	32	With plywood	27	628.8
1990	40	32	15	5	8	683.6
1995	49	25	10		16	1,135.4
1997	42	44	12		2	855.2

A detailed study of Western Plywood/Weldwood will enhance our understanding of the role of internal networks in shaping company strategy and in company organisation.

Table III-18 illustrates Western Plywood's/Weldwood's evolution.

Table III-18: Weldwood, Company Growth, 1943-1999.⁸⁵

	Western Plywood	United States Plywood	Canadian Collieries Resources
1943		United States Plywood began operations in Canada, purchased Hay & Co at Woodstock Ont.	
1944	Western Plywood organized.		
1945	Built Kent Ave. Plant.		
1946		Built plywood plant at Woodstock.	
1947	Built joint venture plywood plant at Gatineau, Quebec.	Purchased sawmill at Haliburton, Ontario	
1948	Sold joint venture plywood plant at Gatineau, Quebec.		
1951	Built plywood plant at Quesnel.	Purchased sawmills at Harcourt and Haliburton, Ontario.	
1955	Purchased J. R. Murray Ltd., included plywood plant.		Canadian Collieries Resources exited the coal business and

⁸⁴ Compiled from *Annual Reports*, 1965, 1970, 1975, 1980, 1985, 1990, 1995, and 1997.

⁸⁵ Based on company *Annual Reports* and Files Weldwood, History Section, RBCM. Panel plants are in bold.

			entered forest products, purchased Timberland and Flavelle Cedar.
1956	Built plywood in Edmonton, Alberta.	Purchased sawmill at Huntsville Ontario, Build sawmill at Searchmont, Ontario.	Built plywood plant in Surrey
1959		Purchased Hubbell Lumber Company at Huntsville, Ontario.	
1961	Purchased Tepson's, Ontario wholesaler.	Purchased Western Plywood and renamed Weldwood.	Purchased Mount Baker Veneer Company and Keeley Lumber Co.
1963	Built prefinishing plant at Woodstock.		Purchased Alwest, wholesaler; purchased Empire Lumber Co. at Squamish.
1964	Purchased Canadian Collieries Resources, includes plywood plant.		
1964	Purchased Northern Studs at Lac La Hache.		
1965	Built plywood plant at Langlac, Ontario.		
1965	Purchased Columbia Forest Products, hardboard plant at Sprague, Manitoba.		
1969	Built pulp mill at Quesnel joint venture.		
1970	Purchased Canim Lake Sawmills, includes plywood plant.		
1970	Sold sawmill Haliburton, Ontario.		
1974	Built waferboard plant at Longlac.		
1975	Built sawmill at Babine, joint venture.		
1978	Purchased Merrill-Wagner at Williams Lake, build plywood plant.		
1978	Built sawmill at Houston, joint venture.		
1979	Purchased waferboard plant Slave Lake, Alberta.		
1982	Close Lac La Hache sawmill.		
1984	Close 100 Mile plywood plant.		
1985	Closed Timberland sawmill, Surrey.		
1985	Sold Ontario operations except Longlac.		
1986	Converted Longlac to oriented strand board.		
1987	Closed Surrey plywood plant.		
1987	Converted Slave Lake from waferboard to oriented strand board.		
1988	Sold Vancouver plywood plant.		
1988	Purchased St. Regis pulp mill at Hinton.		
1989	Purchased St. Regis sawmill at Hinton.		
1989	Merged distribution network with Canfor.		
1990	Sold Kent Ave plywood plant Vancouver.		
1991	Closed/sold Slave Lake.		
1993	Built new sawmill at Hinton, Alberta.		
1993	Closed Williams Lake sawmill.		
1995	Sold Squamish sawmill.		
1995	Sold Flavelle Cedar mill		
1996	Sold Longlac waferboard and plywood plant		

The founder of Western Plywood, John Bene, was born in Vienna, Austria but grew up in Budapest, Hungary where his family operated a plywood plant, Levy, David & Co. It was a family venture and John Bene eventually owned sixty-six percent of the

firm, while an uncle retained nineteen percent.⁸⁶ He graduated in mechanical engineering in 1932 and worked in the family firm before coming to Canada in 1938. He left his job at Canadian Forest Products following a disagreement with the owners and proceeded to establish his own company.⁸⁷ He incorporated Western Plywood on July 7, 1944 and secured bank and shareholder financing as well as support from Rogers Sugar, a large family-owned sugar manufacturer in Vancouver.⁸⁸

Bene now had to create the physical assets to begin production. Although he realised that raw materials were critical, he still thought that cottonwood production was feasible. Initially Bene hoped to secure timber limits near Prince George, but eventually settled for timber in the Quesnel area and on the Skeena River.⁸⁹ Delays in obtaining approval for these timber limits resulted in the acquisition of a smaller piece of property in Vancouver on which to build the mill than he originally intended. The choice of a factory site in Vancouver is critical to understanding Bene's strategy. The withdrawal of Pacific Veneer from the production of hardwood furniture plywood and the closing of British Columbia Veneer in Nelson gave Western Plywood an opportunity. A small but profitable market existed for cottonwood plywood in the furniture trade and he realised that soon no British Columbia firm would be supplying this market. Bene filled this void. The Vancouver plant allowed him to draw on cottonwood supplies from any point

⁸⁶ John Bene to Foreign Claims Settlement Commission of the United States September 11, 1964, File John Bene Personal 1963-1964, Box 7A, WC, RBCM.

⁸⁷ Interview with John Bene, Vancouver, by Richard Pinton, May 17, 1984, PC, RBCM.

⁸⁸ See for example Minutes, Board of Directors, Western Plywood, 12 April 1948, originals at Champion International, Stamford Connecticut, copy on file at RBCM.

⁸⁹ Minutes, Board of Directors, Western Plywood, 24 November 1944, and 28 March 1946, originals on file with Champion at Stamford, Connecticut, copy on file at History Section, RBCM.

in British Columbia with a suitable transportation link. The closed Nelson plant provided machinery that would have otherwise been difficult and expensive to obtain.⁹⁰

The construction of the Kent Avenue plant in Vancouver was well underway by March 1945 when Bene took on the additional task of designing and managing the International Paper Company's hardwood plywood mill in Gatineau, Quebec. Western Plywood sold its interest in 1948 and withdrew from their association with Gatineau, while making a profit of \$395,000, not including management fees.⁹¹ The Gatineau venture, although short-lived, provided Western Plywood with needed cash flow while they established their presence in the market.

Bene believed that his major task, once financing was in place, was to create a team of competent managers to operate his company. Leslie Schaffer, also from Canfor, helped with the financial aspects, but had to take early retirement because of illness.⁹² Despite this setback, Bene rapidly built a competent management team that included Jim McCarthy as production manager, Geoff Tullidge in charge of sales, and John Huberman with responsibility for personnel. A brief examination of John Huberman's career will illustrate the calibre of individual he sought and whose services he obtained.

Bene knew John Huberman from Hungary. Huberman graduated in law in Budapest, studied mechanical engineering for two years, and worked for two years with the Bene plywood firm in Hungary. Huberman, following his arrival in North America, managed a furniture plant in North Carolina. He came to Canada in 1938 and, presumably through his connection with John Bene, was appointed superintendent at

⁹⁰ Interview with John Bene, Vancouver, by Richard Pinton, May 17, 1984, and 27 April 1945. Notes from J. B. Armstrong, January 1989, PC, RBCM.

⁹¹ Minutes, 27 April 1945 and 12 April 1948, originals at Champion International, Stamford, Connecticut, copy on file at History Section, RBCM.

Canadian Forest Products, which Bene then managed. He remained at Canadian Forest Products when Bene left in 1944. In 1945 when Bene secured the management contract for International Plywood at Gatineau, he turned the operation over to Huberman. When Western Plywood pulled out of this contract, Huberman joined Western Plywood as vice-president of personnel, a position he held until he decided to join the world of academia, following Western Plywood's acquisition by United States Plywood.⁹³

Bene soon realised that the future of plywood was in softwood, not hardwood. Almost immediately he began a limited production of Douglas fir panels. His greatest problem over the next decade was to obtain a secure log supply. He located an excellent stand of interior Douglas fir at Quesnel, which he shipped to the coast.⁹⁴ He decided, however, that it was feasible and more profitable to construct a plywood plant at Quesnel. The exceptional stand of Douglas fir he initially mined would not last, but he believed that an interior plant operating on smaller diameter logs could be successful.

The Quesnel plant began producing sheathing panels in 1951, the first interior softwood plywood plant to do so. Problems, especially relating to the peeling of small diameter logs, plagued the plant for some time, but the plant was a success. Although timber remained an issue, the Quesnel plant was well located to draw on a large central timber supply region. As the only regional plywood plant, Western Plywood obtained peelers from a wide range of sources, which included a company Forest Management

⁹² Biography of Leslie Schaffer, PC, RBCM.

⁹³ Biography - John Huberman, PC, RBCM. John Bene to Gene Brewer, New York, April 12, 1962, File Gene Brewer, Box 7B, WC, RBCM. During his time at Western Plywood and Weldwood, he implemented a series of testing schemes for personnel. After leaving Weldwood, Huberman returned to university for further education and obtained his Ph.D. in psychology. He subsequently taught part-time at the University of British Columbia. John Bene, to Gene Brewer, New York, May 22, 1962, file Brewer 1961, Box 7A.

⁹⁴ Interview with Floyd Houston, Quesnel, by R. Griffin, July 1994.

Licence.⁹⁵ Despite Bene's concern over their lack of expertise in sawmill operations the Quesnel investment forced the company to enter the sawmill business in order to fully utilise their forest resources.

Western Plywood's management saw the company as a plywood manufacturer. Acquiring a secure timber supply meant that the company had to process logs not suitable for peeling into veneer and laminating into plywood. On the coast, acquired sawlogs were sold to one of the many regional sawmills. Fortunately, in 1951, when the Quesnel plant started operation, standard practice in the interior was to log through a contract sawmiller-logger who shipped peeler logs to the plywood plant and sold the sawn lumber to a planer mill for finishing and sale. Nevertheless, a certain number of sawlogs did arrive at the plywood plant and a small sawmill was built to deal with them.

Western Plywood's Alberta expansion illustrates Bene's perennial problem: his vision was larger than his reach both in terms of capital and the company's ability to fully utilise the potential of the opportunities he saw. Despite intensive studies of site and timber supply, the Edmonton plant, opened in 1956, was only marginally successful. Bene did not have the resources to find customers and convince them to use poplar plywood. The panels were not a great success when competing with coastal Douglas fir production.⁹⁶ In the early 1960s considerable effort was made to improve production with speciality products such as Melwood, high-grade plywood, and blanks for the application of high grade veneer at the Ontario plant following Western Plywood's acquisition by Weldwood.⁹⁷ After over a decade of trouble, the plant closed in 1968.

⁹⁵ See chapter V for further information on timber policy for the Quesnel plant.

⁹⁶ John Bene, to John Schlick, New York, September 18, 1967, File John Schlick, Box 10B, WC, RBCM

⁹⁷ Ken Rymer, Edmonton to Pit Desjardins, Vancouver, March 7, 1960, File Edmonton General, Box 24B. Year-end Report May 31, 1963, File Alberta Financial Statements, Box 27E. Monthly Report for

Many reasons contributed to the plant's difficulties aside from competition: untrained crews, high production costs, labour difficulties, and the need to secure new timber supplies of a better quality fibre. The final blow came when a number of Ontario manufacturers began production of a similar product without the extra shipping costs. This decreased the profit margin and when operating losses were combined with the other difficulties closure seemed the best solution.⁹⁸

Bene's most pressing problem, however, was to secure coastal timber for the growing Kent Avenue plant in Vancouver. During the 1950s and 1960s the greatest profits were in the production of sanded Douglas fir panels. Coastal operators had been logging for generations and in the 1940s it was no simple matter to obtain timber. The trend away from selling logs on the open log market made the available logs expensive and often of poor quality. When the opportunity arose to acquire the small plywood company owned by John Murray, its coastal log position was what interested Western Plywood.

The securing of an adequate supply of logs suitable for conversion to plywood is the limiting factor in the formation and expansion of a plywood company on the West Coast. Murray Plywood has an excellent source of supply for high-grade peeler fir, of which we were in desperate need.⁹⁹

John Murray acquired his plywood experience at Canadian Western in New Westminster where he started work as a labourer. He subsequently had a variety of jobs; tallyman, lumber inspector, shipper, mill superintendent, assistant sales manager, sales

September 1963, dated October 21, 1963, File Alberta Financial Statements, Box 27E, WC, RBCM.

⁹⁸ John Bene to Gene Brewer, New York, Nov 28, 1966. Roger Montgomery, Vancouver to John Bene, April 18, 1967. Roger Montgomery to John Bene July 21, 1967. Roger Montgomery to John Bene, October 16, 1967. John Bene to John Schlick September 18, 1967, File Roger Montgomery, Box 10B, WC, RBCM.

⁹⁹ Secretary's Files, Box 11A, WC, RBCM.

manager, and finally assistant general manager. In 1945 Murray purchased the Pacific Wood Products Limited plant on Ash Street in Vancouver, near where John Bene built his Kent Avenue plant.¹⁰⁰ Pacific Wood Products made containers, primarily fruit boxes from veneer, but Murray switched to door and subsequently to plywood production. He created a very successful, if small, operation that had a particularly innovative timber department. Bene considered Murray to be a typical "He-man." Murray ran a one-man show, but he was "honest, straight-forward, and quite rough--sometimes difficult to negotiate with or influence" and a very successful businessman.¹⁰¹

Even the acquisition of the Murray companies did not fully solve Bene's timber problem. In 1959 Western Plywood sought assistance from the large American company Georgia Pacific and granted them a seat on the Western Plywood's board of directors as part of the cost of acquiring American peeler logs. Georgia Pacific also offered technical advice, but peelers were the main objective.¹⁰²

British Columbia's forest industry was capital intensive; Western Plywood, with mounting debts and limited possibilities for expansion, needed additional capital. John Bene was also nearing retirement age and drastic action was required to achieve the wider success he desired. United States Plywood had examined Western Plywood as an acquisition possibility in 1953, but decided that its timber base was too limited.¹⁰³ Western Plywood's 1955 acquisition of J. R. Murray improved Western Plywood's timber situation to the extent that United States Plywood was once more interested. Bene

¹⁰⁰ John Bene to the Directors of Western Plywood, December 2, 1954, File Murray Merger, Box 30A, WC, RBCM.

¹⁰¹ John Bene to the Directors of Western Plywood, December 2, 1954. File Murray Merger, Box 30A, WC, RBCM

¹⁰² Minutes, 25 June 1959, Western Plywood, copy on file History Section, RBCM.

¹⁰³ Lawrence Ottinger, New York to John Bene, March 16, 1953, File Financing - United States Plywood Corporation, Box 30A, WC, RBCM.

decided to accept United States Plywood's offer and convinced his board and most of the shareholders that it was a good opportunity.¹⁰⁴ Bene clearly believed that with the capital resources of United States Plywood backing him, and its control of a hardboard manufacturing process, he could finally build the company he wanted.¹⁰⁵

John Bene, even prior to selling the company to United States Plywood, had studied the potential of the new panel products, such as particleboard. He also was determined to add pulp to Western Plywood's product line. As early as 1949 he commissioned a study of hardboard plant processes and by 1958 nearly began construction of a hardboard plant. In 1960 Western Plywood finally proposed to construct a particle board plant at Edmonton, but this was delayed and then side-tracked by the United States Plywood acquisition.¹⁰⁶

Bene undertook similar studies of pulp manufacture. He initiated a study project in 1947 and even went so far as to develop equipment lists and costs.¹⁰⁷ He continued to examine the possibilities, undertook detailed studies, and by 1958 considered building at Quesnel. Again this initiative was delayed by the sale of his firm to United States Plywood.¹⁰⁸ It is doubtful whether he could have raised the needed capital without participation of a company such as United States Plywood.

Prior to the merger Western Plywood undertook one additional acquisition. The purchase of the eastern wholesale distributor, Tepson's, which was largely forced on Western Plywood, as a result of the initial uncertainty surrounding the United States

¹⁰⁴ Minutes, 13 April 1961, Western Plywood, copy on file History Section, RBCM. See chapter V for a more complete discussion of problems regarding log supplies.

¹⁰⁵ File Hardboard Study, Box 9A. Frank Hahn, Edmonton to John Bene, August 7, 1962, File Frank Hahn Memos, Box 23A, WC, RBCM.

¹⁰⁶ John Bene, to John Catchpole, Edmonton, March 11, 1960, File Particle Board, Box 30A, WC, RBCM..

¹⁰⁷ File Pulp Mill, Box 30A, WC, RBCM.

Plywood arrangement, but it was a welcome opportunity. The Tepson's purchase was concluded in 1961 shortly before United States Plywood finalised its acquisition of Western Plywood.

Western Plywood's purchase of Tepson's typifies the larger company's relationships with the independent wholesale distribution network. Tepson's was Western Plywood's largest non-company owned distributor. In 1957 Tepson's sold just over sixteen percent of Western Plywood's production, but Tepson's was often in considerable debt and at the time of purchase owed Western Plywood over two hundred and fifty thousand dollars. Tepson's was also, at least from Western Plywood's point of view, unreliable. Joe Sonshine, its owner, continually tried to improve his situation by making backroom deals, while Western Plywood felt they were doing their utmost to be fair. As John Bene wrote to Sonshine after he had taken to buying from competitors for cash:

We are not aware that we had received from you an offer to purchase plywood for cash, so we could not have refused it. Perhaps we should conclude with regret, that at times even our best effort to serve you is not good enough to secure for us your business, but we do not wish to finance your purchases elsewhere.¹⁰⁹

In 1960 Western Plywood acquired fifty percent of Tepson's to cover its indebtedness to Western Plywood. Following Western Plywood's acquisition by United States Plywood, the remaining fifty percent of Tepson's was purchased. Most of Tepson's warehouses were closed and the remainder amalgamated into the new

¹⁰⁸ File Groundwood project, Box 9A, WC, RBCM.

¹⁰⁹ John Bene to Joe Sonshine, Toronto, May 5, 1960, Tepson's, File Secretary Tepson's, Box 7A, WC, RBCM.

Weldwood (Western Plywood) warehouse system. Weldwood's manager considered the elimination of the Tepson's nuisance well worth the price.¹¹⁰

The acquisition of Western Plywood by United States Plywood brought into existence a new and considerably different company called Weldwood of Canada. Three separate business groups eventually merged into one effective organisation. The British Columbia production facilities of Western Plywood and its warehouse system were merged with United States Plywood's Ontario companies, which included a wholesale group and separate manufacturing plants. This took nearly five years to accomplish under John Bene's guiding hand.

The critical organisational issue to be addressed was corporate simplification. Western Plywood and United States Plywood each operated as a series of incorporated companies. The main corporate entity in each group both operated its own facilities and acted as a holding company for each company in the group. Western Plywood, for example, incorporated each plant as a separate company. Initially the separation was desirable for tax and labour reasons, but now the tax advantage lay in merging the separate companies. The new company would operate under the name Weldwood of Canada. To do so, the company needed permission from a variety of federal and provincial departments, including the forest services of British Columbia, Alberta, and Ontario, the approval of bond and the mortgage holders, and approval from all parties to the myriad of agreements held by each company.¹¹¹

John Bene and Gene Brewer, the Chairman of United States Plywood, decided to merge the Western Plywood companies together in the first stage of reorganisation. The

¹¹⁰ Geoff Tullidge to John Bene and Jim McCarthy, July 10, 1957, John Bene to Geoff Tullidge, August 25 1961. File Geoff Tullidge Confidential, Box 7A, WC, RBCM.

simplest task was to merge Western Plywood (Cariboo) Limited and Western Plywood (Alberta) Limited into Western Plywood. Western Plywood simply acquired each company's assets and liabilities and then placed the other companies in voluntary liquidation. The Murray group was more difficult. It was not difficult to transfer the assets to Western Plywood, but the actual winding up of liabilities and funds was more complicated. The first step merged J. R. Murray Sawmills Ltd, J. R. Murray Ltd., and J. R. Murray Timber Ltd into a new company called Murray Timber Co. Ltd. The issue now became complicated: Western Plywood had to appear not to benefit unduly from the transaction or a significant tax loss would result. Murray Plywood was assigned the money Western Plywood owed to Murray Timber, as a result of the original 1955 purchase. Murray Timber then entered voluntary liquidation. Western Plywood finally assigned to Murray Plywood certain indebtedness, which was eliminated by a liquidating dividend and Murray Plywood was then dissolved.¹¹²

The merger of Western Plywood companies was completed in 1963 and the task of merging the United States Plywood companies under the new Weldwood of Canada name began. Bene and Brewer, based on a chartered accountant's report, adopted a different strategy for merging these companies.¹¹³ In the first stage, Weldwood of Canada acquired all the assets of the various companies, including Western Plywood, in exchange for common stock in Weldwood. All of the companies, except Weldwood, were then transferred to the United States, which made them non-residents of Canada. The companies were subsequently liquidated and their Weldwood shares transferred to

¹¹¹ See Files Corporate Simplification, Box 11A, WC, RBCM.

¹¹² See chronological list in Helliwell, MacLachlan & Co to R. Moller, Western Plywood, January 24, 1963, File Corporate Simplification-General, Box 11A, WC, RBCM.

United States Plywood.¹¹⁴

Corporate simplification, however complicated, was the least of the challenges that faced the new company. Four separate operating groups had to be integrated. The head office of Weldwood of Canada in Vancouver needed to develop its relationship with United States Plywood's New York Office. Opportunities for company growth and profit had to be sought and cultivated. The way in which these issues were addressed shaped the future of Weldwood. On most issues Bene reported to Gene Brewer, who had become president of United States Plywood in 1958. John Bene fortunately found a kindred soul in Brewer during these formative years. Brewer also believed in a team management approach to business, and he supported most of Bene's decisions.

In 1919 Louis Ottinger founded United States Plywood in New York as a retail outlet for plywood. In 1921 S. W. Antoville joined the firm and the two men built United States Plywood into the largest plywood manufacturer and sales agency in the world. The company acquired its first manufacturing plant in 1933 and much of the company's manufacturing expansion took place during the 1940s.¹¹⁵ The acquisition of Western Plywood was part of United States Plywood's expansion program. United States Plywood operated sales agencies in Europe, but Canada was the company's first major international expansion. After establishing sales agencies in Canada, in 1945 it acquired the long established firm of Hay & Co. at Woodstock, Ontario.¹¹⁶ United States Plywood

¹¹³ Clarkson, Gordon & Co. to John Bene, February 20, 1964, see pages 20-21, File Corporate Simplification-1964, Box 11A, WC, RBCM.

¹¹⁴ John Clarson, Treasurer United States Plywood Corporation to Commissioner of Internal Revenue, Washington D.C., March 25, 1964, File Corporate Simplification-1964, Box 11A, WC, RBCM.

¹¹⁵ "This is Your Life SW Tony Antoville," *Weldwood News Special Issue*, (April 1966), File Antoville April 1961-April 1967, Box 7A, WC, RBCM.

¹¹⁶ See Secretary's Files for Canadian Plywoods (1955) Limited and Weldwood Westply Limited, Box 11A, WC, RBCM. See John Clarson, Treasurer United States Plywood Corporation to Commissioner of Internal Revenue, Washington D.C., March 25, 1964, File Corporate Simplification-1964, Box 11A, WC, RBCM.

operated its Canadian sales and manufacturing companies as two separate firms. One company sold plywood, while the manufacturing arm at Woodstock supplied birch to the company's speciality plant at Orangeburg, South Carolina. Highly individualistic men used to running their operations as independent fiefdoms, and reporting directly to New York, ran both Woodstock and Weldwood.¹¹⁷

In 1961 two competing warehouse systems merged to form one of the leading forest product wholesale organisations in Canada. Western Plywood and Weldwood complemented each other. Some duplication existed, primarily in Montreal and Toronto, but the amalgamation of the warehouse facilities proceeded comparatively smoothly. The amalgamation of people, however, especially at senior levels, was difficult. United States Plywood, the new parent company of Western Plywood, gave control to Western Plywood and placed John Bene in charge of all Canadian operations. The former manager of Weldwood, United States Plywood's eastern sales organisation, George Goodfellow, was not pleased.

The different approaches of John Bene and his Vancouver management quickly came into conflict with George Goodfellow. Goodfellow changed his reporting relationship from New York to Vancouver with great reluctance.¹¹⁸ John Bene liked and worked well in a team relationship and he easily and successfully harmonised his relationship with United States Plywood. Goodfellow, to the contrary, was a strong and

¹¹⁷ John Bene to Gene Brewer, New York, September 11, 1961, File Gene Brewer, Box 7A. WC, RBCM.

¹¹⁸ John Bene, to George Goodfellow, Montreal, June 26, 1961, File George Goodfellow, 1961-1964, Box 9A. WC, RBCM. In this letter Bene made specific statements to Goodfellow stating how their relationship was to proceed. John Bene made all policy changes and all enquiries from New York were to be directed over Bene's desk, "You [Goodfellow] report to me on behalf of Weldwood."

aggressive individual who wanted to dominate any relationship. Teamwork was not his style.¹¹⁹

The eastern Canadian sales organisation, prior to the merger, primarily sold hardwood plywood, although it also sold the softwood production of Evans Products Limited. Goodfellow operated on a very free agenda as long as profits rolled in, but now he reported to a softwood plywood manufacturing group. Goodfellow did not easily accept that softwood plywood was to be his main profit-making product. He also remained determined to achieve the best profit for his group even when his actions were detrimental to the manufacturing arm of the company. Five frustrating years followed as John Bene tried to force George Goodfellow to accept the new company's operating policies.

John Huberman, Weldwood's personnel manager, noted in his file on Goodfellow, "exceptionally aggressive and probably feels demoted."¹²⁰ Bene found it advisable to keep a separate file on Goodfellow's "shenanigans."¹²¹ Bene hinted to New York throughout these years that all was not well in Canadian management.¹²² However, Bene could not simply remove Goodfellow from his position. New York was extremely reluctant to dismiss any executive who had been as productive for them as Goodfellow. Hints were all Bene could risk for it was apparent that Goodfellow had "quite powerful" connections in New York.¹²³

¹¹⁹ John Bene, to Gene Brewer, New York, September 11, 1961, File Gene Brewer, Box 7A, WC, RBCM. Bene notes there was currently "too much jockeying for position" among the managers. He also noted to Brewer that the eastern manager "is an authoritarian and considers other methods weak and wasteful. My former group has been used to persuasion."

¹²⁰ John Huberman, note, 30-7-61, File George Goodfellow, 1961-1964, Box 9a, WC, RBCM.

¹²¹ *Ibid.*

¹²² For example. John Bene to Gene Brewer, New York, September 6, 1961. File Gene Brewer, Box 7a, WC, RBCM.

¹²³ *Ibid.*

The merging of these two organisations shifted the emphasis for both groups. Softwood plywood became more important than previously and the free purchasing reign was gradually curtailed. These were but a few of the many conflicts between John Bene and George Goodfellow. In 1965 when Goodfellow finally decided that he had had enough of John Bene and resigned, John Bene was reducing his active role in Weldwood management, but he was instrumental in redesigning the new sales organisation.¹²⁴ The plans had been in place since the acquisition, but now Weldwood could operate as an integrated sales organisation. Now the hopes, inherent in the 1961 merger of Western Plywood and United States Plywood, could come to fruition, thus encouraging Weldwood to achieve a leading position in distribution of softwood plywood across Canada.

Immediately following Goodfellow's resignation, plywood sales were divided into three regional groups; Eastern (Quebec and the Maritimes), Ontario, and the West. A fourth sales group, direct mills sales, included sales to independent wholesalers and large customers who refused to deal with the company warehouses. This organisation was similar to those of Weldwood's main competitors, Canadian Forest Products and MacMillan Bloedel. In 1975 Canadian Forest Products, for example, had five sales regions: British Columbia, the Prairies, Ontario, Quebec, and the Atlantic.¹²⁵

All of Weldwood's sales divisions reported to Geoff Tullidge, who became manager of sales.¹²⁶ A new marketing vice president, Donald Cluck, assumed control over the whole operation; the manager of sales and several ancillary operations reported

¹²⁴ John Bene to Gene Brewer, New York, December 6, 1965, File Gene Brewer, Box 7A, WC, RBCM.

¹²⁵ "Coast to Coast with Canfor," *Canfor News* 3/4 (1975), 4.

¹²⁶ Tullidge was previously Western Plywood's sales manager and then western sales manager for Weldwood.

to Cluck, who also sat on the company's board of directors. The additional divisions reporting to Cluck included market research, quality control, export sales, and a centralised import department of products for resale and products for remanufacture, such as hardwood veneer. This organisation could not have been imposed as long as Goodfellow dominated eastern Canada.

The departure of Goodfellow did not eliminate all the controversies, but it changed the authority relationships and created a more integrated structure at Weldwood. It was an organisation that, when compared to its predecessor, functioned relatively smoothly. The conflicts were at a lower authority level within the corporate structure and even when the conflicts were similar to those previously experienced the method of resolution now changed. A directive from the senior level, rather than negotiation, solved them.

The division and branch warehouse managers still wanted to create as much profit for their individual fiefdoms as possible; they saw any impediment to this goal as opposition. The division managers frequently believed they were discriminated against by the production organisation and argued continually about pricing, just as George Goodfellow had. A typical complaint made by the eastern region manager in 1967 argued that:

Try as I might Geoff I have a very difficult time endeavouring to understand just what our corporate procedure is in softwood plywood. I have written you before on this. I find that the mechanics of decision with regards to pricing is slow and while we wait for decisions from Vancouver, other organisations are coming and taking the business. I cannot relate our current branch costs to the market place. On an ex-warehouse basis our branches find themselves in the position where they cannot logically meet

competitive offerings from our competitors, in many cases against our own manufactured material.¹²⁷

Current pricing from our West Coast mills does not allow our line sales organization to meet established market levels on a day to day basis ex-warehouse.¹²⁸

Despite their vehement objections, the division managers had no choice but to comply with the head office directives. Clearly central administrative control was part of Weldwood's agenda for an efficient organisation:¹²⁹

All branches in the eastern Division were advised by 2:00 p.m. this afternoon to raise prices on all softwood plywood shipments ex-warehouse to the carload list. I have instructed all Branch Managers that there are no exceptions to this rule. We will not check with Vancouver for clearance on any matter that may come up and we will hold this pricing at the expense of considerable loss of sales volume, until such time you advise this office of the contrary. I cannot understand this pricing restriction Geoff in view of the known fact of the prices that our own mills are selling to independent distributors.¹³⁰

The unhappiness and frustration of the Division Manager, with what he viewed as arbitrary decisions made in Vancouver, is clear, but he had no choice but to comply with the directive. Head office made its conservative pricing policy company policy. The Central Division manager had complained earlier in 1966.

Considerable business is turned down because of our stand taken in Vancouver, that Carload price is to be our lowest ex-warehouse.... The only accounts we can possibly retain would be those 'awfully

¹²⁷ Jack Harber, Montreal to Geoff Tullidge, Vancouver, June 23, 1967, File Eastern Division Memos, Box 3C, WC, RBCM.

¹²⁸ Jack Harber, Montreal to Geoff Tullidge, Vancouver, May 9, 1967, File Eastern Division Memos, Box 3C, WC, RBCM. Ex-warehouse means supplied by the warehouse.

¹²⁹ Chandler, *Visible Hand*, see 453 and JoAnne Yates argue this was a central aspect of twentieth century business practice. JoAnne Yates, *Control through Communication: The Rise of System in American Management* (Baltimore: The Johns Hopkins University Press, 1989), 274-275.

¹³⁰ Jack Harber, Montreal to Geoff Tullidge, Vancouver, July 4, 1967, File Eastern Division Memos, Box 3C, WC, RBCM.

dumb' or those with no intention of paying on a current basis or no intention of paying period.¹³¹

The strategy of operating company-owned warehouses, as Weldwood's situation demonstrates, was not the panacea that corporate executives envisioned. The internal problems, such as the controversy between Goodfellow and the rest of the organisation, had the potential to seriously disrupt an individual company's sales strategy and success in the marketplace. However, it is also clear that head office used the structure to exert considerable control over sales and used the warehouse system to impose its vision on how distribution should occur.¹³²

The process of integrating the Hay & Co. plant at Woodstock was just as difficult as the task of integrating Weldwood's eastern sales. The original Woodstock firm started in 1845 as a furniture factory, closed in the depression of 1893, and reopened in 1896 producing veneer with a rotary lathe, possibly the first rotary lathe installed in Canada. United States Plywood rebuilt the plant in 1947. Over the next few years United States Plywood purchased additional timber and several sawmills to form a small, but significant, lumber and veneer operation in Ontario.¹³³

The problem that faced Bene was to make the Hay plant profitable. The plant manager was very knowledgeable about plywood production, but did not have the flexibility needed to make it a success. After much negotiation John Bene finally

¹³¹ Allan Young, Toronto to Geoff Tullidge, Vancouver, January 24, 1966, File Central Division Memos, Box 3C, WC, RBCM.

¹³² Chandler tends to emphasise costs as the critical issue for the internalisation of market transactions, whereas this study tends to support Yates arguments regarding control. Chandler, *Visible Hand*, 237 and Yates. *Control Through Communication*, 4 and 21.

¹³³ Notes on the History of Hay, File Hay Division General from Aug 21/61 to Aug 30/63, Box 8B, WC, RBCM.

installed an assistant manager/sales manager who Bene felt could deal with the situation.

As Bene noted to Gene Brewer in New York:

The main problem with this operation appears to be that the management of the company is slow to respond to changes and changes have to be made to supply the veneers which are now in demand and to produce a substantial volume of largely prefinished plywood which the Canadian organisation is geared to sell.¹³⁴

He resolved this situation by finally convincing Gene Brewer to move Hay's manager to the United States where "his knowledge could be put to good use but his stubbornness and extremely conservative views" will not interfere with operations and success.¹³⁵

The most serious problem the Hay plant faced was the reluctance of Eastern sales to shift their purchases of hardwood finished plywood from a contract with Oka, an independent manufacturer, to the Weldwood owned plant at Woodstock.¹³⁶ Before the 1961 merger, Woodstock had supplied birch veneer to the United States, but afterwards it had to make a profit supplying Canada with prefinished plywood, about one thousand panels per day.¹³⁷ These panels were popular and Bene viewed Woodstock as the logical production site. Success for Hay in the Canadian market meant the plant had to be upgraded. An expert from the United States studied the facility and veneer and plywood production was improved.¹³⁸ Dramatic progress followed and by 1966 Bene reported to

¹³⁴ John Bene to Gene Brewer, New York, February 24, 1964, File Quarterly Reports, Box 7A, WC, RBCM.

¹³⁵ John Bene to Gene Brewer, New York, July 6, 1965, File Quarterly Reports, Box 7A, WC, RBCM.

¹³⁶ John Bene to George Goodfellow, Montreal, June 24, 1964, File George Goodfellow, Box 9A, WC, RBCM.

¹³⁷ C. P. Setter, New York to John Bene, February 2, 1962, File CP Setter, Box 10B, WC, RBCM.

¹³⁸ John Bene to George French, New York, November 14, 1963. Austin Zapp to John Bene, February 19, 1964, File Hay Budgets, Box 9A WC, RBCM.

New York that of all the company's operations, only Hay was performing to expectations and this was largely due to the prefinish line.¹³⁹

The Eastern Sales Branch believed it should operate independently and even after problems of price and quality were solved Goodfellow continued to use them as excuses to bypass Woodstock. A meeting in 1964, for example, supposedly improved the situation, but Hay almost immediately noted actions to the contrary:

...it was my understanding that you would direct your Ontario branches to purchase West African Prefinished panels from Hay rather than from Oka.... I have heard fairly reliably that several of your branches are still placing orders with Oka.¹⁴⁰

Eastern sales continued to argue against Woodstock in the belief that their contract with Oka was more beneficial, at least to Eastern sales. They countered that transportation and production costs were higher, while Woodstock argued back:

Can't you believe that Hay & Company is making a sincere effort to give you and all the branches the best service and product possible? This matter of captivity has been overworked and should be forgotten. Weldwood-Westply is our best and practically only customer and we are trying in every way we know how to keep you happy.¹⁴¹

Eastern sales also abetted Hay's competition in the practice of selling "loss-leaders" at "unrealistically low prices." Hay could not hope to compete on price in these circumstances and Bene finally decided the issue when he wrote:¹⁴²

¹³⁹ John Bene to Gene Brewer, New York, February 25, 1966 Quarterly Report. File Gene Brewer 1964-1966, Box 7A. WC, RBCM.

¹⁴⁰ Austin Zapp, Woodstock to George Goodfellow, Montreal, April 20, 1964, File Hay General, Box 9A. WC, RBCM.

¹⁴¹ Austin Zapp, Woodstock to L. J. Gabig, Toronto, January 15, 1962, File Hay General, Box 9A, WC, RBCM.

¹⁴² Austin Zapp, Woodstock to George Goodfellow, Montreal, July 4, 1962, File Hay General, Box 9A. WC, RBCM.

I am in full agreement that our Company must have access to efficient prefinishing facilities in Eastern Canada to take advantage of the rapidly increasing demand for this line. I would not be too concerned about the competition of certain very low priced lines of highly questionable quality.¹⁴³

John Bene overruled the eastern sales' objections and after considerable wrangling ordered the eastern warehouse branches to carry Woodstock prefinished plywood.¹⁴⁴

Problems in uniting the organisation in Canada, however, were only part of what Bene faced. Equally critical was establishing a satisfactory relationship with the American head office. The issues between New York and Vancouver were usually clear, even if not always resolved to Vancouver's liking. Western Plywood, as the acquired firm, had to accommodate itself to the reporting relationship dictated by its New York headquarters. During the 1960s, despite the establishment of a Canadian board of directors, and assurances to the Federal Government that Weldwood was an independent company, in many respects John Bene acted as division manager reporting to Gene Brewer in New York. However, he enjoyed considerably more latitude than his American counterparts.

The issue most easily resolved was that of accounting procedures. Western Plywood learned to use United States Plywood's procedures and supplied data to compare the Canadian and American operations. The parent firm sent accountants to set up the Vancouver accounts to make the transition to new accounting procedures easier; the Vancouver accountant believed that he could maintain a "high degree of continuity"

¹⁴³ John Bene to C. P. Setter, New York, February 8, 1962, File CP Setter, Box 10B, WC, RBCM.

¹⁴⁴ C. P. Setter, New York to John Bene, February 28, 1962, File CP Setter, Box 10B, WC, RBCM.

so that local management would not be unduly inconvenienced.¹⁴⁵ Procedures, however, were sufficiently different that problems arose and it became “increasingly more difficult to compare the results of one month with that of the previous one because of these changes.”¹⁴⁶

Increased efficiency required certain deviations from the United States Plywood policy manual and these were eventually granted to the Canadian organisation. American warehouses, for example, carried much broader product lines and procedures were simplified to suit Canadian sales. Simplification, however, required lengthy discussions that finally convinced New York, as one senior New York executive wrote to John Bene:

the breakdown is excessive and in many cases obviously does not apply to Canada. However, just as soon as we make changes to dispose of some of the information I know there will be questions from certain staff people in New York as to why the same type of figures are not available in Canada.

It would be very helpful for our future method of operations if you and I could sit down with Gene Brewer on your next trip to New York and have a thorough understanding that we are going to approach the paperwork problem in Canada primarily on the basis of your management needs and will not feel restricted by UNITED STATES practices I think Gene will give us the latitude knowing that I won't do anything to jeopardise proper consolidation of the overall financial statements and management tools.¹⁴⁷

The integration was so successful that some Canadian operations complained when

¹⁴⁵ John Bene to Roger Montgomery, New York, June 20, 1961 and W. F. Arntz, New York to G. Steele, Vancouver, July 24, 1961, File Accounting USP June 1961 - Dec 1965, Box 7A, WC, RBCM. W. F. Arntz, New York to G. Steele, Vancouver, July 24, 1961, File Accounting USP June 1961 - Dec 1965, Box 7A, WC, RBCM.

¹⁴⁶ John Bene to Gene Brewer, New York, Quarterly Report for April 30, 1962 - May 30, 1962, File G Brewer, March 1961 - August 1962, Box 7A, WC, RBCM.

¹⁴⁷ E. R. Montgomery, New York to John Bene, April 19, 1963, File Accounting USP June 1961 - Dec 1965, BOX 7A, WC, RBCM. Montgomery followed John Bene as president of the Canadian operations.

practice deviated from United States Plywood's manual of procedure.¹⁴⁸

Difficulties also emerged from New York's failure to understand certain issues of importance to Canada. New York, for example, had great difficulty comprehending that conditions in Canada and the United States were not the same.¹⁴⁹ New York also imposed certain policies and agreements on Canada, much to the chagrin of the Canadian head office, especially when it came to international trade. Weldwood finally cancelled one agreement in the United Kingdom by convincing New York that the firm employed was completely ineffective and not providing the required service. As Bene wrote regarding the issue: "Mr. Wood is a delightful elderly gentlemen and I think that perhaps he has charmed us for too long and we need action rather than charm."¹⁵⁰ Some of the disagreements were minor, such as the refusal of the parent firm to allow Weldwood to export chips to Japan, declaring it would breach an agreement the United States company had in effect.¹⁵¹ Other cases were annoying and frustrating. One of the New York offices sought control of Weldwood's purchases of mahogany from Japan and the Philippines, but Western Plywood had prior arrangements that worked extremely well. Considerable wrangling followed, but when Bene presented evidence that New York could not provide the service he needed, the existing arrangements were left in place.¹⁵²

The Canadian company also found little welcome when it tried to supply the United States branches, although New York wished to pretend otherwise. Hay found this

¹⁴⁸ E. Banning, Vancouver to Jim Dorsey, Montreal, August 27, 1964, File Accounting USP June 1961 - Dec 1965, Box 16A, WC, RBCM.

¹⁴⁹ See for example Austin Zapp, Woodstock to Alan Kenny, Vancouver, April 5, 1965, File Hay Division, Box 9A, WC, RBCM.

¹⁵⁰ John Bene, to Bazett Hutcheson, Woodstock, September 14, 1965, File Hay Division, Box 9A, WC, RBCM. Wood was a friend of United States Plywood's former president S. Antoville, which made his replacement as Weldwood's English agent a particularly sensitive issue.

¹⁵¹ John Bene, Vancouver to Pit Desjardins, Vancouver and Roly Ellison, Vancouver, July 21, 1964, File Memos 1964, Box 7A, WC, RBCM.

attitude a major problem when it tried to sell its production through United States Plywood's American warehouse system. Even proof that Hay supplied a better product at a cheaper price brought little result:

... there is no doubt, however, that ... U. S. P. branches have been discouraged from buying from us. We are not sure exactly what form this discouragement has taken. In some cases we believe they have been told that they must buy from certain sources of supply. In other cases perhaps the instructions have been a bit softer but still they have turned away from us.¹⁵³

Protests from John Bene and even support from senior officers in New York failed to improve the situation. Several northern branches did purchase small quantities from Hay, but Weldwood was effectively stopped from competing in the United States.¹⁵⁴

The United States Plywood acquisition did provide Bene with opportunities for company growth that he sought. Certainly New York limited Weldwood in some ways. Certain profit levels were expected, but during these first years New York seemed somewhat forgiving and willingly looked at expanding the Canadian subsidiary.¹⁵⁵ Bene used this support to reshape Weldwood from a plywood producer into an integrated forest products firm.

His first major step was the acquisition of Canadian Collieries Resources which owned three sawmills and a plywood plant; Flavelle Cedar in Port Moody, Timberland and Tply in Surrey, and Empire Lumber at Squamish. Canadian Collieries, in its current configuration, had been assembled by Vancouver financiers Norman Whittall and Fred

¹⁵² John Bene to M. Pollack, New York, July 6, 1965, File M. Pollack, Box 10A, WC, RBCM.

¹⁵³ Bazett Hutcheson, Woodstock to John Bene, November 12, 1965, File Hay Div., Hutchinson B., Box 9A, WC, RBCM.

¹⁵⁴ John Bene to Bazett Hutcheson, Woodstock, April 28, 1965; John Bene to Gene Brewer, New York, April 28, 1965; Bazett Hutcheson, Woodstock to John Bene, September 9, 1965; Bazett Hutcheson, Woodstock to John Bene September 15, 1965, File Hay Div., Hutchinson B., Box 9A, WC, RBCM.

¹⁵⁵ John Bene to Gene Brewer, New York, June 6, 1962, File Gene Brewer 1962, Box 7A. WC. RBCM.

Brown to resell at a profit.¹⁵⁶ Weldwood was mainly interested in the company's extensive timber resources, especially the valuable Squamish Tree Farm Licence. As John Bene pointed out to United States Plywood, "the acquisition of C.C. represents an unique opportunity to control about nine billion feet of timber on the British Columbia Coast...."¹⁵⁷ In fact, as Bene also argued, only two other options existed for Weldwood to gain control of sizeable blocks of timber not already committed to a plywood operation in coastal British Columbia: Esquimalt and Nanaimo Railway timber and East Asiatic timber, neither of which was very satisfactory for Weldwood.¹⁵⁸ Bene reinforced his views to New York: "I am still of the opinion that control of Canadian Collieries is one of the few remaining avenues towards establishment of a very large timber supply base on the Canadian West Coast...."¹⁵⁹ He also argued that the company must move quickly or Weldwood would face a timber shortage.

The timing was also right for Weldwood. It had just put its own house in order and Canadian Collieries had just secured the valuable Squamish timber. Bene was also well aware that Norman Whittall, Canadian Collieries president, wanted to sell the company: "Knowing Norman Whittall for something of a promoter, I guess it wouldn't be too surprising if he were to parlay the Forest License into a profitable sale."¹⁶⁰ Canadian Collieries had also just absorbed a plywood distributor, Alwest, and acquiring Collieries would eliminate an annoying competitor.¹⁶¹

¹⁵⁶ Canadian Collieries Resources was a long established firm in British Columbia and was originally a coal mining company.

¹⁵⁷ John Bene to Gene Brewer, New York, June 24, 1963, File Gene Brewer 1962 Box 7B, WC, RBCM.

¹⁵⁸ John Bene to Gene Brewer, New York, October 17, 1962 File Gene Brewer 1962, Box 7B, WC, RBCM. East Asiatic was a timber company on the west coast of Vancouver Island. See Chapter V for a fuller discussion of the timber issue.

¹⁵⁹ John Bene to Gene Brewer, New York, October 15, 1963, File CC Empire, Box 8A, WC, RBCM.

¹⁶⁰ John Bene to Gene Brewer, New York, April 10, 1962 File Brewer 1962, Box 7B, WC, RBCM.

¹⁶¹ John Bene to Gene Brewer, New York, October 17, 1962 File Gene Brewer 1962, Box 7B, WC, RBCM.

Canadian Collieries had for sale almost since the day that Whittall first acquired the timber and sawmills. The company had been approached time and again but the Collieries shareholders always wanted too much money. United States Plywood had examined Canadian Collieries prior to purchasing Western Plywood. The large United States forest giant, Georgia Pacific, had also just completed a survey in hopes of purchasing Canadian Collieries, but again the deal fell through because the company was overpriced.¹⁶² Georgia Pacific found, for example, that "in many cases, Canadian Collieries Resources Limited estimates of timber volumes are grossly overstated."¹⁶³ Fortunately for Weldwood, several Collieries directors, such as Frank McMahon, founder of West Coast Transmission, were fed up and wanted a deal.¹⁶⁴ McMahon also was a close friend of S. Antoville, the former president of United States Plywood.¹⁶⁵ Perhaps most importantly, however, was that "the directors and shareholders have become less greedy and more anxious to avoid the publicity of another abortive negotiation."¹⁶⁶

The acquisition went smoothly, following a thorough financial investigation and a review of various reports, including the early investigations of United States Plywood and Georgia Pacific. In 1964 Weldwood made a share offer which was expected to provide a satisfactory return. After some negotiation, Canadian Collieries accepted the offer of \$13.00 per share. Previously the shares had traded on the market at \$11.66.¹⁶⁷ In

¹⁶² S. W. Antoville to John Bene, October 22, 1962, File Antoville April 1961 -April 1967, Box 7A. Gene Brewer, New York to John Bene, July 29, 1963 File Brewer 1962, Box 7B, WC, RBCM.

¹⁶³ Study, Canadian Collieries Resources by Carl Sahlin, September 14, 1963, Box 22B, WC, RBCM.

¹⁶⁴ Gene Brewer, New York to John Bene, October 10, 1962, File Brewer 1962, Box 7B, WC, RBCM.

¹⁶⁵ S. W. Antoville, New York to John Bene, October 22, 1962, S. W. Antoville to John Bene, March 26, 1964, File Antoville April 1961-April 1967, Box 7A, WC, RBCM.

¹⁶⁶ John Bene to Gene Brewer, New York, February 24, 1964, File Gene Brewer 1964-1966, Box 7B, WC, RBCM.

¹⁶⁷ Proposed Purchase, Canadian Collieries, April 1964, Box 22B, WC, RBCM.

all, somewhat over \$21,000,000 was paid for the company.¹⁶⁸ In the first eighteen months, profits were only slightly more than one-half of those projected. One bright spot was the plywood plant which earned about \$100,000 more than anticipated.¹⁶⁹ The large profits probably saved the plant as Weldwood proposed to close the Canadian Collieries plywood plant and consolidate plywood operations at Kent Avenue. The acquisition brought to Weldwood three sawmills, a veneer plant, a plywood plant, a small wholesale operation, and extensive timber resources scattered throughout the lower coastal region. Weldwood, for the first time, became a major lumber producer.

Over the next several years, Weldwood sought and examined a variety of expansion opportunities, including the Kicking Horse Forest Products' veneer operation at Golden and the Savona Timber Company's plywood plant at Savona. Cyprus' offered to sell the Golden plant to Weldwood as a result of personal connections between Gene Brewer and the president of Cyprus Mines, the American parent of Kicking Horse Forest Products. Bene rejected the opportunity, arguing Golden was too far outside the company's operating area, but the lack of an adequate timber supply was of even greater concern..¹⁷⁰ He rejected buying the Savona plywood mill also because of an inadequate timber supply.

Weldwood, however, continued to seek new opportunities for expansion. In 1965 it purchased a troubled hardboard plant at Sprague, Manitoba belonging to Columbia Forest Products. In that same year Weldwood also started construction of a new plywood plant in Ontario at Longlac. Kimberley Clark, who operated extensive timber holdings in

¹⁶⁸ Collieries Purchase Price Projection, February 8, 1966, Box 22B, WC, RBCM.

¹⁶⁹ *Ibid.*

¹⁷⁰ John Bene to Gene Brewer, New York, December 29, 1961, John Bene to Gene Brewer, New York, March 30, 1962, File Gene Brewer March 1961-August 1962, Box 7A, WC, RBCM.

the Longlac area, sought a value-added alternative for their better logs. After investigating a variety of options, Weldwood reached an agreement with Kimberley Clark to construct a plywood plant to manufacture poplar panels. Demand for poplar panels was growing quickly in Ontario and Quebec during the late 1960s. The company's market survey was cautious but suggested that "there appears no doubt that the market can absorb additional 4 x 4 sheathing production...."¹⁷¹ Production was increased at the Longlac plant after the closure of Weldwood's Edmonton plywood plant.¹⁷²

John Bene's final initiative, before retirement, added pulp production to the Weldwood portfolio of holdings, finally transforming Weldwood into a fully-integrated forest products company. He apparently had little difficulty convincing his American overseers that such a project was worth the cost. Bene wanted to build at Quesnel, as he had intended to prior to the acquisition of Western Plywood by Weldwood. In order to convince New York, however, he also examined the pros and cons of other sites including Manitoba, Vancouver Island, and Squamish. Lengthy negotiations were conducted with the English paper firm of Price Brothers and a partnership agreement was drawn up. The British Columbia government gave its approval and then the project was cancelled by United States Plywood. In 1967 United States Plywood merged with Champion Paper, one of the United States' larger pulp and paper manufacturers. Champion management believed that the arrangement with Price could lead to a serious conflict of interest and forced the cancellation of the agreement. The British Columbia Government considered this a breach of contract and suggested cancellation of harvesting

¹⁷¹ Alan Kenny to Pit Desjardins, August 21, 1964, Poplar Mill Feasibility Study, Box 5A, WC, RBCM. 4x4 sheathing is a plywood panel 4 feet by 4 feet. The smaller panels were easier to manufacture from the smaller Ontario timber than the standard 4x8 panels made in British Columbia.

rights. Gene Brewer flew from New York and reassured the provincial government that while the Price agreement had to be cancelled Weldwood was committed to building a pulp mill at Quesnel. Champion “brought new concepts and a new point of view...” and soon obtained an agreement with Daishowa of Japan. The Weldwood-Daishowa subsidiary Cariboo Pulp and Paper was in production by 1969 at Quesnel.¹⁷³ This was the last major project in which John Bene had major involvement. He was then appointed to the American company’s board of directors and retired from local management.

John Bene, while president of Weldwood of Canada, achieved two important goals and fixed company strategy during the 1970s and 1980s. First, his acquisition of Canadian Collieries Resources Limited secured the coastal timber base the company needed. Secondly, he initiated construction of a pulp mill which launched a program of full integration. Throughout the 1970s and 1980s Weldwood maintained the goals established by Bene. It expanded its Cariboo operations, shifted into waferboard production and acquired a large sawmill and pulp mill complex in Alberta, all of which John Bene would have approved. Only the severe economic recession of the 1990s caused Weldwood to refocus its strategy and eliminate its British Columbia coastal and Ontario operations. Despite these strategy changes, Weldwood remains Canada’s largest producer of softwood plywood. The long history of plywood as a central aspect of the company’s survival strategy nurtured its reluctance to relinquish its leading role in softwood plywood production.

¹⁷² P. Davey, “Poplar Plywood Study,” October 11, 1967 and Roger Montgomery to Management Committee, December 19, 1967, File Longlac Feasibility Study Plant Extension, Box 4A, WC, RBCM.

¹⁷³ Meeting with Williston - Desjardins to Roger Montgomery, March 26, 1968, Box 6A, WC, RBCM. Now Daishowa-Marubeni International Ltd.

Analysis of Weldwood internal networks suggests that plywood production and sales introduced unique attributes within an otherwise typical pattern of forest products wholesale distribution. Plywood manufacturers overcame their external conflicts with wholesalers by creating an internal distribution system, but the creation of the warehouse system did not solve all the companies' problems. New company acquisitions, such as the merger of Weldwood of Canada and Western Plywood, created certain power struggles within the corporate organisation. New York gave John Bene the authority to manage the company, but New York also left George Goodfellow with enough authority to cause Bene difficulty. The result was an organisation sometimes fragmented and certainly fighting internally. The elimination of one of two nearly equal power bases (Goodfellow and Bene) within the company did not eliminate the problem, but did change the tone and lessen the impact of such power struggles. The continued struggle within Weldwood suggests that the problem of conflict between sales and manufacturing branches is inescapable in business organisations structured along branch lines, where sales operate separately from manufacturing.

Each plywood manufacturer had different networks and power relationships, and each responded differently to the varied circumstances of plywood manufacturing and sales. What the shifting of organisation and authority within Weldwood shows is the changing nature of the relationships and the varied ways organisations adapt and respond to internal as well as external environments. The role plywood played within each corporation also varied. Weldwood demonstrates one extreme wherein plywood played a central role in the whole decision making process, while MacMillan Bloedel illustrates, in contrast, a company in which plywood production was one element in a multifaceted

effort to develop as a forest based company. The shift of Weldwood into a multi-product manufacturing base undermined the critical role of plywood and created a new set of corporate perceptions and internal networks and relationships. The company, however, remained committed to plywood production, while MacMillan Bloedel and Canadian Forest Products did not.

This detailed examination of Weldwood highlights the central arguments of this dissertation, especially the relationship between pattern and diversity in business history. Weldwood conformed to the established patterns of the rest of the plywood industry. Like other major producers, Weldwood sought to become a fully integrated forest products manufacturer and it succeeded in this goal. Beneath that general pattern, Weldwood's individual strategy to achieve that goal varied significantly from the other major producers and especially illustrates the various alternatives that businesses can use to achieve the same goals. Analysing this diversity thus becomes the key to understanding industrial evolution. Each of the companies examined in this chapter, both large and small, adopted different strategies for success. Sometimes the differences were minor, sometimes the differences were major, but it is the differences that established the overall pattern of forest resource exploitation for British Columbia. Weldwood presents an excellent opportunity to observe the role of history interacting with a firm's capabilities. John Bene's past experience in hardwood production, for example, was reflected in his production of cottonwood plywood, a situation that only changed when the skills of softwood men became available to him. Bene thus drew on his own experience to further his objectives of growth and industrial integration and used the firm's capabilities to finally achieve success.

The Smaller Companies

The domination of the plywood industry by the big five producers did not prevent a variety of smaller operators from manufacturing and selling plywood. The small producers in many respects illustrate a different business strategy than that used by the bigger producers. Plywood production for the larger producers was a small part of their overall strategy. Plywood for the smaller producers, however, was a significant product and occasionally their only product. The smaller scale of their operations meant that plywood played a large role in their success and failure. The organisation and strategies of the smaller producers, while diverse, had a greater similarity with each other than did those of the five large producers, who each chose a separate approach to achieve success. The small producers, however, still faced a variety of choices and options and each firm adapted these options to accommodate their individual perception of a successful business strategy. Table III-19 lists most of the smaller producers along with their disposition. The few plywood producers not included in table III-19 were speciality firms with limited production.

Table III-19: Small Plywood Manufacturers, 1945-1999.

Operation	Location	Start	Disposition
J. R. Murray	Vancouver	1945	Acquired by Western Plywood 1955, closed in 1978.
Beaty Laminated	Vancouver	1947	Acquired by Crown Zellerbach, closed in 1968.
Victoria Plywood	Victoria	1951	Sold to Pacific Forest Products, sold to a Co-operative, closed in 1995.
Evans Products	Vancouver	1954	Closed in 1973
King Lumber Company	Savona	1955	Acquired by Evans Products, sold to Ainsworth, operating in 1999.
Simpson Lumber Company	Kelowna	1956	Sold to Crown Zellerbach in 1965, sold to Riverside in 1991, operating in 1999.
Canadian Collieries Resources Limited	Surrey	1956	Purchased by Weldwood in 1964, closed in 1987.
Richmond Plywood	Richmond	1957	Operating in 1999.

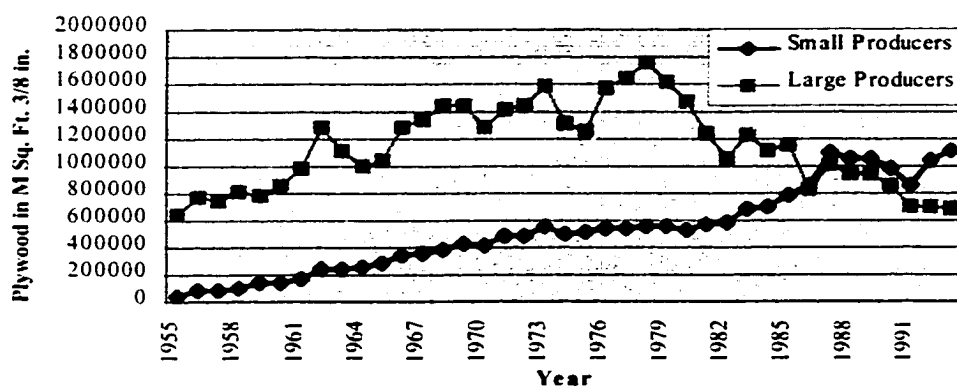
Douglas Plywood	Richmond	1962	Purchased by Cattermole-Trethway in 1963, purchased by British Columbia Forest Products, burned in 1971.
Canim Lake Sawmills	100 Mile House	1965	Purchased by Weldwood, closed in 1984.
Kootenay Forest Products	Nelson	1966	Acquired by Westar, closed in 1982.
Federated Cooperatives	Canoe	1965	Operating in 1999.
Canadian Plywood	Richmond	1967	Purchased by British Columbia Forest Products in 1971, closed in 1991.
Evans Products	Golden	1971	Parent firm bankrupt, purchased by employees, sold 1999 to Louisiana Pacific, operating in 1999.
Balco	Helfly Creek	1971	Purchased by Canadian Forest Products, sold to Tolko in 1987, operating in 1999.
North Central Plywood	Prince George	1972	Purchased by Northwood 1980, operating. In 1999
Alpine	Richmond	1974	Purchased by Tackama, joint ownership Riverside and Slocan, closed in 1998.
International Wood Products	Merritt	1977	Purchased by Balco and closed in 1977.
Tackama	Fort Nelson	1985	Purchased by Slocan, operating in 1999.

The smaller producers sometimes acted in accord with and sometimes in opposition to the larger companies. They ranged from small single plant operations to slightly larger multi-plant companies. Ownership varied and their life span varied. Some, such as the Federated Co-operative plant at Canoe, served a speciality market; others, such as the small plywood plant at Savona, developed speciality products. A few competed directly with the majors, while most used the major producers as their sales agents. The small producers, prior to 1980, played only a minor role in shaping the market place. Their combined production for many years was smaller than that of the any one of the leading producers. The larger companies generally viewed them as a nuisance and disruptive of stable markets.¹⁷⁴ However, the changing economic climate of the 1970s, 1980s, and 1990s gave what were once the small producers an increasingly important role as softwood plywood manufacturers. By 1970 the small producers produced over thirty percent of softwood plywood and in 1985 finally surpassed the

¹⁷⁴ See Chapter III.

larger manufacturers in total production. The small producers were now becoming large integrated forest product firms. It was a transformation of industry in which the older, dominate companies partially gave way to new and aggressive firms, located in the interior instead of on the coast.

Graph III-3: Comparison of Growth and Decline of the Production of the Large Versus Small Producers.¹⁷⁵



The slight influence of the smaller plywood producer does not agree with arguments presently articulated by business historians. Matthew Roth pointed out the importance of small business to the United States economy in general in his study of Platt Brothers. Roth argued that examination of small business reveals that large corporate growth was not the only model of success.¹⁷⁶ In British Columbia the small plywood companies certainly played an important role; it was they who continued to manufacture plywood when several of the larger companies abandoned the industry.¹⁷⁷ The British Columbia plywood industry, however, contradicts the contentions of Scranton and Roth

¹⁷⁵ Production information supplied by the Canadian Plywood Association. Data is missing for many years and has been estimated. See Appendix IV for years in which production is known.

¹⁷⁶ Roth, *Platt Brothers*, 11 and 4.

about the importance of small business in the formative stages of industrial development. The small plywood plants, instead, moved from a subordinate position to one in which they dominated the industry, reversing the trend noted by Scranton and Roth. The interior operations, however, largely evolved from small-scale producers into integrated companies. Ainsworth, for example, owner of the Savona plywood plant, is an integrated forest products corporation.¹⁷⁸

The timing and reasons for the establishment of each new plant varied greatly among the smaller producers. The earliest small producer was John Murray, who was determined to own his own company and left Canadian Western to create Murray Plywood. John Beaty, in a similar fashion, on a management track at MacMillan Bloedel, left to start his own company. Beaty, in fact, established British Columbia's only independent hardwood panel plant, producing hardwood faced plywood with non-native species, such as Mahogany. The small Douglas Plywood operation was organised in 1961 as a result of Western Plywood's 1955 acquisition of Murray Plywood. The Douglas brothers worked for Murray, but found themselves in an unhappy situation following the take-over by Western Plywood. The Ash Street plant (the old Murray plant) declined in importance and rumours abounded that it was to be merged into Western Plywood's Kent Avenue facility.¹⁷⁹ In 1961 they created their own company and began production in 1962.

¹⁷⁷ Roth, *Platt Brothers*, 4.

¹⁷⁸ Ainsworth does not own a pulp mill but processes chips for sale to pulp mills. Ainsworth is a major panel producer but most of their production is orientated strand board, which generates 57 percent of their revenue, while lumber produces 22 percent, and plywood 16 percent. *Annual Report*, 1998, 4.

¹⁷⁹ Ash Street was not actually closed until 1978, but its situation was under continual review.

Table III-20: Small Company Start-Up Reasons.¹⁸⁰

Individuals wanting to own their own firm	Individuals tempted by high returns	Corporate strategy for improved profits
J. R. Murray	Victoria Plywood	Evans Products
Beaty Laminated	Savona Timber Company	Kootenay Forest Products
Canadian Collieries	Simpson Lumber Company	Federated Co-operative
Douglas Plywood	Canim Lake Sawmills	Alpine/Cantree
Richmond Plywood	Balco	Tackama
	North Central Plywood	
	International Wood Products	

Table III-20 charts the known reasons for the start-up of the smaller firms. The table demonstrates, in fact, that, unlike the early formation of many of the firms documented by Scranton and others, the individual's role and especially the role of those connected with the plywood industry played only a small part in initiating new firms. The greatest impetus came from rumours of the large profits made by the large producers. The new plywood plants were usually attached to sawmill facilities already in place. The Simpson Lumber Company in Kelowna, for example, operated a sawmill and manufactured veneer for some years, but following a serious fire rebuilt its plant to include the manufacture plywood. Simpson made this decision on the basis of a growing need in the region for plywood apple bins and constructed them based on a design which the firm developed.

In some instances the profits made by the larger producers induced small operators to follow suit. This was the case for the Jens Brothers at 100 Mile House who started in the fuel business in 1937. The brothers shipped fuel wood to Vancouver from the Lone Butte/100 Mile House area and began sawmilling in 1944. Ten years later the brothers decided plywood might be a good investment and in 1956 they shipped two carloads of logs to MacMillan Bloedel's Vancouver plant for a test run; MacMillan

¹⁸⁰ Company files, History Section, RBCM.

Bloedel was also their lumber sales agent. It took another six years to acquire a large enough timber quota to support the plywood plant and in 1964 they started construction.¹⁸¹ Such was also the case for Newton Cameron in Victoria, who decided a plywood plant would provide the greatest return on his timber limits at Sooke Lake.

Ownership was varied but local owners predominated. Table III-21 lists the companies by the ownership categories of Local (British Columbia), United States, and Other (Saskatchewan and Quebec).

Table III-21: Ownership at Start-up of Small British Columbia Softwood Plywood Plants, 1945-1980.¹⁸²

Local	United States	Other
J. R. Murray	Evans Products	Federated Co-operative
King Lumber Company	Alpine	Kootenay Forest Products
Richmond Plywood		
Canadian Collieries Resources		
Victoria Plywood		
Douglas Plywood		
Canadian Plywood		
Canim Lake Sawmills		
Balco Forest Products		
International Wood Products		
North Central Plywood		
Tackama		

Some of the smaller plywood plants were integrated sawmill-plywood operations and some were independent plywood plants.

¹⁸¹ Interview with Theodore and Rudy Jens, by R. Pinton, 1985, PC, RBCM.

¹⁸² Based on file information, History Section, RBCM. Small means not one of the five largest manufacturers.

**Table III-22: Integrated versus
Non-integrated Small Producers, 1945-1980.¹⁸³**

Operated as a single plant	Partial integration
Richmond Plywood	J. R. Murray
Victoria Plywood	King-Savona
Douglas Plywood	Canadian Collieries Resources
North Central Plywood	Evans Products
Alpine	Canim Lake Sawmills
Canadian Plywood	Balco Forest Products
	International Wood Products
	Tackama
	Kootenay Forest Products
	Federated Co-operative

Survival rate amongst the smaller companies was low, but the survival rate for their plants was much higher than in the dominant firms. However, the question of what this means is more difficult to assess and brings up the question of small versus large within the British Columbia forest industry. A large eastern manufacturer, the Eddy Match Company, owned Kootenay Forest Products, for example, a small British Columbia plywood producer. Eddy originally acquired Kootenay Forest Products in 1958 to assure a match block supply from Nelson and in 1967 expanded into plywood production. In 1968 they attempted to sell the facility to Crestbrook Timber but were stopped by the British Columbia Government who, in 1974, added the plant to British Columbia Cellulose. British Columbia Cellulose operated several pulp mills and sawmills in addition to the Kootenay plywood plant. They closed the plywood plant in 1982, citing timber shortages, but probably the plant closed as part of a reorganisation of British Columbia Cellulose and a belief that plywood was a sunset industry.¹⁸⁴

¹⁸³ File information, History Section, RBCM.

¹⁸⁴ *British Columbia Lumberman*, 42 (March 1958), 88. *British Columbia Lumberman* 50 (September 1966), 50. "Peeler Shortage frustrates KFP" *Hiballer* 29/10 (October 1978) 32. "Kootenay Forest Products

Even though most of the interior plants once operated by the smaller companies remain in operation in 1999, only three plants can be considered as small forest products producers. These are the Federated Co-operative's plant at Canoe, Evans Forest Products' plant at Golden and Richmond Plywood on the coast.¹⁸⁵ The new leaders of British Columbia's forest industry, including Riverside Forest Products of Kelowna, Tolko Industries headquartered at Vernon, and Ainsworth Lumber operating from 100 Mile House, absorbed the remaining plywood plants.

The diversity of companies and a lack of information prevent discussion of each of the smaller operators in detail. In order to provide examples of differing strategies and purposes, Canadian Collieries Resources has been selected as a contrast to Evans Products. Canadian Collieries is an example of a coastal operator that was absorbed by a larger manufacturer, in this instance Weldwood, and eventually closed. Evans illustrates a smaller interior operator.

Canadian Collieries Resources, at the time of its acquisition by Weldwood, was one of British Columbia's oldest operating companies. Robert Dunsmuir originally established it in 1869 as the Union Colliery Company to mine Vancouver Island coal. In 1910 an eastern Canadian financial group acquired its assets and renamed the company Canadian Collieries (Dunsmuir) Limited. In 1921 the company acquired the Western Fuel Company, the successor to the Vancouver Coal and Land Company which was originally established in 1863. This gave the company a near monopoly on coal production from Vancouver Island. The 1910 purchase, however, left the company with

Acts As A Part of B.C. Resources Investment Corporation," IWA Report, n.d, but probably 1977. *Nelson Daily News*, November 19, 1982. 1.

a serious debt load. After it struggled for decades with declining coal revenues, a Vancouver financial group, under Norman Whittall and Fred Brown, bought it in 1948. They closed the mines on Vancouver Island and sought additional investments including a coal mine in Alberta. In 1952 they also acquired an interest in Alberta oil and gas lands, which were subsequently sold for about twelve million dollars.¹⁸⁶ Whittall used this money to invest in the British Columbia forest industry. He purchased two older sawmills, Timberland in Surrey and Flavelle Cedar at Port Moody, both of which had a good supply of timber. Timberland operated a Tree Farm Licence, while the Flavelle company had timber limits at Indian Arm and Harrison Lake. These timber resources were combined with timber still owned from the days of the coal company.

Canadian Collieries expanded by building a plywood plant in Surrey and subsequently acquired several additional companies, including Keeley Lumber in 1961. Keeley operated a sawmill in Vancouver and logged at Squamish. The Squamish Forest Management Licence held by the Keeley Company particularly tempted Weldwood to acquire Canadian Collieries in 1964.¹⁸⁷ There was no doubt that the owners of Canadian Collieries built a company to attract potential purchasers. Norman Whittall and Fred Brown had both reached the age when they wanted to retire, although Whittall maintained his interest and joined the Weldwood board of directors. A variety of companies had investigated Canadian Collieries over the years but as John Bene

¹⁸⁵ Evans was purchased in 1999 by Louisiana Pacific and can no longer be considered a small company, reducing the number to two. Federated Co-operative is a large enterprise but operates few forest industry plants.

¹⁸⁶ Herb McRae, "History of Canadian Collieries Resources," typescript, Files Canadian Collieries, History Section, RBCM.

¹⁸⁷ Tree Farm License No. 38, Squamish Area-Empire Operation, Timber Holdings, Canadian Collieries, Box 6A, WC, RBCM.

observed, the owners had an inflated idea of the company's worth.¹⁸⁸

In 1955 plywood was a very profitable product line for any forest company with the raw material to support it. Certainly in Whittall and Brown's view, such a facility would enhance the sale value of their operation. Harry Lester, assistant to the General Manager, Eastern Division of MacMillan Bloedel, convinced Whittall and Canadian Collieries that a plywood plant was a good idea.¹⁸⁹ Lester had wanted to build a plywood plant for some time and, even though he was on the management track at MacMillan Bloedel, he decided that building and managing the Canadian Collieries operation would be more to his liking.¹⁹⁰

The report Lester prepared convinced Whittall and the Collieries' Board of Directors to proceed. Lester estimated that the plant would cost about \$1,600,000 and return an average profit of over \$500,000 per year. Lester predicted even greater profits when the higher rate of return on logging was included, over \$1,200,000 per year. This figure was slightly reduced in a later report presented on March 5, 1956.¹⁹¹

Canadian Collieries' new plywood plant went into production in December 1956.¹⁹² The company quickly established a cross-Canada network wholesalers to handle their production. Although sales were satisfactory, they were unhappy with their dependence on wholesalers as it appeared "we have too many distributors whom we

¹⁸⁸ Macrae, "History of Canadian Collieries Resources," 10. John Bene to Gene Brewer, New York, February 24, 1964, File Gene Brewer 1964-1966, Box 7A, WC, RBCM.

¹⁸⁹ Harry Lester to Norman Whittall, n. d. but written in 1955, copy in Canadian Collieries files RBCM. Interview with H. Lester, Surrey, R. Griffin, July 1995.

¹⁹⁰ Interview With H. Lester, Surrey, R. Griffin, July 1995; "Personal Statistics, Henry Lester," copy in File Canadian Collieries, History Section, RBCM.

¹⁹¹ H. Lester, "Complete Plywood Plant," (November 1955). H. Lester "Report to the Directors, Canadian Collieries (Dunsmuir) Limited," March 5, 1956, copy in Canadian Collieries Files, History Section, RBCM.

need, but do not need us."¹⁹³ The report recommended establishment of a warehouse distribution system, the appointment of representatives in eastern Canada, and the construction of one warehouse in Ontario. This plan was not implemented and little major change occurred until 1959 when the company took over the financially troubled Prairie distribution network of the Alberta Western Company.¹⁹⁴

The first major change to the plywood plant occurred in 1957 when a second dryer was installed. In 1959 an automatic patch line was also added. A further addition was made to the plant following the acquisition of the Mount Baker Veneer Company, as part of the purchase of the Empire Mills and the Keeley Lumber Company. The Mount Baker veneer plant was adjacent to the Surrey operation and had processed veneer for plywood plants in Washington. Another large customer was Beaty Laminated in Richmond, who used the veneer as core for their hardwood overlays. Almost immediately Lester secured permission to expand the Timberland plywood plant by adding another dryer and a thirty opening hot press with ancillary equipment. This new capacity was just coming on line when Weldwood acquired the firm. Weldwood immediately shut the veneer operation at the Mount Baker plant and shifted it to the Timberland facility. They continued to operate the plant as a full plywood facility until 1981 when it was converted into a hardwood speciality plant. In 1987 Weldwood stopped speciality production and closed the mill.

Table IV-23 shows the profit and production made while the company operated as Canadian Collieries.

¹⁹² H. Lester to N. Whittall, Memo re project, May 18, 1956, Lester to J. Shick, Memo re Project June 4, 1956, Memo to R. Ellison, October 16, 1956, copy in Canadian Collieries Files, History Section, RBCM. These files detail the construction of the plant.

¹⁹³ Annual Report, Tply, March 31, 1958, Box 6A, WC, RBCM.

**Table III-23 Canadian Collieries
Plywood Profits and Production, 1957-1964.¹⁹⁵**

Year End March 31	Profit	Production M 3/8ths	Domestic sales Percentage	Export sales Percentage
1957	-10,348.00	8		
1958	302,097.00	41	93.4	6.6
1959	404,223.00	53	92.3	7.7
1960	663,225.00	48	87.1	12.9
1961	174,239.00	50	91.1	8.9
1962	522,033.00	61	87.3	12.7
1963	1,029,152.00	64	88.6	11.4
1964	1,409,693.00	79	85.1	14.9

The plant, while a great success, did not fully meet Henry Lester's expectations for profit. This did not undermine the company's interest in plywood and we only need to compare lumber versus plywood recovery, as shown in Table III-24, to see why. In only one year between 1957 and 1963 did lumber come close to providing as great a return as plywood.

**Table III-24: Plywood
Versus Lumber Recovery.¹⁹⁶**

YEAR	Recovery per M logs – plywood, in dollars	Recovery per M logs – lumber, in dollars
1957	19.36	7.12
1958	20.12	4.52
1959	36.82	14.57
1960	9.31	9.27
1961	12.76	10.52
1962	19.64	16.04
1963	25.62	13.00

So great was Canadian Collieries' interest in plywood that Henry Lester in 1961 examined the feasibility of building a plywood plant for the company at Dawson

¹⁹⁴ Annual Report, Timber Plywood Division, Sales Report 3, WC, RBCM.

¹⁹⁵ Annual Reports, 1957-1963, Canadian Collieries, Timberland Division, Box 6A, WC, RBCM.

¹⁹⁶ Annual Reports, 1957-1963, Canadian Collieries Timberland Division, Box 6A, WC, RBCM.

Creek.¹⁹⁷ The addition of the Empire/Mount Baker operation, the new log supply, and better market conditions in the early 1960s increased profits.

The second operation examined, Evans Products, was a very different type of company. Evans Products began operation in Michigan in 1915, manufacturing equipment to prevent damage when moving goods by rail or truck. It entered the forest industry in 1929 with the acquisition of a company manufacturing yellow cedar battery separators in Coos Bay, Oregon. In 1931 the battery separator business was expanded with the purchase of a plant in Vancouver. The company grew in the United States into a major forest industry enterprise and, in 1943, undertook steps to improve its position in British Columbia by building a sawmill. After the sawmill was destroyed by fire in 1948, Evans Products built a plywood plant and closed the battery separator operation. The new plant went into production in May 1955 and sold its product through Weldwood in eastern Canada. This agreement lasted until after Weldwood and Western Plywood were merged and John Bene, on expiry of the agreement in 1964, decided the company no longer needed Evan's production. Evans Products subsequently sold through independent wholesalers. The Vancouver plant was one of the earliest victims of reduced availability of Douglas fir peelers and closed in 1973 as a result, despite the acquisition of a Tree Farm License on Knight Inlet in 1954.¹⁹⁸

In the mid-1960s, Evans, partly in anticipation of the closure of its Vancouver operation, sought new opportunities in the British Columbia interior.¹⁹⁹ Between 1968 and 1970 they acquired the Savona Timber Company, the Commercial Lumber

¹⁹⁷ H. Lester to R. Ellison, "Plywood Dawson Creek" June 7, 1961, copy in File Canadian Collieries, History Section, RBCM.

¹⁹⁸ The license was sold to British Columbia Forest Products in 1967 and probably was one source of funds for the interior acquisitions.

Company, Kicking Horse Forest Products, and Selkirk Spruce Mills. This added to the company a sawmill at Lillooet, a sawmill and a veneer and plywood plant at Savona, a sawmill at Donald, and a sawmill and veneer plant at Golden.

The Savona plywood plant was the third softwood plywood plant to operate in the British Columbia interior. It began production in 1955 shortly prior to the S. M. Simpson Lumber Company's plant in Kelowna. The King Lumber Company, owner of the Savona plant, was a long established but small sawmill firm in coastal British Columbia. In 1950 they sold their North Vancouver sawmill to the Fullerton Lumber Company, which added a veneer plant. The King brothers moved into the interior and purchased a small sawmill at Savona. Subsequently, they made a number of other acquisitions, built-up a substantial log quota, and built a plywood plant. The plant was a cold press operation, and immediately lost money. Success depended on King finding the right managers who could make a profit despite opposition from the major producers. Don King hired the Harris brothers, who quickly put the plant back into production and secured several customers.²⁰⁰ The Harrises' demonstrated that plywood plants could succeed in defiance of the major producers. In 1965, however, with the plant profitable, they converted it to a hot process plant and conformed to the standards established by the majors.²⁰¹ The plant ran into further difficulties not long after its acquisition by Evans in 1969.

Savona was the smallest producer in BC and it could not compete with the larger sheathing operations. As a result Evans Products converted it to speciality production.

¹⁹⁹ "Vancouver Plywood Division," typescript in files of Evans Forest Products, Golden.

²⁰⁰ Martin Keeley, "To Herb Harris, Innovations in Plywood are Second Nature," *British Columbia Lumberman* 57 (November 1973), 103. Interview with Herb Harris, Kamloops, R. Griffin, October 1996.

²⁰¹ "Plywood Output Boosted with Hot Press Conversion," *British Columbia Lumberman* 49 (May

By 1977 only pour form was manufactured, an overlaid plywood for concrete work.²⁰² In 1980 Evans Products also installed a veneer plant in association with its Lillooet sawmill. The veneer was trucked to Savona. The Ainsworth Lumber Company acquired the Lillooet and Savona operations in 1986 with the break-up of Evans Products. The plant produced speciality plywood in 1999.

Evans Products' second interior plywood plant at Golden was built in association with a veneer plant they purchased in 1969. Cyprus Mines of Los Angeles, who had timber holdings in Oregon, California and Alabama, bought the Golden Lumber Company in 1960 and created Kicking Horse Forest Products.²⁰³ In 1964 the company installed a veneer plant with the intention of building a plywood plant.²⁰⁴ They purchased equipment to build a plywood plant in Calgary, but it never went into production.²⁰⁵ Cyprus also hoped to construct a pulp mill, but this project also fell through and soon the company was seeking to sell their investment.²⁰⁶

Evans immediately invested considerable funds in expanding its new acquisitions, and completed the Golden plywood plant in 1971. The company also expanded its wholesale operations in 1973 by constructing warehouses in Vancouver, Toronto and Calgary, but the Toronto and Calgary operations were closed in 1975. Financial difficulties in the American parent company resulted in the Canadian operations being offered for sale in 1986. In 1987 the Evans Company's eastern managers purchased the company. The western operations at Lillooet and Savona were sold to the Ainsworth

1965), 74.

²⁰² "Evans Expands Plywood Capacity at Savona," *Hiballer* 28/11(November 1976). 33-34. "High Quality Product Byword at Savona Mill," *British Columbia Lumberman* 61 (January 1977) 20-21.

²⁰³ *British Columbia Lumberman* 44 (March 1960), 78.

²⁰⁴ *British Columbia Lumberman* 48 (November 1964), 66.

²⁰⁵ *Canadian Forest Industries* 49 (December 1965), 49.

²⁰⁶ "First Phase Ready for Total Integration," *British Columbia Lumberman* 50 (September 1966), 60-61.

Lumber Company. The new Evans Forest Products Company continued the operations at Golden and Donald. In 1993 the company acquired the Eagle River Sawmill at Malakwa. Severe timber shortages and other problems in 1996 forced the company to restructure and close the sawmill at Donald. The company remained in production at Golden, but was sold to Louisiana Pacific in 1999.²⁰⁷

Canadian Collieries and Evans illustrate the up and downs of the smaller producers. Typically, many of the plants were absorbed by the larger producers and then closed or resold. The only exceptions were the two co-operatives (Richmond and Federated). Evans Products, a subsidiary of a larger American company, met a fate similar to Crown Zellerbach. Community support enabled Evans Forest Products to survive as an independent operation until 1999 when it was acquired by Louisiana Pacific. British Columbia's forest industry is clearly not supportive of small-firm survival, especially independent plywood producers. The survival of the interior plants was clearly not because they were small but was due to factors of location and resource allocation.²⁰⁸

Conclusion

The role of plywood and the strategy each British Columbia plywood producer adopted was different. Differences in style, structure, and ownership among the largest five plywood producers outweigh any similarities that their common search for growth and profit suggest should be the case. Differences are equally evident amongst the smaller producers. Even when a suggestion of similarity is apparent, major differences also exist. John Murray and John Beaty, for example, both left large companies to form

²⁰⁷ Interview with Len Pettman, President, Evans Forest Products, Gold, R. Griffin, September 30, 1998.

their own firms because they wanted to run their own operations. John Murray, however, was an established employee of Canadian Western, while John Beaty was a relatively recent employee of the MacMillan Bloedel, but on a management track. Murray purchased an older veneer plant and sawmill, and began producing Douglas fir plywood, while Beaty built a plant and faced his plywood with exotic woods such as mahogany. The place of diversity within industrial organisation presents a challenge for historians. Certain activities seem to interact to homogenise industrial organisation and industrial organisations displays certain patterns, however, a wide range of diversity in conduct and organisation also exists.

Neo-classical economics has been described as the economics of choice, however, it is choice driven by market demands.²⁰⁹ This chapter suggests options outside the realm of neo-classical economics existed. Company organisation and strategy demonstrate characteristics more compatible with evolutionary economics. First, the large size of the firms that dominated plywood sales and the comparatively limited role of plywood in their organisations meant that the plywood sales were adjusted to meet each firms' expectations and not the reverse. Secondly, the smaller firms played a limited role in determining how plywood was sold and marketed. Instead, the firms adapted themselves to an existing situation. Thirdly, the diversity of organisation and strategy, presented in this chapter, suggests that forces outside the market played a large role in shaping British Columbia's plywood industry.

The five largest producers of Douglas fir plywood entered plywood production differently and exited or stayed in production for different reasons. Some of the larger

²⁰⁸ See Chapter V.

²⁰⁹ Donald N. McCloskey, "The Economics of Choice," in Rawski et al, *Economics and the Historian*, 122.

producers appear to have greater similarities, at various times, with the smaller plywood producers than they do with each other. Their only strong commonality was a desire for growth and profit. The small plywood manufacturers were as diverse as the major producers, but two strong factors outside the small producers' desire for growth and profit influenced their entry choice. First, several owners were plywood men who wanted to run their own firms: John Murray, John Beaty, Harry Lester, and the Douglas brothers. Secondly, most of the remaining firms began plywood production because they saw the high profits made by the larger operators.

In the case of the larger integrated producers, two began as plywood producers (Weldwood and Canadian Forest Products), one as a lumber producer (British Columbia Forest Products), one as a lumber producer that was subsequently acquired by a pulp and paper company (Crown Zellerbach), and one as a marketing firm (MacMillan Bloedel). A similar range exists in the smaller producers as well, with some companies remaining solely plywood producers, others started as plywood producers and added sawmills, and others started as sawmillers and added plywood facilities.

Just as the mode of entry varied, so did the timing of entry. The pattern that emerges is that all the major producers, before the 1980s, were coastal companies that began production by 1952. The majority of the smaller companies followed, beginning production during the late-1950s to mid-1960s. All the major producers, except Weldwood and Crown Zellerbach, focused production on the coast and disappeared. Nearly all smaller plants that began production in the interior survived.²¹⁰ An industry organised so that major producers were in almost total control of coastal production was disastrous for coastal production. The varied organisation of the interior, with a mixture

of sizes and ownership, was more successful. The only coastal survivor, Richmond Plywood, was organised in a distinctive manner as a co-operative, while in the interior most plants survived and continue to operate in 1999. The only large operator to survive was Weldwood which had a large interior production base.

American manufacturers during the 1930s demonstrated that the future of plywood was in softwood panel production. In British Columbia only one major producer (British Columbia Forest Products) began production in expectation of high returns from Douglas fir panels. Table III-25 compares the reason for entry among the five largest producers.

Table III-25: The Big Five, Reasons for entry.

Company	Date	Reason
Canadian Western Lumber Company	1913	Enter the high value door market. Expansion into panel sales came much later.
MacMillan Bloedel	1935	Initially interest in doors but saw potential for panels prior to opening. Middle management interest senior management.
Canadian Forest Products	1938	Capital to invest and convinced by personal contact that plywood production was a good investment. Initially produced hardwood plywood but converted to softwood panel production.
Western Plywood	1945	Initiated Pacific Veneer, after a disagreement secured capital to start own facility. Came from a plywood background, started producing hardwood plywood.
British Columbia Forest Products	1952	Close relationship with H. R. MacMillan Export Company. Saw potential of high value returns.

The smaller producers, however, except J. R. Murray and Beaty Laminated, all entered production to produce softwood plywood panels.

The number of plants, the location and timing of each plant and the product mix of each large producer was also markedly different. Table III-26 lists the plants each company operated along with the date of start-up or acquisition by that company.

²¹⁰ Further discussion of this situation is in chapter V.

Table III-26: Major Producer Plants.

MacMillan Bloedel	Canadian Forest Products	Weldwood	British Columbia Forest Products	Crown Zellerbach
Vancouver* , plywood (1935)	New Westminster , plywood (1938)	Vancouver, Kent Ave. plywood (1945)	Victoria , plywood (1952)	Fraser Mills , plywood (1913)
Port Alberni , plywood (1942)	New Westminster , hardboard, (1948)	Quesnel , plywood (1951)	Delta , plywood (1972)	Richmond (Beaty) , hardwood plywood (1962)
Vancouver, K3 particle board (1962)	Alberta (Grand Prairie). plywood (1955)	Vancouver, Ash St. plywood (1955)	Minnesota, waferboard (1977)	Kelowna , plywood (1965)
Saskatchewan, waferboard (1965)	Heffley Creek , plywood (1973)	Alberta (Edmonton), plywood (1956)		Armstrong , plywood (1974)
Ontario , hardwood plywood (1973)		Ontario, Woodstock, hardwood plywood (1961)		
Alabama, plywood (1968)		Surrey , plywood (1964)		
Alabama, Waferboard (1974)		Ontario (Longlac), hardwood plywood (1965)		
Ontario, particle board (1975)		Manitoba (Sprague), hardboard (1965)		
Ontario, hardboard (1979)		Canim Lake , plywood (1970)		
Ontario, Hardboard (1984)		Ontario (Longlac), waferboard (1974)		
Mexico, Waferboard (1994)		Williams Lake , plywood 1978)		
Saskatchewan, plywood (1995)		Alberta (Slave Lake), waferboard (1979)		
Ontario, waferboard (1996)				
New Brunswick, Waferboard (1996)				
Pennsylvania, Waferboard (1996)				

*British Columbia locations are in bold.

The large companies all became integrated forest industry firms, which greatly reduced the importance of plywood to the companies' product strategies. Several also entered non-plywood panel production, which again reduced the importance of plywood production. Even Weldwood, which continued to produce softwood plywood, produced non-plywood panels and greatly decreased its reliance on revenue from plywood panel products.

The economic changes of the 1990s resulted in the restructuring of resource control. This is very much in keeping with Langlois and Richards contention that older firms tend to give way to newer firms when a new economic environment emerges.²¹¹ The decreasing value of plywood as a viable profit centre resulted in the virtual elimination of the coastal industry, no matter the fond memories such plants held for each company.²¹² Table III-27 demonstrates the changing circumstances of the major company's plants and suggests the restructuring that occurred within the forest industry as a whole.

**Table III-27: Large Company Plywood Plants
in British Columbia.**

Company	Coast	Disposition	Interior	Disposition
MacMillan Bloedel	2	Closed	None	
Crown Zellerbach	1	Sold to Fletcher Challenge – closed	2	Sold to Fletcher Challenge Sold to Riverside Forest Products
Canfor	1	Closed	1	Sold to Tolko
Weldwood	3	2 closed 1 sold to Co-operative – closed	3	1 closed 2 operating
B.C. Forest Products	2	1 closed 1 sold to Fletcher Challenge – closed	None	
TOTAL	9	All closed	6	5 operating

²¹¹ Langlois and Robertson, *Firms, Markets and Economic Change*, 143-144.

²¹² Tom Buell, former chairman of Weldwood, indicated he agreed to the closure of their Kent Avenue plant with great reluctance due its historic connection to the company. Interview, Tom Buell, Vancouver, R. Griffin, July 1994.

The strategic choices made by each large company dictated its role in the plywood industry and each company's long term success as a plywood producer. Two companies (MacMillan Bloedel and British Columbia Forest Products) did not operate plywood plants in the interior and therefore lost all association with British Columbia's plywood industry when coastal production went into decline. Three of the major producers operated interior plants and two withdrew from plywood production. The third interior producer, Weldwood, remained in the plywood industry as the province's largest single producer.

These producers made a strategic decision regarding interior production, and their participation in British Columbia's forest industry. Senior management in MacMillan Bloedel changed H. R. MacMillan's strategy and eliminated expansion into British Columbia's interior as an option. British Columbia Forest Products entered interior production at too late a stage to engage in new plywood production. Canadian Forest Products exited interior plywood production as part of a divestment of subsidiary firms to reduce debt. Fletcher Challenge sold its two plants as part of a new strategy to focus production on pulp and paper. Weldwood remained a plywood producer and expanded its plywood production.

Baum and Korn's study of interfirm rivalry argues that entry and exit are usually key strategies in competition, but this was not the case in British Columbia's plywood industry.²¹³ Larger plywood manufacturers did not acquire smaller operators to eliminate them as competition, but rather to increase capacity or to acquire timber limits. British

²¹³ Joel A.C. Baum and Helaine J. Korn, "Competitive Dynamics of Interfirm Rivalry," *Academy of Management Journal* 39 (January 1996), 257.

Columbia Forest Products, for example, purchased Douglas Plywood to secure timber resources and plywood production only continued because of the established customer list.

Weldwood was the most aggressive purchaser of plywood plants, and generally acquired the plants because of their associated timber resources. Crown Zellerbach wanted to use its acquisition of Simpson to expand its operations into the province's interior. The associated plywood plant was a bonus but not the deciding criteria. The smaller operators invariably succumbed to the lures offered by the majors and sold their facilities unless protected in some fashion. Richmond Plywood and Federated Co-operative were apparently protected as co-operatives, while the large American corporation that backed Evans Products initially had no interest in selling. Table III-28 illustrates the plywood plant acquisition programs of each major producer.

Table III-28: Plant Acquisition by Major Producers.

Company	Plant	Mode	Year
B. C. Forest Products	Victoria	Build	1952
B. C. Forest Products	Canadian Plywood/ Douglas Plywood	Purchase	1971
B. C. Forest Products	Delta	Build	1972
Canfor	New West	Build	1938
Canfor	Grand Prairie	Purchase	1955
Canfor	Balco	Purchase	1973
Crown Zellerbach	Fraser Mills	Build	1913
Crown Zellerbach	Kelowna	Purchase	1965
Crown Zellerbach	Armstrong	Build	1971
MacMillan Bloedel	Vancouver	Build	1935
MacMillan Bloedel	Alberni	Build	1942
Weldwood	Kent	Build	1945
Weldwood	Quesnel	Build	1951
Weldwood	Ash Street	Purchase	1955
Weldwood	Edmonton	Build	1956
Weldwood	T-Ply	Purchase	1964
Weldwood	100 mile	Purchase	1968
Weldwood	Merrill Wagner	Build	1978

The above comparison reinforces the role of diversity within the British Columbia

plywood industry. What seems to be clear is that pressures within each organisation acted to give each firm its own identity and to seek the strategy that its managers saw as most advantageous for its future. The strategy chosen related primarily to the past capabilities of the firm and the perception of the future that these capabilities suggested to the managers within the firm. This was in keeping with approach adopted by evolutionary economics and Richard Langlois, in particular. The path to success is defined by how each company's decision-makers perceived that path and thereby effected different strategies based on the available resources. In the case of British Columbia's plywood industry, the departure of the two largest companies created opportunities for smaller producers to remain in business and increased the diversity of production within the industry. British Columbia's plywood industry moved away from oligarchy to middle and small firm control of the industry. Chapter IV will examine the role markets played in shaping plywood's place in British Columbia's plywood industry.

Chapter IV **Selling Plywood, World War II and Beyond**

Introduction

This chapter will examine how British Columbia plywood manufacturers created demand for Douglas fir plywood, and subsequently withdrew from that market. Over the fifty-year period, they increased production, resorted to production of other softwood species, competed with each other, and eventually failed within the specialised market they had constructed. They made Canada the largest per capita consumer of plywood in the world, but their failure to respond appropriately to new conditions caused the virtual disappearance of the coastal plywood industry. The major producers were aware of the potential of alternative products, but only MacMillan Bloedel, of all the major producers, placed greater emphasis on non-plywood panel production. Company executives and managers believed that domestic plywood sales were declining, and that export sales could not absorb existing production, so they dismantled the coastal plywood industry. The continued success of interior production suggests that profit and loss were only part of the reason for their decision to close the coastal mills.

The critical role of the market and marketing in business activity is widely recognised by economists, historians, and business managers.¹ Daniel F. Spulber recently

¹ In this dissertation the word market or markets is used in the traditional economic sense, as defined by the Encyclopedia Britannica (online version): “a means by which the exchange of goods and services takes place as a result of buyers and sellers being in contact with one another,

asked his readers what does a business do and his answer was that "they make markets."²

Gerald Fitzhugh has argued that "marketing ... proved of central importance to the success of Rowntree."³ In his study of the triumph of diesel locomotive manufacturer EMD over Alco, Albert Churella suggested that marketing was a key factor.⁴

Understanding the process of selling and distributing plywood is crucial if we are to understand the organisation of British Columbia plywood manufacturing.

The market is frequently the mechanism used by scholars to understand business interactions. The perfect competition model in neo-classical economics, which eliminated all the imponderables such as entry barriers and created an ideal world against which to judge the real world, placed price and competition as the central point of departure. Neo-classical models have a certain acumen, but as Stephen Littlechild has noted, these models have little to do with the real world of business, even as a

either directly or through mediating agents or institutions." < <http://search.eb.com/cgi-bin/dictionary?va=Market> > (October 1999). I would supplement this definition with that provided by Marc Tool: "modern markets are comprised of a large number of usually complex correlated patterns of behaviour, all of which, though typically habitual, are initially creations of people as discretionary agents." Marc R. Tool, "Contributions to an Institutional Theory of Price Determination," in Giovanni Dosi, Christopher Freeman, Richard R. Nelson, Gerald Silverberg, and Luc Soete, *Technical Change and Economic Theory* (New York: St. Martin's Press Inc., 1988), 22. Marketing is used in the business sense of product promotion, although most marketing texts broaden this term to include a variety of activities relating to the sale of a product. See Eric N. Berkiwitz, et al, *Marketing*, second Canadian edition (Toronto: Irwin, 1995), 8.

² Daniel F. Spulber, *The Market Makers: How Leading Companies Are Creating and Winning Markets* (New York: McGraw-Hill, 1998), 65.

³ Robert Fitzgerald, *Rowntree & the Marketing Revolution, 1862-1969* (Cambridge: Cambridge University Press, 1995), 5.

⁴ Albert Churella, "Corporate Culture and Marketing in the American Railroad Locomotive Industry: American Locomotive and Electro-Motive Respond to Dieselization," *Business History Review* 69 (Summer 1995), 191-229.

counterfoil.⁵ Alfred Chandler Jr. also made the market central to his discussion about business evolution. He documented the rise of the visible hand of the manager, which replaced the invisible hand of market forces.⁶ The creation of a hierarchical business organisation, which abrogated to itself the activities formerly handled by “price and market mechanisms,” was the defining characteristic of twentieth century business enterprise for Chandler.⁷

Chandler’s separation of the visible and invisible hand is adroit, but market manipulation was not confined to Chandler’s new managerial hierarchy. Businessmen grasped this prerogative centuries earlier. This study, instead, approaches its topic from the point of view of market diversity articulated by Philip Scranton and evolutionary economics.⁸ Scranton, as do many company and industry histories, has demonstrated the diversity of industrial structures and markets, but has retained a sense of pattern over time. The problems faced by James Watt in regard to the sale of high-pressure steam engines in the early nineteenth century, for example, were not significantly different from

⁵Stephen C. Littlechild, “Three Types of Market Process,” in Richard N. Langlois. ed., *Economics as a Process: Essays in the New Institutional Economics* (Cambridge: Cambridge University Press, 1986), 29. See also Paul R. Ferguson and Glenys J. Ferguson, *Industrial Economics: Issues and Perspectives*, second edition (Houndmills: The MacMillan Press, 1994), 4, where the authors note the now generally recognised failure of neo-classical structure-conduct-performance theory to provide an adequate explanation of business activity. Stephen Martin, *Advanced Industrial Economics* (Oxford: Blackwell, 1993), 296-325 presents a more positive view of perfect competition and contestable market theory.

⁶ Chandler, *Visible Hand*, 1.

⁷ Chandler, *Visible Hand*, 7 and 287-314, 364.

⁸ Philip Scranton is in many ways a response to Chandler.

the problems faced by British Columbia plywood manufacturers in the 1940s and 1950s.⁹

Watt had to convince buyers that his product was more efficient and economical than those it already used.

Even a brief review of business history suggests that individual firms respond to similar market conditions in a variety of ways, but they also sometimes respond in similar ways. The response of a given firm however, often appears random and frequently was not systematic, as an examination of both Weldwood's and MacMillan Bloedel's warehouse acquisition programs will illustrate. The historical experience of the firm and the resource environment in which a firm operates shape the strategy used to sell its product, and may even determine the product sold. A review of British Columbia plywood markets demonstrates that such variation is evident not only between decades and centuries but also between firms that seem to operate within the same environment.

Douglas Fir Dominates

The British Columbia Plywood industry changed between 1930 and 1950. The earlier cottonwood producers disappeared. The introduction of hot pressed waterproof plywood, at the Canadian Western Lumber Company in 1936 and then at the MacMillan Bloedel plant in 1938, was the turning point in British Columbia's softwood plywood

⁹ G. N. von Tunzelmann, *Steam Power and British Industrialization to 1860* (Oxford: Clarendon Press, 1978), for example, see pages 81, 88, 118, and 119.

production. Douglas fir plywood shifted from door manufacture and panel products emerged as the key item. The large increase in American plywood production and sales demonstrated plywood's potential as a marketable product, and MacMillan Bloedel and the Canadian Western Lumber Company seized the opportunity.

The American plywood industry, prior to World War II, undertook a campaign to introduce softwood plywood throughout the United States. More than twenty thousand building supply dealers across the country stocked plywood panels by the end of 1939.¹⁰ Even in the United States, however, continued promotion was required to convince consumers of the advantages of plywood. In Canada, this effort had barely begun when World War II broke out. New uses and new markets opened for British Columbia softwood plywood and by 1949 Douglas Fir plywood was touted as the "New Western Colossus."¹¹

**Table IV-1: British Columbia Plywood
Plants Operating, 1930-1950.¹²**

Plant	Owner	Product	Status as of 1950
Nelson	B.C. Veneer	Cottonwood - birch	Closed in 1945.
New Westminster	Canadian Western	Softwood	Production starts in 1913 – operating in 1950.
B.C. Plywoods, Vancouver	H. R. MacMillan Export Co.	Softwood	Production starts in 1935 – operating in 1950.
Alberni Plywood	H. R. MacMillan	Softwood	Production starts in 1942 –

¹⁰ *The Timberman* 60 (December 1939), 19.

¹¹ "Plywood–New Western Colossus," *Western Business and Industry* 24/6 (June 1950), 145.

¹² Information taken from various directories and reference files, History Section, RBCM.

	Export Co.		operating in 1950.
New Westminster	Pacific Veneer	Birch – converts to softwood in 1944.	Production starts in 1938 – operating in 1950.
Vancouver	Western Plywood	Cottonwood-converts gradually to softwood	Production starts in 1945 – operating in 1950.
Vancouver	J. R. Murray	Softwood	Begins production 1946 – operating in 1950.

The managers of British Columbia Plywoods Limited, as H. R. MacMillan called his new company, were aggressive and very determined to build a significant market for plywood. They hired an advertising company and immediately committed funds to promote their product. Canadian Western's earlier efforts to promote plywood had conveyed the same message that MacMillan Bloedel presented. Canadian Western, however, advertised to plywood sellers not plywood buyers, whereas MacMillan Bloedel directed their advertising campaign at the potential users of plywood - homeowners, builders, and architects.

MacMillan Bloedel's senior manager, Blake Ballentine, based the company's advertising campaign on brand name recognition and he hoped to use it to undermine Canadian Western's tenuous plywood market. He chose Firply as the product name, but shortly after he changed the name to Sylvaply because of objections from an American export organisation who were already using the Firply name.¹³ Ballentine's initial decision to seek brand name recognition is not surprising considering that Canadian Western, their only British Columbia competitor, marketed their plywood under the brand

¹³ White interview, n. d., PC, RBCM.

name Weatherply. The advertising company, J. J. Gibbons Limited of Vancouver, prepared promotional literature and undertook a mailing campaign. Name recognition continued as one of the three central advertising objectives. The other objectives were demonstrating the range of new uses for plywood and urging the consumer to seek more information.¹⁴ The company, on the advice of J. J. Gibbons, targeted selected newspapers and magazines, especially in Ontario and on the Prairies. Convincing builders, however, was no easy task despite demonstrations of plywood's advantages. One of MacMillan Bloedel's salesmen wrote: "Several of the other contractors are starting to use Sylvaply but in a very cautious manner. It is hard plugging Al but I get great satisfaction from that plugging."¹⁵

**Table IV-2: Advertisements Placed by
MacMillan Bloedel in 1940.¹⁶**

Periodical	# of Ads	Newspaper	# of Ads
<i>Family Herald & Weekly Star</i>	14	<i>Montreal La Presse</i>	52
<i>Free Press & Prairie Farmer</i>	14	<i>Montreal Star</i>	52
<i>Country Guide</i>	8	<i>Toronto Star</i>	52
<i>Bulletins Des Agricola</i>	14	<i>Toronto Globe</i>	52
<i>Maritime Farmer and Co-operative Dairyman</i>	14	<i>Vancouver Province</i>	52
		<i>Vancouver Sun</i>	52

¹⁴ "The 1940 Plan of Merchandising and Advertising for Sylvaply Products, Revised March 15, 1940." File 72-70, MacMillan Bloedel Collection (Hereafter MB), University of British Columbia Library, Special Collections (Hereafter UBCSC).

¹⁵ G. Burns to A. Johansson, July 18, 1939, File 73-59, MB, UBCSC.

¹⁶ "The 1940 Plan of Merchandising and Advertising for Sylvaply Products, Revised March 15, 1940." File 72-70, MB, UBCSC.

MacMillan Bloedel also introduced a new distribution method to the industry in 1938, which became the standard for the larger plywood producers during the post-World War II period.¹⁷ It established company-owned wholesale warehouses at strategic locations and used them to promote plywood to the retailers and larger contractors. The company warehouses gave MacMillan Bloedel more control over sales than heretofore enjoyed by a Canadian forest products company.¹⁸

Retail selling was not new to British Columbia's forest industry, but direct wholesale distribution was unusual. Canadian Western operated a string of retail yards across the Prairies in which they sold their lumber and plywood directly to the consumer.¹⁹ The company also sold through independent wholesalers in eastern Canada. MacMillan Bloedel's move into selling plywood through company-owned, centrally located, wholesale warehouses, in direct competition with the established independent wholesalers, was a new departure and one the company effectively used to fight its competition. MacMillan Bloedel considered warehouses at a very early stage in its distribution strategy. By 1938, less than three years after production start-up, MacMillan

¹⁷ Chandler and others (Churella and Tedlow, for example) also suggests that control over distribution was a critical element in the success of mass production and distribution. Chandler, *Visible Hand*, 485.

¹⁸ A complete discussion of the warehouses distribution network appears on pages 191-202.

¹⁹ Lumber manufacturers using their own retail outlets to distribute their production were common. See John N. Vogel, *Great Lakes Lumber on the Great Plains: The Laird, Norton Lumber Company in South Dakota* (Iowa City: University of Iowa Press, 1992).

Bloedel had warehouses in several Prairie cities.²⁰ In 1939, the company moved into Ontario with warehouses at Toronto and subsequently in Hamilton and London. Optimism swept the company about the warehouse system. One MacMillan Bloedel manager wrote: "Now that we are in our own warehouse (at Toronto), and it is operating smoothly, I feel that we are at last on a basis under which real progress will be made in the service end of our business...."²¹

MacMillan Bloedel felt justified in operating these warehouses, and in 1941 established branches in Quebec and Winnipeg. The company's senior managers believed that the independent wholesalers had attempted to hold the company captive, especially in Ontario.²² Plywood Supply, an independent wholesaler, for example, apparently forged fake discounts onto invoices in an effort to induce MacMillan Bloedel to lower its plywood prices.²³ When MacMillan Bloedel enquired, Canadian Western claimed they had never offered such low prices and would investigate. MacMillan Bloedel's Vancouver office instructed its Toronto agent to buy some of these carloads through "good friends" to see if plywood could be purchased at the reduced price, but apparently nothing came of this attempt.²⁴ Several Quebec wholesalers who had supported MacMillan Bloedel's first sales efforts in 1935 were very disturbed by the company

²⁰ Toronto Warehouse, File 73-59 MB, UBCSC. The start dates of these warehouses was extremely close and, while some sources indicate Toronto as the first centre, others suggest the Prairie warehouses opened first.

²¹ AL Johansson to E.B. Ballentine, April 16, 1939, File 73-59, MB, UBCSC.

²² E.B. Ballentine to V.B. Moore, February 26, 1940, File 73-59, MB, UBCSC.

establishing a warehouse in Quebec. MacMillan Bloedel's managers replied that their major Quebec wholesaler "has thrown its weight around at times and in late 1937 forced us to make hasty price concessions on the threat of US (United States) importations."²⁵ Such actions reinforced the MacMillan Bloedel organisation's view that a company-owned warehouse network was an essential part of its sales program and by 1944 the company decided to sell most of its production through its own warehouse system. Head office wrote to their chief field agent: "it is our desire to eliminate this condition [selling plywood through a number of wholesalers and by direct mill sales] and market everything possible through the medium of our own organisation and offices...."²⁶ This decision shaped the future of plywood sales in Canada by dictating the strategy adopted by four of the five largest British Columbia plywood producers in the years following World War II.²⁷

MacMillan Bloedel's decision to sell plywood through its own warehouse system was only one strategy the company could have adopted. Manufacturers frequently faced similar situations and made a variety of choices in their approach to wholesale distribution. There are many precedents for a company owned warehouse system, but

²³ V.B. Moore to E.B. Ballentine, February 18, 1940, File 73-59, MB, UBCSC.

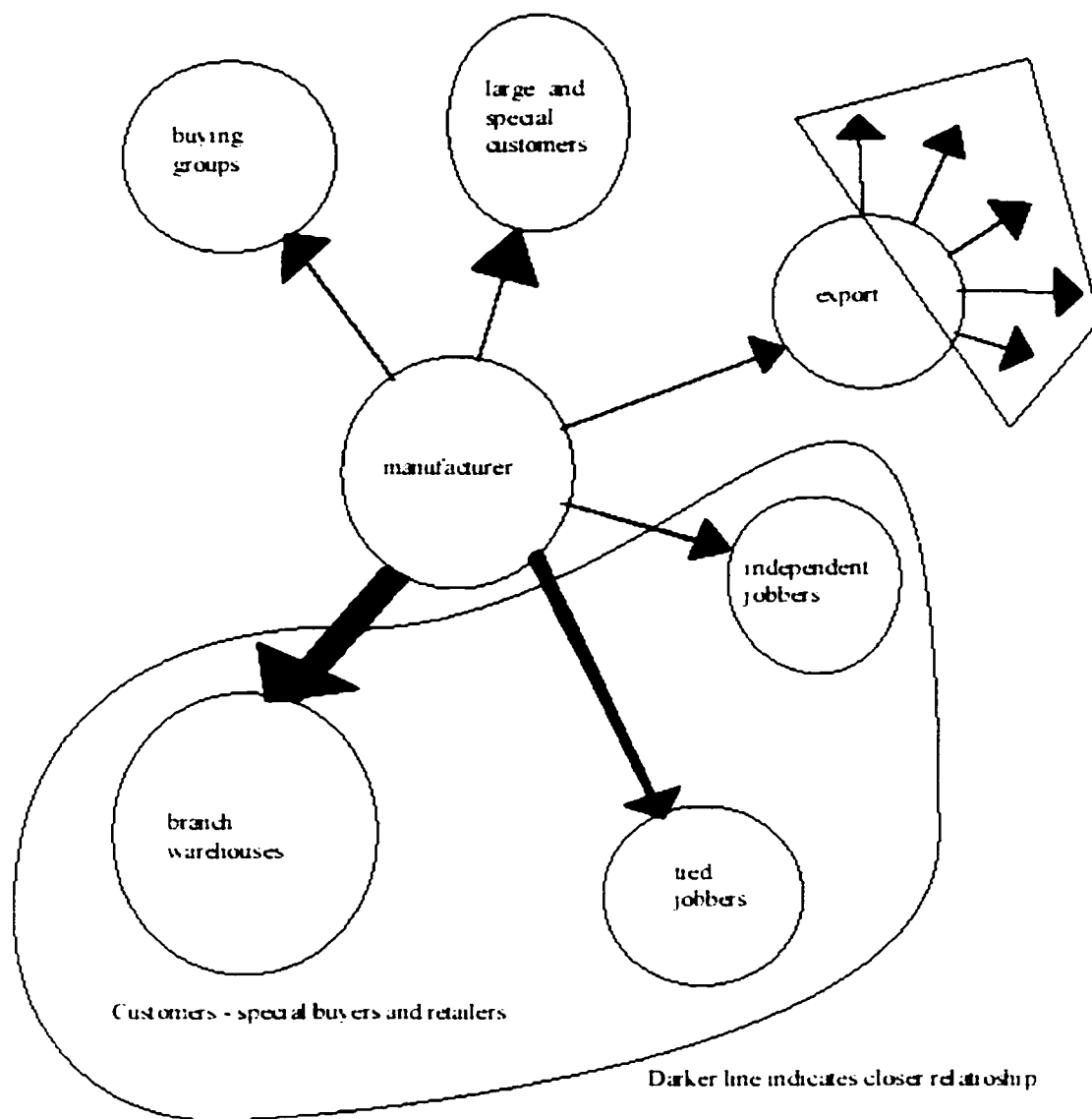
²⁴ E.B. Ballentine to V.B. Moore, Toronto, April 30, 1940, File 73-59, MB, UBCSC.

²⁵ Memo to E.B. Ballentine (n.d. 1940?). File 74-16, MB, UBCSC.

²⁶ Leon R. Scott, Vancouver to E.R. Moorehouse Winnipeg, August 1, 1944, File 61-3 MB, UBCSC.

²⁷ British Columbia Forest Products sold through MacMillan, the remaining three companies were Canadian Western (Crown Zellerbach), Pacific Veneer (Canadian Forest Products), and Western Plywood (Weldwood).

Diagram IV-1: Movement of Plywood from Manufacturer to Wholesaler and Special Customers.



other firms faced with similar competition did not create their own wholesale network.²⁸

The plywood manufacturers did not initiate manufacturer-owned warehousing to provide a support service, but to control competition. Providing extra services only became a competitive practice during the later 1950s and the 1960s, when company warehouses began to offer a multitude of products to building-supply retailers.

That decision-makers in MacMillan Bloedel moved into plywood wholesaling is not surprising given firm's origins as a seller rather than a producer of forest products. Production facilities were acquired to assure a steady supply of lumber and plywood for the company's wholesale activities. The managers of the plywood sector all entered production from the selling end of MacMillan Bloedel's operations and thus their desire to control the distribution of plywood becomes understandable.²⁹ The rapidity with

²⁸ Phillip Scranton notes instances of conflict between manufacturer and wholesaler in the jewellery industry where, for example, the bad times of the 1880s resulted in the wholesalers manipulating the manufacturers against each other. The manufacturers in this instance did not create their own wholesale network to solve these problems, Scranton, 110. Alfred Chandler notes, however, that some companies did establish their own wholesale organisations. He cites I. M. Singer as an example and argues that the company established a system of warehouse distribution to deal with specialised requirements within the industry, Chandler, *Visible Hand*, 302- 312. This was probably the case for John Deere, who established central agencies starting in the late 1860s. John Deere tied strategically located branches into a system of closely regulated joint-ownerships, Wayne G. Broehl, jr., *John Deere's Company: A History of Deere and Company and its Times* (New York: Doubleday & Co., 1984), 177 and 181. Richard Tedlow, in his study of mass marketing, argued that Sears flourished because the company took complete control of the distribution process and eliminated the middleman, Richard S. Tedlow, *New and Improved: The Story of Mass Marketing in America* (Boston: Harvard Business School Press, 1990, 1996), 269. The Johnson Company's formula of company-owned distributors, in the 1880s, is probably closer to that used by the plywood manufacturers. The Johnson Company, however, like the Singer Company, wanted to provide extra services, such as specialised information and repairs to equipment, Michael Massouh, "Technological and Managerial Innovation: The Johnson Company, 1883-1898," *Business History Review* L/1 (Spring 1976), 52.

²⁹ Notes of Tom White interview with Joe and Al Johansson, n. d.. PC, RBCM.

which MacMillan Bloedel's senior managers established their own wholesale organisation clearly suggests that this was where they wanted to be active, regardless of other alternatives. These managers must also have been aware of the competitive chaos that existed in other industrial spheres. For example, "great waste and extravagance" in British Columbia's system of independent coal distributors was widely reported during a Royal Commission investigation in the mid-1930s.³⁰ Once MacMillan Bloedel demonstrated the relative efficiency and market influence offered by company-owned wholesale distribution, other large producers had to follow suit.

World War II not only improved the British Columbia plywood industry situation, but was also part of the environment that shaped post-war policy. During World War II the demand for plywood was high. The federal government controlled price and production but guaranteed a satisfactory profit. The war effort channelled much of British Columbia's plywood production to end uses in Great Britain. MacMillan Bloedel and Canadian Western sent Douglas fir plywood overseas for construction work and the British Columbia Veneer plant at Nelson and the newly built Pacific Veneer (Canadian Forest Products) plant in New Westminster peeled birch and made plywood for aircraft construction. Canadian Forest Products reported in 1943 that between one half and two-thirds of its production went to England.³¹ The Canadian market, the expected post-war

³⁰ M. A. MacDonald, *Report of the Commissioner relating to the Coal Industry*, Vol. II, *Coal and Petroleum Products Commission* (Victoria: King's Printer, 1937), 62.

³¹ John Bene to Norman Wright, May 25, 1943, Leary File Box 9B, WC, RBCM.

mainstay, remained largely underdeveloped. Plywood was classified as an essential product and virtually all production went to meet war demand. In January 1945 sixty percent of all British Columbia plywood production went to the United Kingdom, five percent to other Dominions, with only thirty-five percent allocated to Canada. All of the Canadian thirty-five percent went to buyers with priority, as designated by the Federal Timber Control Office, and little remained for non-priority buyers.³²

Surprisingly, the war convinced MacMillan Bloedel's managers to concentrate post-war sales in the Canadian market. The company's long success in lumber exports and the large plywood market created in Britain by war requirements did not influence the company's managers. Blake Ballentine, the head of MacMillan Bloedel's plywood operations, was not protesting the war effort, which had his full support, nor did MacMillan Bloedel have any choice in whom it sold plywood to, but it convinced Ballentine that domestic sales were critical. He wanted to limit what he saw as the capriciousness of foreign governments.³³ In the early part of the war, for example, he considered the problems, caused by the British government forcing ship owners to carry only essential war goods, and German military action which delayed and destroyed shipping, as the type of actions reliance on domestic markets would avoid. The War, in Ballentine's view, also prevented the company from meeting the demand in the growing

³² "B. C. Plywood Still Reserved for War," *Western Business & Industry* 19/1 (January 1945), 48.

³³ E.B. Ballentine Vancouver to J.E. Green, Montreal, February 6, 1940 74-16. E. B. Ballentine, Vancouver, to J.J. Gibbons LTD, Vancouver, January 23, 1942. File 73-43, MB, UBCSC.

Canadian plywood market, as early as 1944 retailers complained to MacMillan Bloedel about the lack of plywood.³⁴

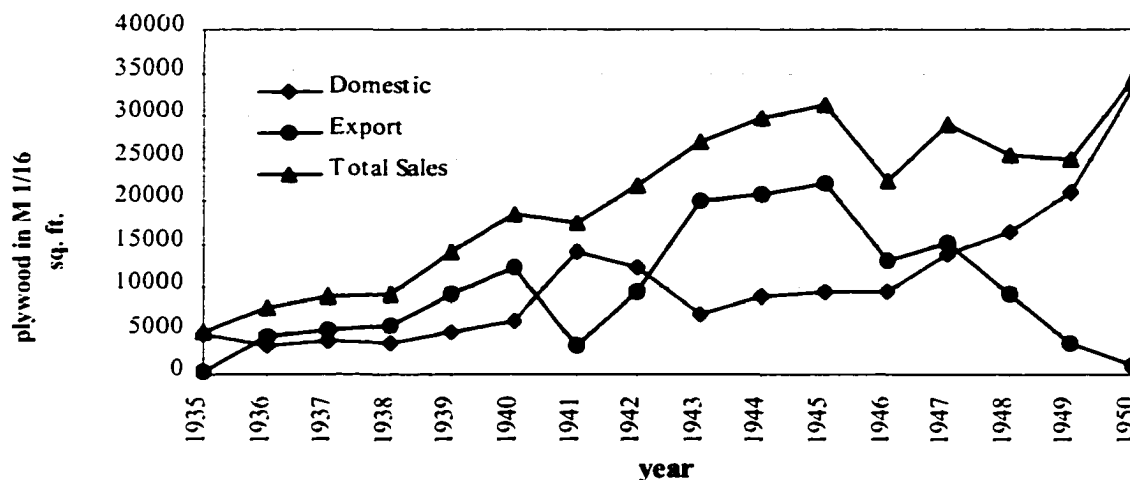
The cessation of hostilities in 1945 resulted in a modest decline in plywood exports, but in 1948 exports to the United Kingdom sharply declined as a result of the severe financial crisis in Britain. Only then, did domestic sales finally surpass export sales, despite a shortage of building materials in post-war Canada. A further rapid decline in export sales in 1949 virtually ended the export trade for several years. The shift from export to dependence on domestic sales had relatively little impact on British Columbia's plywood industry. Domestic retailers were demanding increased quantities, and a slight drop in total sales and production in 1948 is the only statistical evidence that the shift even occurred. Total sales of British Columbia plywood immediately rose again in 1949.

Graphs IV-1, 2 and 3 show the change created by World War II and the transformation of the plywood market after the War. The most complete series are the sales and production information of the Canadian Western Lumber Company between 1935 and 1950. Graph IV-1 demonstrates the impact of World War II: the gradual growth of pre-war demand, the increased demand at the beginning of the war, the drop due to shipping problems in 1941, and the subsequent export growth once the shipping

³⁴ J. A. Johnson, Report on Tour of Eastern Canada, January 12 to February 10, 1945, File 61-12, MB, UBCSC.

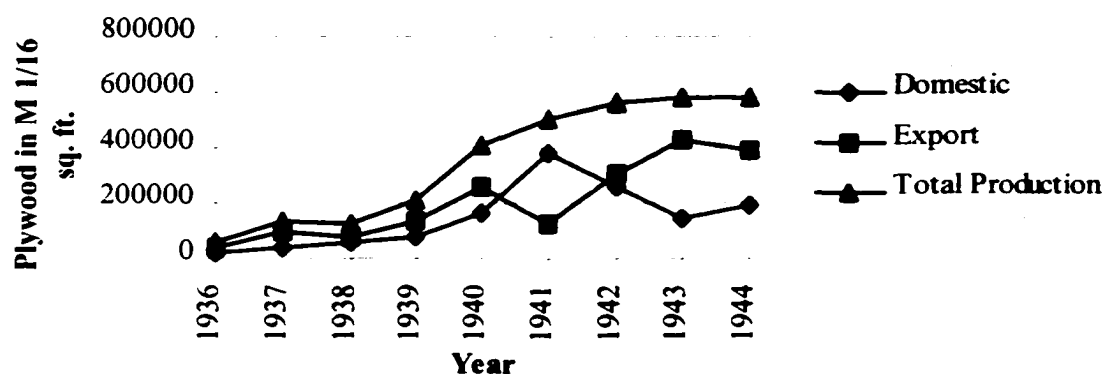
problems were resolved. A decline in export sales began in 1945 for Canadian Western and exports rapidly fell in 1948. An additional point stands out in Graph IV-1; the Canadian Western Lumber Company exported more plywood between 1936 and 1938 than they sold domestically. This is also true for MacMillan Bloedel (see Graph IV-2). The increased exports associated with World War II were not a change in sales strategy, although they had little choice but to sell to designated customers during World War II.

Graph IV-1: The Canadian Western Lumber Company's Total, Domestic, and Export Sales, 1935-1950.³⁵



³⁵ Canadian Western Lumber Company, Annual Reports, 1935-1950, Port Moody Historical Society. Domestic means within Canada, export means outside Canada sales, primarily to the England. Canadian Western's door plywood production is not included.

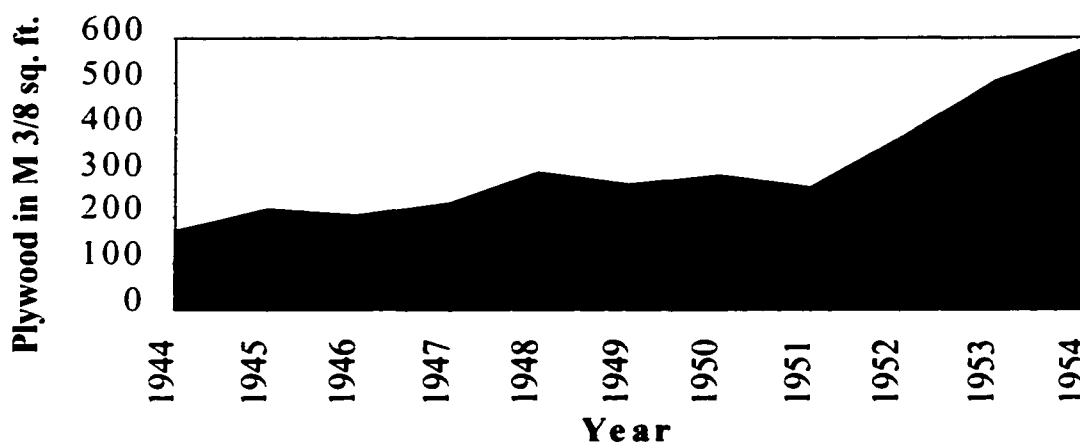
**Graph VI-2: MacMillan Bloedel's
Sales and Production, 1936-1944.³⁶**



The sales figures for MacMillan Bloedel are less complete, but for those years that information is available, a nearly identical pattern exists. MacMillan Bloedel also built a completely new plywood plant during the war. It was one of the very few British Columbia companies able to undertake such a task. Approval was given by the Federal Government because of the increased demand for plywood for war needs. The new capacity placed the company in an excellent position to take advantage of the post-war domestic demand.

³⁶ Production, File 72-53, MB, UBCSC.

**Graph IV-3: British Columbia Plywood Production,
1944 to 1954.³⁷**



MacMillan Bloedel's wartime activities contributed directly to the ease of the post-war transition from export to domestic markets. In a far reaching decision, MacMillan Bloedel expanded its pre-war advertising program and highlighted new uses for plywood to potential post-war consumers. The advantages of plywood over other products for home and builder use were pointed out and it was shown how plywood had contributed to the war effort. In 1940 the company used magazine advertising to provide

³⁷ F. L. C. Reed and Associates Limited, *Selected Forest Industry Statistics of British Columbia* (Victoria: British Columbia Forest Service, 1973), 79.

"the Canadian public ... a source of complete information on the uses, applications and flexibility of all Sylvaply products."³⁸ In 1942 the company decided that

to retain interest in plywood already developed by our company a series of advertisements could be issued, reviewing the development of Plywood such as improved glues new manufacturing methods etc.³⁹

MacMillan Bloedel successfully carried out their objective, with advertisements in *MacLeans*, *Chatelaine*, and *Canadian Home Journal* and a variety of builders' magazines.⁴⁰ The company anticipated dependence on Canada as the most important market following the war and directed its advertising campaign into creating sales capable of absorbing its plywood production.

Domestic Markets in the 1950s and 1960s

British Columbia's plywood industry experienced great change and growth during the 1950s and 1960s. Market highs and lows, conflict and disarray, were all part of these decades. Two of the larger producers, Western Plywood and Canadian Western, were acquired by large American forest product firms. Other firms appeared and disappeared but at no time before or since was plywood similarly unchallenged in the marketplace.

³⁸"The 1940 Plan of Merchandising and Advertising for Sylvaply Products," revised March 15, 1940, MB, UBCSC.

³⁹ Minutes, Advertising, January 13, 1942, File 73/43, MB, UBCSC.

**Table IV-3: British Columbia Plywood Producers,
1950 to 1969.⁴¹**

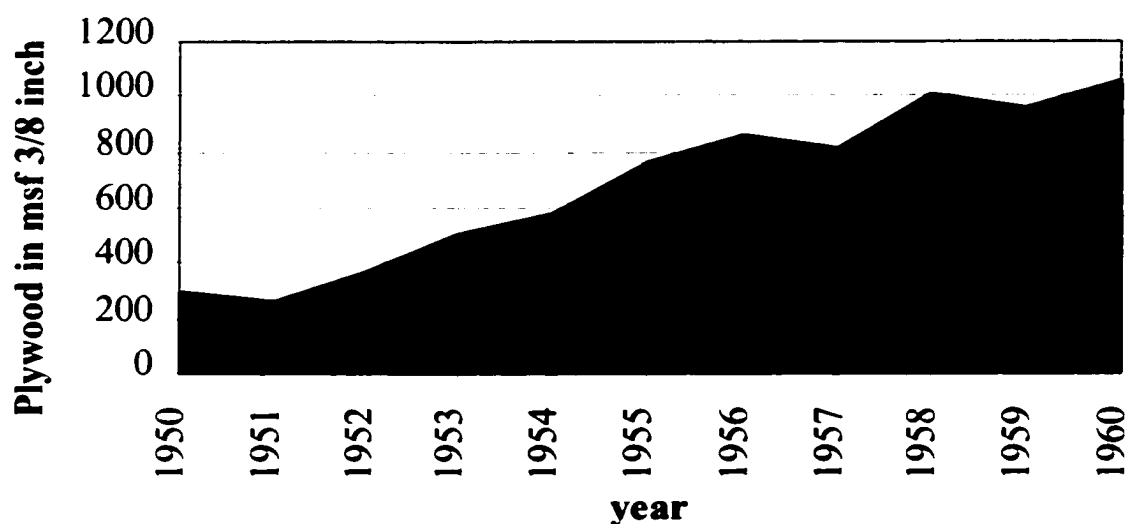
Plant	Owner	Location	Start
Fraser Mills	Crown Zellerbach	Vancouver	1913
Vancouver Plywood	MacMillan Bloedel	Vancouver	1935
Pacific Veneer	Canadian Forest Products	Vancouver	1938
Alberni Plywood	MacMillan Bloedel	Alberni	1942
Kent Avenue	Western Plywood	Vancouver	1945
Ash Street	Western Plywood	Vancouver	1946
Cariboo Plywood	Western Plywood	Quesnel	1951
Victoria	B.C. Forest Products	Victoria	1952
Victoria	Victoria Plywood Ltd.	Victoria	1955
Savona	King Lumber Co.	Savona	1955
Richmond Plywood	Richmond Plywood	Vancouver	1956
T-Ply	Canadian Collieries Resources	Vancouver	1956
Vancouver	Evans Products	Vancouver	1956
Simpson	S.M. Simpson	Kelowna	1956
Douglas Plywood	Douglas Plywood	Vancouver	1961
Canim Lake	Canim Lake Lumber	Canim Lake	1965
Federated Co-operative	Federated Co-operative	Canoe	1966
Kootenay	Kootenay Forest Products	Nelson	1967

New plants and production increases in existing plants meant greater amounts of plywood needed to be sold. The advertising campaigns of the newly-formed Plywood Manufacturers Association and MacMillan Bloedel convinced consumers to buy more plywood. Graph III-4 illustrates the growth in production between 1950 and 1960. Production increases sometimes exceeded demand, but the relentless activity to sell plywood meant that the plants generally remained very profitable.

⁴⁰ Minutes, Advertising, January 13, 1942, File 73/43, MB, UBCSC

⁴¹ Table is compiled from a variety of sources including directories, reference files at the RBCM and periodicals. Vancouver in this table refers to Greater Vancouver which includes, New Westminster,

**Graph IV-4: British Columbia Plywood Production,
1950 to 1960.⁴²**



The formation of the Plywood Manufacturers Association of British Columbia (PMABC) in 1950 had far-reaching and positive consequences for the plywood industry.⁴³ Initially the organisation was formed to establish standards and obtain certification but it quickly moved into general product promotion. The PMABC was not in a position to reduce competition, but it did act to homogenise both the industry and the marketplace. W. E. Burns, manager of Canadian Forest Products' plywood plant, held

Richmond, Coquitlam and Surrey.

⁴² Reed and Associates Limited, *Selected Forest Industry Statistics*, 79.

⁴³ Industry associations are well documented throughout the literature. See Scranton, 93, 211, for example. British Columbia's forest industry was also well acquainted with association activities, British Columbia

the first meeting with Geoff Tullidge of Western Plywood and John Murray of Murray Limited to discuss the problem of securing acceptance for plywood in building codes.⁴⁴ MacMillan Bloedel had made representations to the City of Vancouver and sent John Ramsay along with J. McCutcheon, who had presented MacMillan Bloedel's case for inclusion of plywood in local building codes, to the second meeting.⁴⁵ The PMABC was to be administered by the manufacturers through their representatives on the PMABC's board of directors. Hired staff carried out the PMABC's activities. All the large manufacturers quickly joined the new association and set about establishing the priorities that formed the basis for its activities over the next decade.

The PMABC first needed to establish standard grading rules and nomenclature. The allowance of plywood within various building codes, especially at the national level and then at the local level, followed. J. B. Armstrong, a professional engineer, was hired to carry out the requisite steps. The creation of plywood standards was imperative and the PMABC was the only body capable of such a task. The PMABC also determined the criteria to be applied by industry to ensure quality control and became the accepted policing agent for maintaining softwood plywood standards.

Despite the fierce competition, the producers generally followed the PMABC's standards. The PMABC proved its credibility by frequent plant visits, exchanges of

Logger's Association and the British Columbia Lumber Association.

⁴⁴ Minutes, January 6, 1950, Box 73, Plywood Manufacturers Association of B.C., Council of Forest Industries (hereafter COFI), UBCSC.

production statistics, and the provision of technical and other information. It implemented laboratory testing for quality in 1961 and threatened to remove the right to use its trademark from any firm that did not meet the industry standard. So successful was the PMABC in establishing its authority that it attained and enforced somewhat arbitrary edicts. The PMABC's decision, for example, that only hot pressed plywood would be included in national building standards generally eliminated cold pressed plywood from Canada.⁴⁶ MacMillan Bloedel had been pursuing this goal since 1944 and it urged all British Columbia suppliers to "adopt a similar policy forcing resin bonded gluing on the Canadian market."⁴⁷ The PMABC pushed the superiority of hot pressed plywood throughout the 1950s.⁴⁸ When Kingply at Savona, in the late 1950s and early 1960s, produced cold pressed softwood plywood, the rest of the industry ostracised the firm until it came into line. The general industry attitude is illustrated by Weldwood's head office's response to their Eastern sales organisation's request to sell Kingply product: "we feel that we should have Kingply change to hot pressed waterproof plywood manufacture or put them out of business."⁴⁹ Kingply continued to produce cold pressed plywood for several years, but as soon as it could afford to do so, it converted to hot press

⁴⁵ Minutes, January 7, 1950, *Ibid.*

⁴⁶ See for example Canadian Standards Association, *CSA Standard 0121-1961, Douglas Fir Plywood*. Cold pressed plywood cannot meet this standard.

⁴⁷ Minutes Sales Meeting, November 16, 1944, Box 61-19. MB, UBCSC.

⁴⁸ Meeting Minutes, August 27, 1959, Box 73, COFI, UBCSC.

⁴⁹ John Bene to George Goodfellow, August 15, 1961, File George Goodfellow, 1961-1964, Box 9A, WC, RBCM.

production and joined the PMABC. The PMABC used the issue of hot pressed plywood and general standards for decades to limit competition from United States' plywood. The United States Plywood Association adopted a different grading regime and so could not easily sell plywood for structural purposes in Canada.

The Plywood Manufacturer's Association of British Columbia initiated a second equally important program, one of product promotion. Shortly after the first meeting, the PMABC sought a national advertising agency. Most producers wanted the PMABC to promote plywood as a useful product. MacMillan Bloedel, the only company in a position to underwrite the extensive advertising campaign needed to establish a plywood market, objected strongly. Its Association representative noted that:

He believed it to be the opinion of his company that the original aims of the association were to make a co-operative effort to improve building code treatment of plywood and to prepare an industry standard. He said his company felt that advertising was primarily the responsibility of individual companies rather than the association.⁵⁰

MacMillan Bloedel only agreed when it was clear the PMABC would proceed regardless of the company's opposition.⁵¹

The PMABC built on the promotion programs already established by MacMillan Bloedel and Canadian Western. First of all, advertising in periodicals showed builders

⁵⁰ Minutes, October 23, 1952, Box 73, COFI, UBCSC.

⁵¹ Minutes, February 13, March 8, March 23, April 11, 1950 and October 23, 1952, Box 73, COFI, UBCSC..

the savings to be realised by using plywood over lumber, even though plywood was more costly piece by piece. Secondly, the Association provided specific services such as building plans and booklets to enhance the use of plywood in many different roles. It provided advice by correspondence and even made visits demonstrating the utility of plywood to the retailer, to the homeowner, and to whoever would listen.

As early as June 1952, the PMABC advertised in the *Canadian Builder* emphasising the better quality workmanship and cost savings that resulted from using plywood. They announced it was "strong and rigid, waterproof, saves time and labour, easy to work ... build better with Douglas Fir plywood."⁵² They repeated the advertisements throughout the 1950s and 1960s and illustrated the advantages of plywood over lumber. Between January and October, 1961, the Association ran sixty-one advertisements in eleven periodicals aimed specifically at builders and architects. Additional advertisements ran in *MacLeans* and other journals bought by home consumers.

⁵² *Canadian Builder* 2/6 (June 1952), 11.

Table IV-4: Advertisements Placed in Building Related Periodicals January to October 1961.⁵³

Magazine	# of ads
<i>Canadian Builder</i>	8
<i>Batiment</i>	8
<i>Journal de Construction</i>	6
<i>Journal of Commerce</i>	8
<i>Daily Commercial News</i>	8
<i>Maclean's Building Guide</i>	4
<i>National Building</i>	7
<i>Engineering Journal</i>	3
<i>Canadian Architect</i>	3
<i>R.A.I.C. Journal</i>	3
Specification Association	3

The advertising campaign targeted specific cost-saving areas, especially for sheathing and concrete formwork.⁵⁴ Plywood, the PMABC pointed out, when used as sheathing reduced construction times by twenty-nine percent over the traditional methods. The advertisements even included a calculation to illustrate the cost-saving in man-hours.⁵⁵ When builders used plywood as sub-flooring even greater savings of over fifty-nine percent resulted. Later advertisements contended that the same was true for roof sheathing.⁵⁶ The overall cost savings converted many builders to plywood, despite

⁵³C. J. Hemsall, Vancouver to PMABC Advertising Committee, April 3 1962, Field Reports, Box 77. COFI, UBCSC. Unfortunately no similar data exists for the 1950s, however, a review of *Canadian Builder* shows a similar pattern of advertising. The first advertisement appears in the March 1951 issue. In 1955 the Association placed eleven advertisements. The actual number during the 1950s seems to vary between six to eleven per year between 1954 and 1960.

⁵⁴ *Canadian Builder*, 4/12 (December 1954), 9.

⁵⁵ *Canadian Builder*, 3/5 (May 1953), 44; 4/12 (December 1954), 9.

⁵⁶ *Canadian Builder*, 4/12 (December 1954), 10; 5/2 (February 1955), 20.

the greater unit costs.

Plywood markets, however, were chaotic even during the prosperous decades of the 1950s and 1960s. Geoff Tullidge, Western Plywood's sales manager, described the early 1950s as a time when "the undercurrent of chiselling and intrigue has been more than a little fascinating."⁵⁷ MacMillan Bloedel was also very concerned about over-capacity in 1952.⁵⁸ The worry was so great that in 1953, rather than reduce prices, the mills considered an overall production cutback, an illegal move in restraint of competition.⁵⁹ Problems again arose during the mid-1950s. Company salesmen could not anticipate future sales, the fluctuations were simply too unpredictable. Indeed in 1955 Geoff Tullidge, Weldwood's sales manager, complained he had never "known the market to be in a more chaotic state."⁶⁰ Rapid change in the plywood market was chronic. A year later, for example, Tullidge noted that:

the situation in western Canada (from the Lakehead west) seems to be pretty well under control. Everybody is screaming for more plywood. I think our own warehouses are in good shape with their sales fairly well balanced.⁶¹

⁵⁷ Geoff Tullidge to John Bene, March 24, 1955, File Geoff Tullidge Confidential, Box 7A, WC, RBCM

⁵⁸ Geoff Tullidge to John Bene, October 22, 1952, File Geoff Tullidge Confidential, Box 7A, WC, RBCM. See W. T. Stanbury, "Legislation to Control Agreements in Restraint of Trade in Canada: Review of the Historical Record and Proposals for Reform," in R. S. Khemani and W. T. Stanbury, eds., *Canadian Competition Law and Policy at the Centenary*, Halifax: The Institute for Research on Public Policy, 1991. 61. Canadian legislation was poorly enforced, but the combine would have been illegal.

⁵⁹ Geoff Tullidge to John Bene March 12, 1955, Geoff Tullidge to Steve McKay, July 31, 1953, File Geoff Tullidge Confidential, Box 7A, WC, RBCM

⁶⁰ Geoff Tullidge to John Bene, Memo, March 12, 1955, File Geoff Tullidge Confidential, Box 7A, WC, RBCM.

⁶¹ Geoff Tullidge to John Bene, Memo, February 27, 1956, File Geoff Tullidge Confidential, Box 7A, WC, RBCM.

In Ontario, at the same time, the situation was more unsettled and only kept in check by the plywood shortage. As Tullidge described it:

This Ontario market is certainly very badly mixed up. The categories of dealer and distributor are not clearly defined anywhere and the size of the order governs the discount.⁶²

Nine months later the problem shifted from under-supply to over-supply. Tullidge noted that the situation was grim and that the warehouses of MacMillan Bloedel's distributors were loaded with unsold stock.⁶³

The activities of Tepson's, Western Plywood's major Ontario jobber, illustrate the disorder of the mid-1950s. Tepson's decided to sell in the London area and was forcefully countered by the existing wholesalers and retailers until it began selling direct to contractors. When retail dealers complained bitterly, Tepson's informed the retailers they had to buy from Tepson's or the practice would continue. In disapproval, Tullidge noted that "this was certainly one method of getting the dealer business."⁶⁴ Such tactics pushed the players beyond their usual roles and into confrontations that created market confusion. These were not practices Western Plywood, at least, hoped to encourage. In Western Plywood's view, disruptions continued well into the late 1950's with firms such

⁶² *Ibid.*

⁶³ Geoff Tullidge to John Bene, Memo, November 26, 1956, File Geoff Tullidge Confidential, Box 7A, WC, RBCM.

⁶⁴ Geoff Tullidge to John Bene March 12, 1955, File Geoff Tullidge confidential, Box 7A, WC, RBCM.

as Tepson's being misled into giving greater discounts than were standard. The whole period was one of decreasing profit margins for both company and independent distributors.⁶⁵

Plywood sales during the 1960s remained erratic, although the causes differed from the 1950s. John Bene, president of Western Plywood, hoped that joining Seaboard Lumber and Shipping Company (Seaboard), a co-operative export organisation, would increase domestic market stability. Bene wrote to the company's agent in England: "At the present time we all sell below cost on the domestic market, perhaps because some people hope they can knock out their competitors. Export co-operation may weaken the desire for mutual extermination."⁶⁶ The situation changed again by 1962, but not because Western Plywood joined Seaboard. A surge in housing projects increased demand, and as John Bene noted the

actual demand for plywood fully taxed the industry's capacity to supply. We worried a year ago whether the merged sales organisation would be able to dispose of the Western and Evans output and now we are losing customer goodwill because we could not deliver in time.⁶⁷

⁶⁵ Geoff Tullidge to John Bene, September 1956, from Waterdown Ont., Geoff Tullidge to John Bene, Nov 9, 1955, File Geoff Tullidge confidential, Box 7A, WC, RBCM. Profit margins appear to have varied considerably from year to year. In 1960, for example, Canadian Collieries calculated their profit per thousand square feet of 1/16th inch of plywood at \$3.55 in 1960, this dropped to \$1.50 in 1961. Annual Report-Fiscal Year ended March 31 1962. Canadian Collieries Resources, Box 29D, WC, RBCM.

⁶⁶ John Bene, to Alan Kenny, Merstham England, July 28, 1960, File John Bene Confidential, Box 7A, WC, RBCM.

⁶⁷ John Bene, to Gene Brewer, New York, Quarterly Report for July, August 24, 1962, File Gene Brewer, Box 7A, WC, RBCM. Weldwood had a long term contract with the Evans plywood plant in Vancouver to

Prices rose steadily while Weldwood (formerly Western Plywood) and the other manufacturers and wholesalers continued to follow the MacMillan Bloedel lead.⁶⁸

The erratic markets meant that continual promotion was critical to plywood sales and the Plywood Manufacturer's Association of British Columbia's efforts were unflagging. Throughout the 1960s it continued in the struggle to convince consumers to use plywood. A survey conducted by the Association in 1962 found that in the Kootenays many builders still did not use plywood for formwork and "boards appeared most commonly used for wall and roof sheathing."⁶⁹ This was after ten years of the PMABC providing proof that plywood was a better product. The situation was not confined to British Columbia. Another PMABC report suggested that "the oil industry is sadly unaware of the construction advantage plywood offers."⁷⁰ The campaign emphasising plywood use in construction intensified following the negative reports.

The PMABC also advertised the advantages of built-in plywood cabinets and it published technical manuals and plans to encourage plywood use.⁷¹ The plans drawn for the PMABC, and available on request, ranged from boat designs to farm buildings. In 1960 the Association began publication of *Plywood World*, a glossy periodical illustrating

market all their output, this continued for several years after the merger.

⁶⁸ John Bene, to Gene Brewer, New York, April 12, 1962, File Gene Brewer, Box 7A, WC, RBCM.

⁶⁹ J.W. Knubley, Vancouver August 21, 1962, Field Reports July - December, Box 77, 1962, COFI, UBCSC.

⁷⁰ C.E. Leahr, Calgary to F.N. Walsh, Vancouver, December 27, 1961, Field Reports July - December, Box 77, COFI, UBCSC.

⁷¹ *Canadian Builder* 6/1 (January 1956), 30.

the uses of plywood. The first issue contained ideas on boat designs, on the use of plywood in arches, and on plywood used in a library built in the Borough of Worthing, England.⁷² The PMABC convinced the authors of how-to books to use plywood in many of their projects. The American Plywood Association also contributed to Canadian efforts by supplying additional information. Many of the how-to books, for example, were published in the United States and sold in Canada.⁷³ One tactic employed a van and information trailer that toured Ontario attracting considerable attention.

The Plywood Association employed representatives across Canada but the PMABC's main focus was on the large Ontario and Quebec market. The field agents made frequent rounds, disseminating information about the proper use of plywood as they demonstrated to builders and manufacturers how plywood improved their operations. The agents' work initially focused on securing acceptance for plywood in local building codes and convincing building inspectors that plywood was a good and safe product. The routine of activities became a series of visits to builders and architects, and a mixture of lectures, exhibitions and conventions. The Plywood Association's employees sought anyone who would listen and presented their case for using plywood.⁷⁴ Occasionally they made special appeals. E. Fowler, for instance, called on Black & Decker in 1962

⁷² *Plywood World* 1/1 (First Quarter 1961).

⁷³ Lee Frankl, *Home Repairs Made Easy and 101 Ways to Increase the Value of Your Home* (Garden City: Garden City Books, 1949). Although this volume only suggested plywood as an alternative, the role of plywood was growing. The volume contains numerous references to the use of plywood see page 71 for example.

and convinced the company to use plywood for their radial arm saw table tops.⁷⁵ The PMABC's employees also monitored changes in specifications and related issues. One agent, for example, reported acceptance of poplar plywood for roof sheathing by the Central Mortgage and Housing Corporation.⁷⁶ Only one Plywood Association member produced this type of sheathing and the British Columbia industry viewed it as a competing product.

The PMABC occasionally investigated problems at the request of the manufacturer or when the manufacturer of the plywood was unknown. A Plywood Association field agent, for example, investigated a complaint of paint peeling in Fort Erie. In this case the problem was poor building practice; the absence of a vapour barrier and incorrectly installed insulation were but a few of the problems at this house.⁷⁷ Field agent activity continued to be an extremely important duty of the PMABC even after it joined the Council of Forest Industries in 1963.

MacMillan Bloedel was the only British Columbia plywood manufacturer to persist in its own advertising campaigns in competition with advertisements produced by the PMABC.⁷⁸ Crown Zellerbach Canada and a small producer in Surrey, Canadian

⁷⁴ See Field Reports, Box 77, COFI, UBCSC for numerous examples.

⁷⁵ E. L. Fowler, Ottawa to Vancouver, May 31, 1962, Field Reports, Box 77, COFI, UBCSC.

⁷⁶ E. L. Fowler Ottawa, to Vancouver, May 4, 1962, Field Reports, Box 77, COFI, UBCSC.

⁷⁷ P. G. Willson, Toronto to Vancouver, May 3, 1962, Field Reports, Box 77, COFI, UBCSC.

⁷⁸ In 1954 for example MacMillan Bloedel placed nine advertisements in *Canadian Builder*, while the Plywood Manufacturer's Association placed six.

Collieries Resources Limited, occasionally inserted similar advertisements.⁷⁹ More varied advertising appeared in the later 1950s and the 1960s with the increased popularity of special products for interior panelling. MacMillan Bloedel, for example, advertised a new product called Sylva-Cord, a panel with a striated surface.⁸⁰

Such speciality products were not new to the industry, Canadian Forest Products began producing speciality panels very early. In 1946 they produced a new panel product in red cedar and in 1949 Etch Wood, a Douglas fir panel with the grain etched and highlighted.⁸¹ The major competition for this type of product came from the eastern distributor for the United States Plywood Company, Weldwood. It advertised speciality panels in the *Canadian Builder* in early 1956, and offered products such as "V-Plank," a grooved plywood panel available in several patterns.⁸² In turn, Canadian Forest Products advertised their new speciality product, Ranch Wall. This panel appeared to be very similar to Weldwood's offering, but it was unfinished or with a red base coat.⁸³ Canadian Forest Products continued to be an innovator in such panels, although during the 1960s they largely replaced the solid wood products with finished hardboard.

MacMillan Bloedel clearly hoped to keep the Sylvaply name in the forefront with its advertisements. Like the PMABC, MacMillan Bloedel advertised the cost advantages

⁷⁹ *Canadian Builder* 7/4 (April 1957), 9 and *Canadian Builder* 7/4 (April 1957), 90 are examples.

⁸⁰ *Canadian Builder* 5/10 (October 1954), 59.

⁸¹ "A New Plywood Product," *West Coast Lumberman* 75/5 (May 1946), 66. *British Columbia Lumberman* 33/4 (April 1949), 88.

of using plywood as sheathing, but it emphasised the Sylvaply name.⁸⁴ While the campaign contributed to the general acceptance of plywood, MacMillan Bloedel failed to achieve brand name recognition. Consumers tended to choose plywood by price rather than brand name.⁸⁵ MacMillan Bloedel's control of over forty percent of total production and its aggressive warehousing program resulted in the company maintaining an ill-defined market leadership. Richard Bessom has argued that MacMillan Bloedel was the recognised price leader, although considerable evidence suggests this was a very tenuous leadership.⁸⁶ Unfortunately, detailed information is only available for 1956 through 1961, but Table IV-5 indicates the general pattern of industry market share.

Table IV-5: Plywood Sales by Selling Organisation, 1956 to 1961.⁸⁷

Company	1956	1957	1958	1959	1960	1961
MacMillan Bloedel	44.8	43.1	42.7	41.6	41.5	42.6
Canadian Forest Products	22.6	21.5	21.0	19.6	20.4	19.5
Western Plywood	18.4	17.6	17.3	16.6	16.5	16.5
Crown Zellerbach Canada	9.9	9.4	8.7	7.9	7.7	7.4
Other ⁸⁸	4.3	8.4	10.3	14.3	13.9	13.9

The amount of plywood sold by MacMillan Bloedel varied slightly over time.

MacMillan Bloedel was a large producer in its own right and the company also sold the

⁸² *Canadian Builder* 6/4 (April 1956), 62; 6/6 (June 1956), 32.

⁸³ *Canadian Builder* 6/7 (July 1956); 7/6 (June 1957), 6.

⁸⁴ *Canadian Builder* 4/3 (March 1953), 73.

⁸⁵ Richard M. Bessom, "Competitive Marketing Strategies of Major American and Canadian Softwood Plywood Firms," (PhD. dissertation, Department of Economics, University of Washington, 1965), 272.

⁸⁶ Bessom, "Competitive Marketing Strategies," 260.

⁸⁷ File Production – Industry, Box 28A, WC, RBCM. Numbers are the percentage of total sales for each company.

production of British Columbia Forest Products. British Columbia Forest Products built a large plant in 1952 and immediately became an important producer. They contributed over ten percent of total softwood plywood sales in Canada by 1956, a substantial share.

MacMillan Bloedel's early establishment and continued expansion of their national warehouse network and marketing efforts contributed as much if not more to their considerable market influence. The warehouse system became the single most important means of plywood distribution in Canada, and quickly became an integral part of the competitive process. Small retailers refused to carry large inventories of plywood because of cost. Plywood sales, however, demanded quick delivery or the customer sought an alternative product. The manufacturers found their solution in the company owned warehouse network.⁸⁹ The mills carried little inventory and the retailer only enough inventory to satisfy the homeowner trade, while the bulk of the inventory was carried by the wholesaler, whether company owned or an independent.

Plywood wholesalers found that a strategic location could overcome other competitive pressures and location acted as a critical element for successful distribution.⁹⁰

Supplying a range of products in addition to plywood became necessary for the large

⁸⁸ Other includes the production of 3 companies who did not sell through the four major distributors; Canadian Collieries, Evans Products Limited, and Richmond Plywood.

⁸⁹ September 29, 1950, visit to W.E. Burns and R. S. Laird by G. Howell, Bloedel Survey, File 854/1, MB, UBCSC.

⁹⁰ J .S. Bake & J. A. Bergstrom, "Sylvaply Plywood: Canadian Market Survey and Sales Forecast, January 15, 1962, File 121-21, MB, UBCSC, 8.

distributors.⁹¹ The idea of one-stop shopping during the 1960s especially attracted smaller retailers. For example, Western Plywood, following its merger into Weldwood, carried a broad range of building supplies in its wholesale distribution centres. Canadian Forest Products adopted this approach and carried not only their own products, but also made agreements with other producers for speciality products.⁹² The salesmen who worked from the warehouses were critical to a successful operation. The sales force was relatively large and it was necessary for them to be skilled in selling a product whose main attraction was price, and they drew on company and personal loyalty when possible. Table IV-6 shows the growing numbers of salesmen required by Western Plywood between 1951 and 1959, as an example.⁹³ MacMillan Bloedel in 1959 employed over fifty full time salesmen and additional part-time salesmen across the country. These men mainly sold plywood but also took orders for the varied building products the warehouses carried.⁹⁴ The competition, which included the other three large producer-distributors (Canadian Forest Products, Western Plywood and Crown Zellerbach Canada) and independent wholesalers, employed about one hundred and thirty additional salesmen.⁹⁵

⁹¹ Blake & Bergstrom, "Forecast," 17.

⁹² See for example *CANFOR News* 3/4 (1975), 5. In 1975 about fifty non-company products were handled through the Canadian Forest Products' warehouse system.

⁹³ File Personnel, Box 25A, WC, RBCM.

**Table IV-6: Western Plywood's Domestic
Sales Force, 1951-1959.⁹⁶**

Location	1951	1952	1953	1954	1955	1956	1957	1958	1959
Vancouver	2	3	3	4	4	4	4	5	5
Edmonton			2	3	3	3	3	4	4
Calgary						1	3	3	3
Regina						1		2	2
Winnipeg				1	3	3	3	3	3
Fort William					2	2	2	2	2
Montreal									4
At large	1	2	2	2	3	3	3	3	2
TOTAL	3	5	7	10	15	17	18	22	25

Canadian Forest Products, Western Plywood and Crown Zellerbach Canada followed MacMillan Bloedel's lead into warehouse distribution, as they were able. The capital cost of warehousing, especially during the 1950s, was a trade-off with increased production. As a result, most producer-owned warehouse networks expanded slowly until the 1960s when warehouse ownership became a key tool to maintain or increase market share. Crown Zellerbach opted out of the contest. Aside from its extensive Prairie retail chain, it only operated warehouses at major centres such as Toronto and Montreal. Western Plywood and Canadian Forest Products entered a race to equal MacMillan Bloedel's network. Only by equalling MacMillan Bloedel could they hope to counter MacMillan Bloedel's market influence.

Canadian Forest Products and Western Plywood expanded their warehouse

⁹⁴ Blake & Bergstrom, "Forecast," Part II, MC, UBCSC.

⁹⁵ Blake & Bergstrom, "Forecast," Part II, MC, UBCSC.

⁹⁶ Personnel File, Box 25A, WC, RBCM.

network across Canada by building new warehouses and taking over previously independent wholesalers. Prior to building their own warehouse in a region, each manufacturer usually formed a close relationship with one or more wholesalers; these wholesalers often subsequently formed the nucleus of the manufacturer owned network. Western Plywood, for example, dealt extensively with Tepson's in Ontario, and acquired it in 1961.

An extensive network of warehouses grew across Canada, with MacMillan Bloedel operating country-wide, while Western Plywood was strongest in the West (until its acquisition by Weldwood in 1961) and Canadian Forest Products assembled a strong presence on the Atlantic coast. Western Plywood focused on Western Canada and established warehouses in Edmonton (1953) and Winnipeg (1955), but it did not open its own warehouse in eastern Ontario until 1960. Its acquisition by Weldwood in 1961 gave it a large eastern warehouse system. It still did not equal MacMillan Bloedel in market share but it could compete with Canadian Forest Products on an equal basis in the eastern markets.

Canadian Forest Products opened its first warehouse in Victoria in 1950. In contrast to Western Plywood, Canadian Forest Products expanded into Ontario and then backward into the Prairies. It transformed its strategy of dealing only through jobbers into direct warehouse ownership in Ontario and Quebec with the purchase of the Ottawa Valley Lumber Company (1958). The purchase of the Regent Lumber Company in

Ontario (1960) and the Ralph Hunt Company in Quebec (1964) followed. Canadian Forest Products also acquired warehouses in the Prairies and the Maritimes in the early 1960s through a combination of construction and purchase.

Table IV-7 depicts the company-owned warehouse network in relation to independent wholesalers in 1960; the expansion of manufacturer-owned warehousing is evident. The manufacturers directly owned forty-four warehouses and indirectly controlled another one hundred and fifty-five. Canadian Forest Products' acquisition of the Ottawa Valley Lumber Company meant it owned more warehouses than MacMillan Bloedel, but MacMillan Bloedel controlled, through its jobbers, more warehouses. All companies remained partly dependent on independent jobbers for some plywood distribution. The table also includes Canadian Collieries Resources who acquired their Western Canadian jobber in 1961 and Weldwood whose owners acquired Western Plywood in 1961. Richmond Plywood illustrates a distribution pattern of a small independent producer.

One aspect of the table that is misleading is the extent of MacMillan Bloedel's distribution network. MacMillan Bloedel tied its jobbers extremely closely through sales agreements, loans for expansion, and debts on inventory. The other manufacturers, with less ability to influence customers, did not achieve as close a relationship to their jobbers. Closely connecting wholesale and even retail outlets in this manner was a common practice among manufacturers. BF Goodrich and the tire industry, for example, created a

distributors.⁹¹ The idea of one-stop shopping during the 1960s especially attracted smaller retailers. For example, Western Plywood, following its merger into Weldwood, carried a broad range of building supplies in its wholesale distribution centres. Canadian Forest Products adopted this approach and carried not only their own products, but also made agreements with other producers for speciality products.⁹² The salesmen who worked from the warehouses were critical to a successful operation. The sales force was relatively large and it was necessary for them to be skilled in selling a product whose main attraction was price, and they drew on company and personal loyalty when possible. Table IV-6 shows the growing numbers of salesmen required by Western Plywood between 1951 and 1959, as an example.⁹³ MacMillan Bloedel in 1959 employed over fifty full time salesmen and additional part-time salesmen across the country. These men mainly sold plywood but also took orders for the varied building products the warehouses carried.⁹⁴ The competition, which included the other three large producer-distributors (Canadian Forest Products, Western Plywood and Crown Zellerbach Canada) and independent wholesalers, employed about one hundred and thirty additional salesmen.⁹⁵

Table IV-6: Western Plywood's Domestic

⁹¹ Blake & Bergstrom, "Forecast," 17.

⁹² See for example *CANFOR News* 3/4 (1975), 5. In 1975 about fifty non-company products were handled through the Canadian Forest Products' warehouse system.

⁹³ File Personnel, Box 25A, WC, RBCM.

⁹⁴ Blake & Bergstrom, "Forecast," Part II, MC, UBCSC.

⁹⁵ Blake & Bergstrom, "Forecast," Part II, MC, UBCSC.

Sales Force, 1951-1959.⁹⁶

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Calgary						1	3	3	3
Regina						1		2	2
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Canadian Forest Products and Western Plywood expanded their warehouse network across Canada by building new warehouses and taking over previously

⁹⁶ Personnel File, Box 25A, WC, RBCM.

independent wholesalers. Prior to building their own warehouse in a region, each manufacturer usually formed a close relationship with one or more wholesalers; these wholesalers often subsequently formed the nucleus of the manufacturer owned network. Western Plywood, for example, dealt extensively with Tepson's in Ontario, and acquired it in 1961.

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Canadian Forest Products opened its first warehouse in Victoria in 1950. In contrast to Western Plywood, Canadian Forest Products expanded into Ontario and then backward into the Prairies. It transformed its strategy of dealing only through jobbers into direct warehouse ownership in Ontario and Quebec with the purchase of the Ottawa Valley Lumber Company (1958). The purchase of the Regent Lumber Company in Ontario (1960) and the Ralph Hunt Company in Quebec (1964) followed. Canadian

Forest Products also acquired warehouses in the Prairies and the Maritimes in the early 1960s through a combination of construction and purchase.

Table IV-7 depicts the company-owned warehouse network in relation to independent wholesalers in 1960; the expansion of manufacturer-owned warehousing is evident. The manufacturers directly owned forty-four warehouses and indirectly controlled another one hundred and fifty-five. Canadian Forest Products' acquisition of the Ottawa Valley Lumber Company meant it owned more warehouses than MacMillan Bloedel, but MacMillan Bloedel controlled, through its jobbers, more warehouses. All companies remained partly dependent on independent jobbers for some plywood distribution. The table also includes Canadian Collieries Resources who acquired their Western Canadian jobber in 1961 and Weldwood whose owners acquired Western Plywood in 1961. Richmond Plywood illustrates a distribution pattern of a small independent producer.

One aspect of the table that is misleading is the extent of MacMillan Bloedel's distribution network. MacMillan Bloedel tied its jobbers extremely closely through sales agreements, loans for expansion, and debts on inventory. The other manufacturers, with less ability to influence customers, did not achieve as close a relationship to their jobbers. Closely connecting wholesale and even retail outlets in this manner was a common practice among manufacturers. BF Goodrich and the tire industry, for example, created a network of dealerships during the early twentieth century. In the petroleum industry very

network of dealerships during the early twentieth century. In the petroleum industry very few retailers operated independently of a large producer.⁹⁷

Table IV-7: Location and Number of Warehouses and Jobbers of Selected British Columbia Plywood Producers and of Weldwood in 1960.⁹⁸

CITY	COMPANY WAREHOUSES					JOBBERS						
	PV	WP	CZ	WD	MB	PV	CC	WP	RD	CZ	WD	MB
Calgary		X			X	1	1	1	1	2		2
Lethbridge					X	1	1	1		1		1
Edmonton		X			X	1	2	2		3		2
Saskatoon						3	3	1		1		3
Regina		X				3	2	1		1		3
Winnipeg		X	X		X	2	1	1		1	1	3
Fort William												1
Port Arthur		X				2						1
Toronto	X				X	2	4	4	1	1	1	4
London					X	1	2	3			1	2
North Bay												1
St. Catherines												1
Windsor					X	1	2	2				
Waterloo			X									
Kitchener						1	1					1
Orilla								1				
Peterborough						1	2	2		1		
Kingston						1	2	2				
Sudbury						1	1	2				1
Sault St Marie						1						
Cornwall												1
Montreal	X	X	X		X	2	3	3	3	3	2	3
Ottawa				X		2						2
Quebec City	X				X	1				1	1	2
Sherbrooke	X											
Trois Riviere				X		1						

⁹⁷ Blackford and Kerr. *BF Goodrich*, 58, 91, 116. M. A. Macdonald, Report of the Commissioner Relating to the Petroleum Industry, Vol. 1 (Victoria: King's Printer, 1937), HH 39, 63-64.

⁹⁸ "Fir Marketing Plywood Study, June 9, 1960," file 105/4. MB, UBCSC. MacMillan Bloedel compiled the data in Table IV-7 in a highly competitive market place and some errors exist. Western Plywood, for example, had a close connection to a Nova Scotia wholesaler. Also, all British Columbia plywood manufacturers sold to wholesalers who bought from various manufacturers at the cheapest price. These are not included in the table.

Chicoutimi				X		1						1
Rimouski					X	1						
Matan										1		
Sept Isles	X											
Shawinigan	X											
Lachine												1
Papineauville												1
Moncton	X						1					2
Fredericton	X											
Bathurst	X											1
St John												1
Halifax	X						1			1		1
Sidney	X											1
St John's												1
TOTAL	11	6	3	3	10	30	29	26	5	16	6	43

(Warehouse means owned warehouse, jobbers means closely connected wholesaler, generally exclusively dealing in one firm's product: PV=Canadian Forest Products, WP=Western Plywood, CZ=Crown Zellerbach, MB= MacMillan Bloedel, CC=Canadian Collieries, RD= Richmond Plywood, WD=Weldwood)

Unfortunately, accurate data does not exist to reconstruct such a table for the late 1960s or the 1970s. If available it would demonstrate growth in company warehousing and a decline in independent jobbers, as the larger manufacturers in the early 1960s bought them out and closed redundant facilities.

Warehouse acquisition emerged from each company's distrust of the independent wholesalers and their desire to manipulate and control the marketplace. In 1965 all the industry executives Richard Bessom interviewed believed the independent wholesalers were unreliable.⁹⁹ The manufacturers also wanted to use their own warehouses to limit competition, which required control over the independent wholesalers.

The method and timing of warehouse acquisition varied from firm to firm. The

⁹⁹Bessom, "Competitive Marketing Strategies," 272.

decision process was not always a simple matter of buying the biggest customers in order to assure market share. MacMillan Bloedel's decision to acquire its third largest plywood customer and largest tied wholesaler, the Kingsway Lumber, in 1967 and its failure in 1965 to buy Beaver Lumber, illustrates the difficulties of buying a customer. In the case of Kingsway, MacMillan Bloedel did not need to acquire it in order to control the closely tied wholesaler. However, when it seemed a competing manufacturer, Crown Zellerbach, might acquire the financially troubled Kingsway Lumber Company, MacMillan Bloedel made a pre-emptive purchase.¹⁰⁰ MacMillan Bloedel could not afford to lose one of its largest customers and therefore market share to a competitor. MacMillan Bloedel also considered purchasing its second largest plywood customer, the independent retail chain, Beaver Lumber. However, Beaver Lumber found a purchaser who was acceptable to MacMillan Bloedel instead. The Canadian Acceptance Corporation and subsequently Molson's, who purchased Beaver Lumber in 1971, assured MacMillan Bloedel there would be no changes in Beaver's plywood purchases.¹⁰¹ MacMillan Bloedel was reluctant to buy Beaver Lumber because the buying group, AID, another large customer, would leave the MacMillan Bloedel customer roster in protest. Western Plywood and Canadian Collieries Resources faced similar situations and responded in a similar fashion. The apparent reluctance of these companies indicates some ambivalence about

¹⁰⁰ I. S. Brand to J. O. Hemmingsen, June 15, 1967, File 325/48 and 701/24, MB, UBCSC.

¹⁰¹ I. S. Brand to J. O. Hemmingsen, June 15, 1967, and J. V. Clyne to J. O. Hemmingsen, July 5, 1965, related correspondence, File 325/48, MB, UBCSC.

the extent of their involvement in warehousing.

Western Plywood acquired the independent jobber Tepson's, of Toronto, because Tepson's was in financial difficulty. Similarly, Canadian Collieries Resources acquired its Prairie distributor, Alwest, as the only way it could recover its debt. Western Plywood joined United States Plywood in order to secure capital and expertise for expansion, while United States Plywood wanted to acquire a Canadian manufacturing base. When Weldwood acquired Canadian Collieries, again warehousing played little role; the warehouses duplicated existing Weldwood warehouses and were closed. The experiences of MacMillan Bloedel and Weldwood suggest that while company warehousing played a critical role in marketing plywood in Canada, the actual formation of the system usually occurred in a haphazard fashion and not always at the instigation of the large producers.

Table IV-8 shows the growth of company owned warehousing between 1960 and 1990. The pattern is clear: growth in the 1960s, slower growth in the 1970s, and decline following the economic downturn of the 1980s.

**Table IV-8: B.C. Plywood Producers, Company
Owned Warehouses, 1960-1990.¹⁰²**

Company	1960	1963	1969	1974	1986	1990
MacMillan Bloedel	10	16	15	19	11	3
Canadian Forest Products	11	19	25	28	11	See Can-Weld
Weldwood*	6*	22	29	27	22	See Can-Weld
Crown Zellerbach	3	6	5	6	8	3
Can-Weld**						26

*this is Western Plywood

** Can-Weld is a merger of the Canadian Forest Products and Weldwood warehouse systems.

The company-owned warehousing system spread across Canada. Warehouses operated in at least sixty-six Canadian cities from Victoria, British Columbia to St John's, Newfoundland. Table IV-9 indicates the total number of warehouses operated by region, while Table IV-10 lists the communities and separates the warehouses by year and company.

**Table IV-9: Plywood Producer Owned
Warehouses by Region, 1950-1995.¹⁰³**

B C	Prairies	Ontario	Quebec	Atlantic
14	24	46	17	18

¹⁰² Table is based information in *Directory of the Forest Products Industry* (San Francisco: Miller Freeman, various years).

¹⁰³ Data compiled from Table III-10.

**Table IV-10: Company Owned Warehouses by City,
with Approximate Years of Operation, 1960-1990.¹⁰⁴**

Location	M B		CANFOR		Weldwood		CZ	
	open	Close	open	Close	Open	Close	Open	Close
Burnaby			1938	1986				
Kelowna			<1975		<1986	>1990	<1972	>1986
Prince George			>1975	1985	1966	>1990		<1986>
Nanaimo			1965	1974>		<1990>		
Vancouver	1936	>1974			<1963	1993	<1961	>1974
Vernon			1964	1974				
Victoria			1950	>1974				
Calgary	<1963	>1986	1963	>1986	<1963	>1990	<1961	>1990
Edmonton	1966	1981	1962	>1974	<1963	>1990		<1961>
Fort MacLeod			<1966	<1975				
Grand Prairie			<1966			<1990>		
Lethbridge	<1963	1981	1977	1985				
Moose Jaw								<1961>
Regina	<1963	>1986	<1966	1985	<1963	>1974		<1961>
Saskatoon	<1963	>1990	<1966	>1986	>1963	>1990		
Winnipeg	<1963	1981	1965				<1961	>1985
Yorkton					1969	1981		
Agincourt								<1986>
Belleville	1972	1981						
Brampton					<1986	>1990		
Brantford	1972	1978						
Carleton Place		<1974						
Chatham	<1972	1981						
Fonthill	<1963	1981						
Fort William					<1963	>1969		
Hamilton			1960	1985	<1963	>1974		
Islington					<1969	>1986		
Kingston			1974	1981	<1963	>1986		
Kirkland Lake					1965	1981		
Kitchener	1971	>1993					1971	
London	<1963	1981	1963	1981	<1963	>1990	<1964	>1986
Noranda	1971	1981						
North Bay	1971	1981	1970	1981		<1990>		
Orillia	1972	1981			<1963	1976		
Ottawa	<1963	>1986	1972	>1975	<1963	>1990		

¹⁰⁴ *Directory of the Forest Products Industry*; 1963-1990 (San Francisco; Miller Freeman). Dates are as accurate as possible, based on directory information. < indicates established before, > indicates closed after.

Owen Sound	1972	1981						
Peterborough			1960	1981	<1963	>1990		
Sault Ste Marie	1971	1981			1969	1976		
Scarborough							<1963	1973
Sudbury	1972	>1986			<1963	>1990		
Thunder Bay					1972	>1990		
Timmins	<1972	1981						
Toronto	<1963	1974	1960	>1986	1961	>1990	<1961	>1964
Waterloo							<1961	>1964
Weston	1972	>1986						
Windsor	<1963	1975	1960	1963	1975	1979	1979	
Drummondville	1972	1981						
Chicoutimi						<1963>		
Beauport		<1986>						
Lachine							<1961	>1990
Montreal	1938	1981	1958	>1986	<1963	>1990		
Quebec City	<1963	1981	1958	>1974	<1963	>1990		
Rimouski	<1963	1981			1969	1981		
Sept-Iles			1959	1981				
Shawinigan			1958	1964				
Sherbrooke			<1975	1985	<1963	>1990		
Trois-Rivieres			1964	1981	<1963	>1990		
Bathurst			1958	1985				
Charlottetown			1958	1979				
Dartmouth	1973	>1986			<1963	>1993		
Deer Lake			1976	>1986				
Fredericton			1958	>1986		<1990>		
Halifax			1958	>1986				
Moncton			1958	>1986		<1990>		
Mount Pearl					1970	1979		
St John			1964	1981	1966	>1990		
St. Johns			1958	>1986	1969	1970		
Sydney			1958	>1986		<1990>		
Truro	<1963	>1971						
Total		32		33		32		12

Competition in Plywood Markets

The chaotic sales of the 1950s and 1960s chiefly resulted from competition and rivalry amongst the plywood manufacturers. Their co-operation in the PMABC did not

lead to co-operation in the sale of plywood to retailers. Bessom pointed out that the oligopolistic nature of the Canadian plywood market seems to have increased competition and the evidence presented here supports his argument.¹⁰⁵ Recently Joel Baum and Helaine Korn have argued that answers to industry competitive conditions must be sought in the strategies of individual firms rather than in the industry as a whole.¹⁰⁶ Each firm occupies a specific market domain that is different from every other firm within that domain. Certainly competitive practices and responses by British Columbia companies were firm specific.

Business history is filled with examples of diverse strategies used to meet competition. Co-operative strategies were even adopted by many industries. England's largest confectionery manufacturers, Rowntree, Fry, and Cadbury, operated under such an agreement during the 1920s.¹⁰⁷ The American tobacco and sugar industries formed monopolistic organisations that eliminated competition.¹⁰⁸ But competition can be "intensely bitter," such as existed among the gelatin paper manufacturers in the 1890s.¹⁰⁹ The ubiquitous nature of competition suggests that it is critical if we are to understand an

¹⁰⁵ Bessom, "Competitive Marketing Strategies," 276.

¹⁰⁶ Joel Baum and Helaine Korn, "Competitive Dynamics of Interfirm Rivalry," *Academy of Management Journal* 39 (April 1996), 255.

¹⁰⁷ Robert Fitzgerald, *Rowntree and the Marketing Revolution, 1862-1969* (Cambridge: Cambridge University Press, 1994), 167.

¹⁰⁸ Alfred S. Eichner, *The Emergence of Oligopoly: Sugar Refining as a Case Study* (Baltimore: The John Hopkins Press, 1969), 173.

¹⁰⁹ Reese V Jenkins, *Images and Enterprise: Technology and the American Photographic Industry, 1839 to 1925* (Baltimore: The John Hopkins University Press, 1987), 54-55, and 93.

industry's activities; the position adopted in this dissertation is that each firm's activities need to be analysed as closely as possible, if we are to understand the industry. British Columbia's plywood industry seems replete with conditions that could lead to collusion, such as a standardised product and standard promotion and sales techniques. Behind the facade of co-operation, however, intense competition existed.

MacMillan Bloedel saw itself as the market leader and reluctantly shared sales with other manufacturers. The company used the power of its company-owned warehousing and tightly controlled jobbers to send the industry in whatever direction its sales managers chose as they attempted to force other sellers to conform to their price agenda.¹¹⁰ MacMillan Bloedel did not have absolute control, but the company was also unwilling to share leadership or customers. Any attempt at collusion, such as that exercised in the 1950s by the electrical equipment manufacturers, when the industry set prices and divided North America into regional sales territories, would have been quickly rejected by MacMillan Bloedel.¹¹¹ Bessom argued that MacMillan Bloedel was the undoubted industry leader, but the very nature of plywood sales undermined this leadership.¹¹² Plywood sales were established by the promotion efforts of the PMABC

¹¹⁰ See Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization*, second edition (New York: Harper Collins, 1994), 230-231, and 816, for a general discussion of oligopoly, from a traditional perspective.

¹¹¹ Cited in Carleton and Perloff, 181-183. There are a number of studies of this controversy, for example John G. Fuller, *The Gentlemen Conspirators: The Story of the Price-Fixers in the Electrical Industry* (New York: Grove Press, 1962). See below for a further discussion of plywood competition.

¹¹² Bessom, "Competitive Marketing Strategies," 186. Bessom does not identify the firms he studies,

and the manufacturers, especially at the company-owned, wholesale level, and not by consumer demand. Keen competition is fairly normal in volatile commodity markets, especially one in which the leading producer is viewed with distrust by the rest of the industry.¹¹³

MacMillan Bloedel's tactics, during the 1950s and 1960s worked both to the advantage and the disadvantage of its competitors. In 1951, for instance, while MacMillan Bloedel and several large eastern wholesalers were feuding, Western Plywood moved to appropriate some new business, especially that of a large Montreal-based wholesaler Daigle Lumber Limited. This particular feud did not seem to create any long lasting results but such activity provided market opportunities for other firms.¹¹⁴ Each opportunity had to be examined and if the circumstances were advantageous, seized when the chance arose.

MacMillan Bloedel quickly and aggressively countered any encroachment on what it perceived as its territory. Crown Zellerbach and Canadian Forest Products chose a confrontational strategy in their effort to penetrate the MacMillan Bloedel-controlled market areas, while Western Plywood was more cautious. This caution was partially

however, firm I is clearly MacMillan Bloedel.

¹¹³ BC lumber production is another example, see Peter H. Pearse *Timber Rights and Forest Policy in British Columbia*, Vol. 1, *Report of the Royal Commission on Forest Resources* (Victoria; Queen's Printer, 1976), 292-293. See John Brooks, *Telephone: The First One Hundred Years* (New York: Harper & Row, 1975, 1976), 112-114.

¹¹⁴ Geoff Tullidge to John Bene, Vancouver, December 3, 1951, File Geoff Tullidge Confidential, Box 7A, WC, RBCM.

explained by differing philosophies of how the selling arm should operate. MacMillan Bloedel established control over its main wholesalers and used their established warehouses to manipulate prices and quantities. This gave MacMillan Bloedel considerable control over a significant part of plywood sales, especially in the large Ontario market. MacMillan Bloedel used Kingsway in Toronto and General Forest Products in Montreal, for example, to raid Western Plywood's accounts while maintaining the appearance of arm's length.¹¹⁵ MacMillan Bloedel's arbitrary style was typified by rumours regarding the Kitimat development in 1951. MacMillan Bloedel's top executives told their sales department that if they did not get most of the plywood contracts, "heads were going to roll." Western Plywood's sales manager, Geoff Tullidge, noted that such tactics resulted in "some weird and wonderful marketing." It also resulted in MacMillan Bloedel losing customers to Western Plywood and the other major plywood producers.¹¹⁶

During the 1950s, in contrast to MacMillan Bloedel, Western Plywood exercised little control over its eastern distributors other than friendship, honesty in dealings and, on rarer occasions, prices. One of its long standing accounts in 1953 joined with Robert Bury & Company and purchased a large quantity of Canadian Western's plywood. Western Plywood went on a direct attack and pointed out that it had stuck with this dealer through thick and thin. The dealer finally admitted that Western Plywood was "the only

¹¹⁵ A. Young to G. Tullidge, January 24, 1966, File Central Division Memos, 1966, Box 3A, WC, RBCM.

one that had a halo" in the affair.¹¹⁷ In many instances this stood Western Plywood in good stead, for, although it lost accounts through price-cutting, it maintained an adequate business despite its reluctance to reduce price. Western Plywood was the last to lower its prices and it quickly followed any trend in increases. Company sales manager Geoff Tullidge noted to company president John Bene in 1951 that "every move we make will be carefully considered and well established on the basis of no further breaching of any over-all policies but just counteracting the activities of the opposition."¹¹⁸

The activities of Crown Zellerbach and Canadian Forest Products fell between the autocratic stance of MacMillan Bloedel and the conservative position of Western Plywood. In 1957 Western Plywood's sales people noted, for example, that Canadian Forest Products and Crown Zellerbach countered MacMillan Bloedel by offering some "fancy discounts."¹¹⁹ Interestingly enough MacMillan Bloedel viewed Western Plywood and Crown Zellerbach as the offenders in creating market disruption.¹²⁰

Price was one of the two main weapons used to secure market share. Oliver Westall argues in his study of British competition that "whenever it was possible firms tried to protect themselves from the need to compete on price."¹²¹ British Columbia

¹¹⁶ Geoff Tullidge to John Bene, December 3, 1951, File G. Tullidge Confidential, Box 7A, WC, RBCM.

¹¹⁷ Geoff Tullidge to John Bene, November 16, 1953, File G. Tullidge Confidential, Box 7A, WC, RBCM.

¹¹⁸ Geoff Tullidge to John Bene, December 3, 1951, File G. Tullidge Confidential, Box 7A, WC, RBCM.

¹¹⁹ Geoff Tullidge, Montreal to John Bene, Vancouver, July 10, 1957, File G. Tullidge Confidential, Box 7A, WC, RBCM.

¹²⁰ Blake & Bergstrom, "Forecast," Part II, Box 121-22, MB, UBCSC, 126.

¹²¹ Oliver M. Westall, "The Competitive Environment of British Business, 1850-1914," in Maurice W.

plywood producers in the 1950s and 1960s instead, often used price as a competitive weapon even though these tactics distressed some firms. In 1961, for instance, significant price cutting occurred as a result of a "fight between MacMillan Bloedel and Canadian Forest Products and there is little prospect for peaceful co-existence at this time."¹²² MacMillan Bloedel was determined to lead and the remaining producers were expected to follow, even when MacMillan Bloedel's leadership "severely cut into the already meagre profit margin."¹²³ However, when MacMillan Bloedel's actions seemed unreasonable, the industry as a whole resisted and MacMillan Bloedel usually compromised. In 1961, for example, "after competing with MacMillan for three days at the \$63/44 level the rest of the industry increased its list price to \$74/52 on 8th November. ... Today," a relieved John Bene of Western Plywood noted, "MacMillan published right across the country the \$74/52 list too," although many customers had bought what they could at MacMillan Bloedel's lower price.¹²⁴

A series of published price lists established the highest price level offered to customers. The real price, however, was based on a series of unpublished discounts. A few non-preferred customers paid the high list prices but most customers paid a lower or discounted price. The level of the discount was determined by the going industry

Kirby and Mary B. Rose *Business Enterprise in Modern Britain: From the Eighteenth to the Twentieth Century* (London and New York: Routledge, 1994), 217.

¹²²John Bene to Gene Brewer, New York, October 3, 1961, File Gene Brewer, Box 7A, WC, RBCM.

¹²³John Bene to Gene Brewer, New York, October 3, 1961, File Gene Brewer, Box 7A, WC, RBCM.

¹²⁴John Bene to Gene Brewer, New York, Quarterly Report, November 29 1961, File Gene Brewer, Box

discount rate, competition in a given area, volume of purchases, and manufacturing costs. Each dealer was given different prices until the sellers' bottom line was reached for that dealer or area. Weldwood's eastern warehouse managers in particular believed they were not being dealt from a "level deck." This partly resulted from Weldwood's expectation that both manufacturing and sales would generate a profit and Canadian management held firm to this policy. Not all the British Columbia plywood manufacturers adopted this practice. Most accepted financial loss in one department if the other departments made an adequate profit. Weldwood, instead, refused to meet the competition from the other major producers when the prices were too low.¹²⁵

MacMillan Bloedel and Canadian Forest Products, at least in Weldwood's view, used their jobbers to undercut established prices indirectly, especially when they had a surplus of product.¹²⁶ Canadian Forest Products also proved troublesome to Weldwood a few years later when they attempted to undermine Weldwood's established market segment in the Maritime provinces. Crown Zellerbach adopted policies closer to Weldwood's in the 1950s, although the two companies occasionally came into conflict.¹²⁷ Weldwood, as well, unlike Canadian Forest Products, was not prepared to alienate MacMillan Bloedel and start price wars. Weldwood specifically instructed its eastern

7A, WC, RBCM. The figures separated by slashes represent the list price plus the discount price for large customers, per 1000 square feet.

¹²⁵Bob Grace, Ottawa to George Goodfellow Montreal, March 14, 1962, File George Goodfellow, 1961-1964, Box 9A, WC, RBCM.

¹²⁶George, Goodfellow, Montreal to John Bene, February 6, 1962, File George Goodfellow 1961-1964,

sales group to meet certain discounts to compete with Richmond Plywood and Canadian Collieries, two smaller plywood producers, but not to offer certain ex-warehouse volume discounts. In this instance, the Vancouver office refused to risk MacMillan Bloedel's retaliation and the subsequent inevitable price spiral.¹²⁸ Weldwood was the exception among British Columbia plywood producers and attempted to act similarly to Westall's late nineteenth century British firms; it sought means of competition other than price.¹²⁹ John Bene believed price-cutting was not the best competitive solution.

The small British Columbia plywood producers caused market disruption far greater than their production suggested was likely. The entry of the small producers into a highly competitive but oligarchic market, meant that these newcomers created disruptions as they fought for customers. One Weldwood manager noted in 1966: "Once again the 'majors' have agreed the market level is such and such, but the 'minors' at this time of year come in one or two points below this level and upset the apple cart."¹³⁰

Typically, the smaller producers were more aggressive when first entering the market, as they tried to capture customers. In some cases the need to retain long established customers forced the major producers into matching these incursions, but many customers remained with the major producers, regardless of small price differences.

Box 9A, WC, RBCM.

¹²⁷ John Bene to Gene Brewer, New York, January 16, 1963. File Gene Brewer, Box 7A, WC, RBCM.

¹²⁸ John Bene to George Goodfellow, March 15, 1963. File Gene Brewer, Box 9A WC, RBCM. Richmond and Canadian Collieries were two of the smaller producers.

¹²⁹ Westall, "The Competitive Environment of British Business, 1850-1914," 215.

Some independent wholesalers realised that the majors provided increased price stability and maintained sufficient inventories to meet increases in demand. Price, however, was a major consideration and when the J. R. Murray Company in 1951 slashed prices, everyone else's sales dropped, but Western Plywood expected they would shortly "come into line."¹³¹ Western Plywood, even with Murray slashing prices, still acquired a new dealer at Fort William, formerly supplied by Canadian Forest Products and obtained an agreement with Federated Co-operatives to supply their Prairie yards.¹³²

Canadian Collieries' 1957 effort to undermine Western Plywood's standing with Tepson's is typical of the smaller companies' tactics. The owner of Tepson's, long connected to Western Plywood but desirous of a better deal, showed Western Plywood the written offer from Canadian Collieries. Western Plywood reluctantly matched the price.¹³³ Such tactics induced Western to tighten its relationship with Tepson's, initially by loans and subsequently by acquiring the company and incorporating it into the Weldwood warehouse network.¹³⁴ MacMillan Bloedel's view that Western Plywood and Crown Zellerbach were the market disrupters coincides well with the actions of the smaller plywood producers. Western Plywood and Crown Zellerbach sought market share from MacMillan Bloedel during the early 1950s. During the late 1950s and 1960s

¹³⁰ Bucko ? to Geoff Tullidge, May 18, 1966, File A-M Misc. Box 7A WC, RBCM.

¹³¹ Geoff Tullidge to John Bene, December 3, 1951, File G. Tullidge Confidential. Box 7A, WC, RBCM.

¹³² Geoff Tullidge to John Bene, December 3, 1951, File G. Tullidge Confidential. Box 7A, WC, RBCM.

¹³³ Geoff Tullidge, Montreal to John Bene, November 12, 1957, File G. Tullidge Confidential, Box 7A. WC, RBCM.

the smaller producers, such as Douglas Plywood, pursued market share from all the large producers and thereby induced a certain amount of market instability.

The independent jobbers during the 1960s, faced with growing company warehouse networks, played a smaller role in the market. As one of the Weldwood's long-time Maritime wholesalers noted:

due to current policies in effect by many larger manufacturers there does not appear to be a place for the small independents such as ourselves. We just keep getting smaller and poorer.¹³⁵

Weldwood did not like the worsening situation of the jobbers and stated it would support the Halifax firm in any way possible, but there was little it could do to reverse a growing trend. It also appears that Weldwood had not realised the depth of change occurring in the market place, until receiving Avarð Forsyth's letter:

I think we have all been aware for some considerable time that the role of the independent distributor of all building materials is becoming a more difficult situation as time goes on. You and I have been doing business directly and indirectly over a great many years and I can assure you, receiving this bad news can only be described in the vernacular as a 'gasser.'

I can further assure you that we have at all times endeavoured to keep you as competitive as we possibly can, bearing in mind our responsibilities to our branch customers and others, but with some possibly minor exceptions, you have been buying as advantageously and

¹³⁴ John Bene to Gene Brewer, August 25, 1961, File Gene Brewer 1961, Box 7A, WC, RBCM.

¹³⁵ L. Avarð Forsyth, Halifax to Geoff Tullidge, Vancouver, June 26, 1967 File A-M Misc. Box 4A, WC, RBCM.

competitively at what we consider equitable levels."¹³⁶

The more competitive market place forced some jobbers to survive on smaller margins, while others refused to accept any change. The reduced numbers of wholesalers in the plywood market was consistent with a similar post-World War II trend in other industrial distribution networks. British Columbia's tree fruit industry noticed in the 1940s, for example, that the smaller wholesale jobbers were disappearing.¹³⁷

The independent wholesalers were also squeezed by a new power in the market place, retail buying groups.¹³⁸ Buying groups also proved themselves a thorn to producers, such as Weldwood, but the producers had no choice but to accept them. The buying groups were associations of small chains or individual building supply outlets that joined together to buy direct from the plywood manufacturers. The buying groups refused to buy through the warehouse system and thereby undermined the wholesale system that emerged from the market disorder of the early 1950s.¹³⁹ Canadian Western already operated its own retail yards and the larger retail chains also bought direct prior. Two of MacMillan Bloedel's larger direct buyers, for example, were Beaver Lumber which operated 282 retail lumberyards in 1966 and Revelstoke with 126 yards.¹⁴⁰ The

¹³⁶ Geoff Tullidge to L. Avarð Foresyth, Halifax, July 5, 1967, File A-M Misc., Box 4A, WC, RBCM.

¹³⁷ Dean E. D. MacPhee, *The Report of the Royal Commission the Tree-Fruit Industry of British Columbia* (Victoria: Queen's Printer, October 1958), 458.

¹³⁸ Jack Harber to Geoff Tullidge, June 9, 1966, File A-M Misc., Box 4A, WC, RBCM.

¹³⁹ Geoff Tullidge to Donald Cluck, April 19, 1966, File Marketing, Box 4A, WC, RBCM.

¹⁴⁰ Marketing Planning Workshop, Report by Geoff Tullidge, October 26, 27, & 28 1966, File Marketing, Box 4a, WC, RBCM.

buying groups dramatically reduced the customer lists of the manufacturers' warehouse-distribution network and seriously undermined their profitability.

**Table IV-11: Number of Retail Yards
Associated with Buying Groups in 1966.**¹⁴¹

BUYING GROUP	MEMBERSHIP	SOURCE OF PLYWOOD
ALLONT	94 (END OF 1966)	All the majors plus Richmond
AID (ONT. & QUE.)	22	All the majors
BOLD (ONT.)	41	Weldwood and CANFOR
COLPO	54	Weldwood & Crown Zellerbach
PAL (QUE.)	24 (END OF 1966)	CANFOR, Weldwood, Evans and Richmond
BONHOME (ONT.)	6 (END OF 1966)	MacMillan Bloedel
DISMAT (QUE.)	10	Crown Zellerbach
MARBOIS (QUE.)	18	Crown Zellerbach & MacMillan Bloedel
UNION SIX (QUE.)	5	CANFOR
MASKA (QUE.)	NEW	
EARLY BIRD (B.C.)	30	Crown Zellerbach, CANFOR & Weldwood
TIMBER MARTS LTD. (MAN.)	8 (NEW)	

The size and extent of group buying increased throughout the 1960s. Not all the buying groups succeeded, but by mid-1967 they controlled a significant portion of the market and included over three hundred retailers across the country. The groups tended to buy from one major supplier, but purchases varied and shifted to the manufacturer who offered the best price for equivalent product. Table IV-11 indicates the extent of the

¹⁴¹ Baird Davis Report, August 16, 1967, File Division Managers Meeting, August 16, 1967, Box 4A, WC, RBCM.

buying group advance at the end of 1966.

The leading manufacturers found themselves in a difficult situation by the mid-1960s. New plywood manufacturers, new plywood wholesalers, such as Cooper-Widman of Vancouver, and the retail consortiums undermined the large British Columbia plywood manufacturers market domination. A Trois Riviere retailer, for example, sold plywood cheaper than Weldwood sold to its own warehouses.¹⁴² MacMillan Bloedel and Canadian Forest Products moved quickly to meet this competition. Canadian Forest Products began to make "some weird and wonderful deals in various places."¹⁴³ MacMillan Bloedel retaliated by creating a category of 'wholesaler,' basically a retailer to whom they sold at wholesale prices.¹⁴⁴ The other majors responded and accepted lower prices and profits, Weldwood at times was unable "to sell any cars other than on special deals...."¹⁴⁵

Weldwood met the competition with price controls, a greater onus on sales to meet targets, and reorganisation of the marketing and sales departments. Weldwood, and we can assume the other majors, also sought to reduce expenses and tightened head office control. Significant staff reductions, for example, occurred in mid-1967 in the company's

¹⁴² Geoff Tullidge, to Donald Cluck, February 7, 1967, File Trade Show Conventions. Box 4A, WC, RBCM.

¹⁴³ Geoff Tullidge to Donald Cluck, March 27, 1967, File Trade Shows and Conventions, Box 4A, WC, RBCM.

¹⁴⁴ Geoff Tullidge to Roger Montgomery, March 29, 1967, File Trade Shows and Conventions, Box 4A, WC, RBCM.

¹⁴⁵ Geoff Tullidge to Donald Cluck, February 13, 1967, File Trade Shows and Conventions, Box 4A, WC, RBCM. Car means railcar.

sales division; all expenditures were rigorously examined.¹⁴⁶ Weldwood also took a new step in 1965 and hired Donald Cluck as the new Vice-President of Marketing. Cluck was brought in as an experiment and placed over several divisions including the long established sales section. Sales manager Geoff Tullidge, who had long reported directly to the company's president, now reported to Cluck, who immediately sought to impose his control over all aspects of the sales operations. He ordered Tullidge, for example, to send him blind copies of all letters and memos to branches and copies of certain letters and memos sent to customers and field sales personnel.¹⁴⁷ Management theory in the 1960s suggested the employment of marketing vice-presidents as the most effective means of improving company organisation. John Bene's purpose, however, was to counter the market disruptions of the mid-1960s and so he reorganised Weldwood's sales department under a new vice-president. The experiment failed and once Donald Cluck resigned, the company reverted to employing managers with experience in the forest industry.¹⁴⁸

¹⁴⁶ Geoff Tullidge to Alan Young, Toronto, August 23, 1967, Geoff Tullidge to John Catchpole, Vancouver; Alan Young, Toronto, Jack Harber Montreal; October 7, 1966, File Central Division Memos, Box 3A, WC, RBCM.

¹⁴⁷ Donald Cluck to Geoff Tullidge, May 23, 1967 and Donald Cluck to Geoff Tullidge, July 1967, File Geoff Tullidge Memos, Box 3A, WC, RBCM. Blind copy means that no indication appears on the letter that it has been forwarded to that person. JoAnne Yates noted the use of such practices to curb authority at Scovill Manufacturing just after 1900, JoAnne Yates, *Control through Communication: The Rise of System in American Management* (Baltimore: The John Hopkins Press, 1989), 173.

¹⁴⁸ Interview with Ches Goodwin, Weldwood Sales Manager, Royston, R. Griffin, July 1998. Donald Cluck was Vice-President Marketing at W.P. Fuller & Co in San Francisco and then Director of Marketing for the Standard Packaging Corporation before joining Weldwood. He resigned from Weldwood in 1969 and was replaced in 1971 by Bryce Page, who was hired from MacMillan Bloedel.

During the 1950s and 1960s plywood manufacturers used company-owned warehousing as a way to overcome difficulties with independent jobbers and as a means to control competition. The company owned warehouses lessened external problems but created new internal difficulties, and retailers responded by forming buying groups.

Domestic Sales: 1970 and on

If the 1960s were the heyday of British Columbia plywood production, manufacturers found the 1970s disappointing, despite record production and sales. MacMillan Bloedel announced the closure of British Columbia's largest and second oldest plywood plant in the same year that plywood production peaked, 1978. The depressed plywood markets of the late 1970s induced the British Columbia Ministry of Economic Development to commission Price Waterhouse to study the plywood industry. The results were not optimistic.¹⁴⁹ Even a cautious review by the Federal Forestry Branch on the forest industry in general in 1978 noted that coastal plywood production was reaching a new stage and not one for the better. The report blamed the decline on reduced supplies of Douglas fir veneer.¹⁵⁰

The decade began optimistically. Crown Zellerbach Canada opened a new plywood plant at Armstrong in 1971. In 1972 British Columbia Forest Products built a new plant in Delta and North Central Plywood opened a new plant at Prince George. The

¹⁴⁹ Price Waterhouse, "Plywood Study" (Victoria: Ministry of Economic Development, 1977).

¹⁵⁰ Forest Products Group, *Review of the Canadian Forest Products Industry* (Ottawa: Department of

plywood plants listed in Table IV-12 illustrate the extent of the industry in 1970 and also its subsequent decline.

Table IV-12: Softwood Plywood Plants Operating in British Columbia , 1970-1999. ¹⁵¹

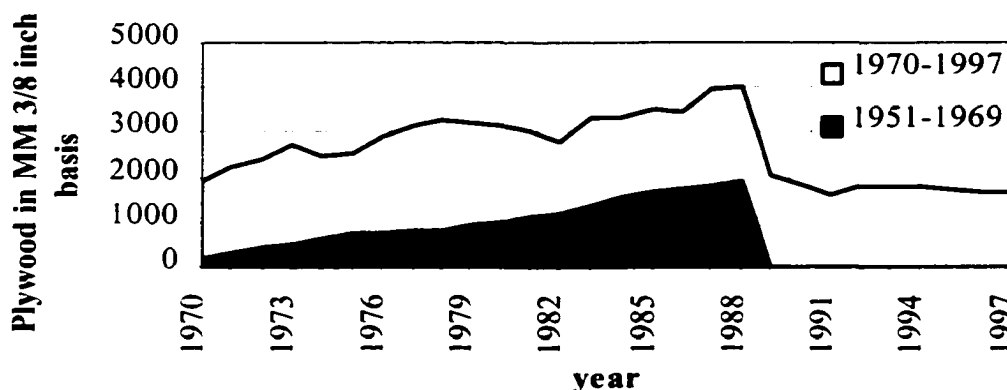
Company	Location	Start date	Closure date
Crown Zellerbach	Vancouver	1913	1986
MacMillan Bloedel	Vancouver	1935	1983
Canadian Forest Products	New Westminster	1938	1986
MacMillan Bloedel	Alberni	1942	1991
Weldwood	Vancouver	1945	1994
Weldwood	Vancouver	1946	1978
Weldwood	Quesnel	1951	Operating
British Columbia Forest Products	Victoria	1952	1982
Evans Products	Vancouver	1954	1973
Victoria Plywood	Victoria	1955	1996
Evans Products	Savona	1955	Operating
Richmond Plywood	Vancouver	1956	Operating
Crown Zellerbach	Kelowna	1956	Operating
Weldwood	Surrey	1956	1987
Douglas Plywood	Vancouver	1961	1971
Federated Co-operatives	Canoe	1965	Operating
Weldwood	100 Mile	1965	1984
Kootenay Forest Products	Nelson	1966	1982
Canadian Plywood Corporation	Vancouver	1967	1970
Crown Zellerbach	Armstrong	1971	Operating
British Columbia Forest Products	Vancouver	1972	1991
Cantree	Vancouver	1974	1998
Tolko	Hefley Creek	1973	Operating
Evans Products	Golden	1971	Operating
Weldwood	Williams Lake	1978	Operating
Northwood	Prince George	1972	Operating
Tackama	Fort Nelson	1985	Operating

The total number of plywood plants operating in British Columbia in the early-

Industry. Trade and Commerce, 1978), 40, 42.

1970s was greater than at any previous time.¹⁵² Production continued to grow until 1978 and only dropped to late-1960s levels by 1991. In the 1980s and 1990s, however, the industry shifted production away from the coast and by the mid-1980s most production was concentrated in the interior forest region. The shift was very rapid; interior production doubled between 1976 and 1980, and coastal production declined following 1978.¹⁵³ This resulted in a change in the product most commonly sold. Coastal Douglas fir was no longer the leading product of the plywood manufacturers in British Columbia;

Graph IV-5: British Columbia Softwood Plywood Production, 1970-1997 (compared with 1951-1969).¹⁵⁴



Canadian Softwood plywood and interior Douglas fir replaced it. Sanded Douglas fir production also underwent a rapid decline. In 1980 top grade sanded Douglas fir was

¹⁵¹ Directories and lists compiled at the History Section, RBCM.

¹⁵² Appendixes IV and V detail British Columbia plywood production.

¹⁵³ Mill Production Report, Council of Forest Industries, 1970 - 1993, Canadian Plywood Association.

¹⁵⁴ Statistics based on Council of Forest Industry Annual Statistical reports.

approximately twenty-five percent of total sales and by 1990 sanded sales, of all species, dropped to about eleven percent; in 1997 sanded production stood at barely three percent. By 1997 nearly seventy percent of softwood plywood production was in relatively low-grade sheathing.¹⁵⁵

The International Woodworkers of America (IWA), the union representing plywood workers, completed a study of potential markets in 1978.¹⁵⁶ The IWA was aghast at the negative report of Price Waterhouse and clearly shocked by the proposed closure in 1978 of British Columbia's largest plywood plant, MacMillan Bloedel's Vancouver Division.¹⁵⁷ The IWA argued that a viable coastal industry was possible and urged the industry to look to the United States for alternative approaches. American producers attempted to diversify into such markets as mobile home construction, alternative underfloors and foundations.¹⁵⁸ Such efforts, perhaps, delayed the rapid decline in coastal plywood production in the United States plywood industry, but certainly did not change the end result. Closures of American plywood plants during the 1980s and 1990s came as thick and fast as in Canada.¹⁵⁹ Interestingly, one of the report's main recommendations was that the coastal producers should specialise in sheathing.

¹⁵⁵ Mill Production Reports, Council of Forest Industries, 1980-1990, 1998, Canadian Plywood Association.

¹⁵⁶ "The Competitive Prospects of the British Columbia Coast Plywood Industry," Research Department, International Woodworkers of America, Regional Council No. 1, June 1978 (IWA Study).

¹⁵⁷ The plant did not close until 1983.

¹⁵⁸ IWA Study, 202-204

¹⁵⁹ R. J. Hyslip & Associates, "Coastal Softwood Plywood" (December 29, 1992), Report for the B.C.

Sheathing, however, was clearly where the coastal product was least competitive, especially when coastal and interior costs were compared.¹⁶⁰

The next ten years brought a series of studies aimed at determining if coastal plywood production had a future. If a future existed, what was the appropriate industry strategy? Woodbridge, Reed, in their 1987 report, although predicting decline in coastal capacity, expected a small growth in sales.¹⁶¹ R. J. Hyslip, another consultant, was very ambiguous regarding the future of coastal production five years later, but the report's failure to suggest market opportunities for the coast's most important plywood product, sanded Douglas fir, indicated Hyslip's doubt that coastal production had a future.

The IWA's study was the only report to argue positively for continued coastal production or to suggest alternative markets. Each succeeding report reflected the coastal industry's decline. The 1987 Woodbridge, Reed report suggested that the closure of one additional coastal plant was inevitable.¹⁶² Hyslip, in 1992, predicted the closure of another plant before a viable coastal industry would exist.¹⁶³ However, between the time of the Woodbridge, Reed report and the Hyslip report three coastal plywood plants closed, not the single plant Woodbridge, Reed predicted. Following Hyslip's report the industry closed all but one coastal plywood plant. The studies attributed the closures to

Ministry of Forests, Victoria, 12.

¹⁶⁰ IWA Study, 224.

¹⁶¹ Woodbridge, Reed and Associates, "A Strategic Analysis of the British Columbia Panel Board Industry" (February 1987) not published. Funded by the Governments of Canada and British Columbia, 49.

¹⁶² Woodbridge, Reed. "A Strategic Analysis," 1987, 77.

two factors, increased costs, particularly for raw materials, and competition from substitute products such as waferboard. Sanded coastal Douglas fir was too expensive for its traditional uses when a cheaper alternative was available. Douglas fir logs became more valuable as lumber.¹⁶⁴

British Columbia coastal plywood producers failed to secure alternative sales for their products when forced out of traditional market niches.¹⁶⁵ The coastal producers needed to find other uses for sanded Douglas fir plywood and especially uses that yielded a high enough return to enable the plywood mills to compete profitably with the sawmills for high quality fir logs. The major producers, however, had reduced their speciality production and were not prepared to increase it, nor were they willing to commit resources to capture new customers to buy existing coastal plywood production.

The majors eliminated speciality products such as the finished softwood panels and brushed and striated panels once profit margins became too small. Crown Zellerbach shut down their hardwood plant in 1970 and moved production to Fraser Mills before ceasing production of hardwood faced plywood panels entirely. Weldwood, a major producer of speciality products, shifted production from its Ash Street plant to Tply and reduced product lines during the 1970s and 1980s until in 1987 speciality production ceased and Tply closed. Canadian Forest Products, who had introduced products such as

¹⁶³ Hyslip, "Coastal Softwood Plywood," 1992, 54.

¹⁶⁴ The reasons for the increased cost of raw materials are discussed in Chapter V.

¹⁶⁵ IWA Study, 202-206.

striated and texture panels to the Canadian market, shut their plant in 1985. Some of this speciality production was in exotic woods such as Mahogany, but speciality Douglas fir production was phased out along with the exotic hardwood production. The only remaining market for sanded Douglas fir was in concrete formwork and cheaper production from the interior plants undermined the coastal mills until, except in the case of Richmond, they ceased production.

The closure of several coastal plywood mills during the late 1980s resulted in a significant drop in total provincial production. During the 1990s, production and sales have stabilised and only a small reduction occurred, caused by the closure of two additional coastal operations. Interior plywood production remained viable, demonstrating that the industry was not a sunset case as so many consultants and companies suggested.¹⁶⁶

The Council of Forest Industries' (COFI – successor to PMABC) focus on export development resulted in some shrinkage in the Canadian market but COFI decided in the mid-1980s to rethink its approach to market development and refocused on the domestic sales. Successes in the export area had not met expectations, while the failure to promote plywood in Canada had reduced domestic sales.¹⁶⁷

**We are stepping up our efforts in the Canadian market.
These had been allowed to shrink as resources were**

¹⁶⁶ Darryl Embley, Manager of Riverside's Kelowna plywood plant, Kelowna, R. Griffin, July 1998.

¹⁶⁷ Exports of plywood are discussed in the next section.

directed to overseas market development. There is a whole new generation of users and specifiers to be taught the merits of plywood.¹⁶⁸

The Canadian Plywood Association was formed in 1994 and took over product promotion when COFI reorganised. The new Plywood Association committed itself to keeping softwood plywood the preferred product for many traditional uses, including roof, wall, and floor sheathing in residential construction. It exerted every effort to re-establish the image of plywood as the preferred product for the do-it-yourself trade and in certain industrial uses.¹⁶⁹

Woodbridge, Reed, suggested that competition in the 1980s came from substitute products, primarily waferboard. It argued the industry viewpoint, one that suggested that the reduced demand was caused by competing products such as oriented strand board, and that these alternative products were the major problem faced by Canadian softwood plywood.¹⁷⁰ Such arguments suggested plywood was no longer a viable product and the plants should be closed. In 1988, in a report for the Canadian Forestry Service, Woodbridge, Reed again argued that "the softwood plywood industry, which is mainly in North America, is likely to come under increasing pressure from substitute products."¹⁷¹

¹⁶⁸ Art Kempthorne, manager COFI plywood program, "Notes for Meeting with the B.C. Cabinet Committee on Economic Development, 26 November 1984, File Presentations, Canadian Plywood Association, 2.

¹⁶⁹ Art Kempthorne, "A Presentation of Members and Potential Members," 20 February 87, Council Of Forest Industries, File Presentations, Canadian Plywood Association, 3.

¹⁷⁰ Woodbridge, Reed, "A Strategic Analysis," (1987), 15.

¹⁷¹ Woodbridge, Reed & Associates, *Wood Products; the Next Twenty Years: Prospects & Priorities*

The problem of substitutes, however, was only one of several difficulties faced by the coastal plywood producers. Other issues included a failure to create sufficient export sales, and an unwillingness to target new domestic customers.¹⁷²

Exports and Imports

The province's export markets were distinct from the domestic markets. The marketing and competitive strategies used by the plywood manufacturers in the export sector were generally co-operative instead of competitive. Competition was now from the United States, not other Canadian producers. Conflicts between the two largest export organisations, MacMillan Bloedel and Seaboard, existed, but were limited by a dependence on the Plywood Association for market development and agreements regarding export quotas. Plywood exports, after World War II, played a small but important role for British Columbia producers. The United Kingdom absorbed a large portion of British Columbia plywood production during World War II and this continued until 1948. The lifting of import restrictions by the United Kingdom in late 1953 caused British Columbia producers to once again seek customers.¹⁷³

MacMillan Bloedel and Seaboard divided the export market to the United

(Ottawa: Government of Canada, 1988), 90.

¹⁷² Discussion of the role of substitutes follows the discussion on Exports and Imports.

¹⁷³ E. G. Perrault, *Wood & Water: The Story of Seaboard Lumber and Shipping* (Vancouver: Douglas & McIntyre, 1985), 191.

Kingdom with sixty percent of the market held by Seaboard and forty percent by MacMillan Bloedel. The two export organisations formed the BC Conference and this agreement controlled amounts and pricing of exports and established the percentage ratio.¹⁷⁴ Occasionally new exporters, such as Cooper-Widman, attempted to enter the market, but most production was tied to one or the other of the consortium.

The export market was generally a small segment of total production for all regional plywood producers. Western Plywood (Weldwood) exports were a fairly constant sixteen to twenty percent of total company sales throughout the 1960s and 1970s. Western Plywood initially exported through several independent English wholesalers, but did not obtain satisfactory results, and joined Seaboard in 1960. This ratio between domestic and export sales seems to have been fairly typical until the 1980s; very few firms exported over twenty percent of their total plywood production. The amount Seaboard permitted each member to ship was based on the initial production quota of the company and on Seaboard's total sales. This quota changed as new members were added to the Seaboard organisation and it changed when one member company acquired another. Weldwood's acquisition of Canadian Collieries in 1964 added to Weldwood's export quota. No member company could export additional production until all members had reached 90 percent of their assigned quota.¹⁷⁵

¹⁷⁴B. P. Page to I. S. Brand, July 27, 1967, File 704-27, MB, UBCSC.

¹⁷⁵ Perrault, *Seaboard*, 102.

When plywood manufacturers re-entered the British market in 1953, consumers had to be convinced that Douglas fir plywood was a product they should use. Despite its extensive use in war work, consumers in Britain had little knowledge of Douglas fir plywood and viewed it with suspicion.¹⁷⁶ Seaboard immediately started a campaign to convince English buyers that they needed plywood and in 1956 the PAMBC appointed an English field agent. Given the long association of British Columbia's forest industry with England, it is hardly surprising that it became the largest export region and the geographical area to which most overseas promotion efforts were directed.

Table IV-13: Seaboard Export Shares 1965-1966.¹⁷⁷

Company	Jan.-June 1965	June-Dec. 1965	Jan.-June 1966	June-Dec. 1966	Jan.- Dec. 1966	Jan.- Dec. 1965
Weldwood	27.9	26.4	37.1	37.8	355486	341027
CANFOR	23.1	21.4	21	20.5	196214	198219
Crown Zellerbach	13.2	9	19.4	19.1	182734	176006
Tply/Cdn Collieries	11.5	10.9				
Richmond	9	8.7	9	9.3	88961	81971
Evans Plywood	8.6	7.6	7.6	7.6	62871	63779
Victoria Plywood	6.7	6	5.9	5.7	55548	55203
Total					517284	916205

The first columns show percentages, the last two columns show, on a M 3/8" square foot basis, the amount of plywood sold.

¹⁷⁶ Perrault, *Seaboard*, 198.

¹⁷⁷ File Seaboard Meetings, Box 4B, WC, RBCM.

**Table IV-14: Seaboard Exports
to United Kingdom, 1955-1963.¹⁷⁸**

Year	Plywood in MM 3/8	
1955	11	
1956	13	
1957	17	
1958	19	
1959	?	
1960	41	
1961	68	Western Plywood included
1962	92	
1963	91	Evans and Richmond included

Over the next decades, the Plywood Manufactures Association's English agents spent their time seeking expanded sales. In 1961 their activities included building a ski jump of plywood for an international competition held at Wembley. They helped a truss fabricator design a new plywood truss. A manual on rigid frame construction was produced in 1960 and four thousand were distributed in 1961, and at least twenty buildings were built using the rigid frame method. In 1961, as well, twenty-six lectures were given, five exhibits created, three conferences attended, and answers were prepared to numerous written and verbal inquiries. Inspectors, builders and trades people were all individually visited.¹⁷⁹ Such activities occupied Canadian and overseas agents year after year as they visited plywood importers, architects, builders, wholesalers, attended conferences, and exhibitions. The only significant change to their routine occurred after

¹⁷⁸ Geoff Tullidge, to M. Pollack, New York, January 15, 1964, File M. Pollack, Box 10, WC, RBCM.

¹⁷⁹ J. R. Wilson, London to Market Committee, June 18, 1962, Field Reports Jan-Jun 1962, Box 77, COFI.

1966 when the COFI reorganised along functional lines, instead of product groups.¹⁸⁰

The field agents of the various organisations were merged by 1970 and these representatives began to work with all solid wood products, including lumber and shingles. Lumber was now the major component of the workload instead of plywood, although special attention was given to plywood at various times.¹⁸¹

Efforts to interest other Europeans and, in fact, any potential plywood importer, were pursued, if with less zeal than was applied to the United Kingdom. In the early 1960s, initial efforts to expand plywood markets to the European continent commenced. The overseers at PMABC were aware this would be a long process. Reports from France, for example, were not encouraging. The PMABC's field agent noted in 1963: "I am not certain either that anyone can in the end sell fir plywood to the French."¹⁸² In France four conditions worked against Canadian Douglas fir plywood: France had its own plywood industry, cheaper and lower grade American plywood competed for the same business, Canadian plywood was the highest priced in the market, and low labour costs in construction meant that large cost savings, by using plywood, did not occur. The PMABC's Paris agent highlighted two of these problems in 1963 by noting that "the

UBCSC.

¹⁸⁰ The Plywood Manufacturers' Association joined the Council of Forest Industries in 1963.

¹⁸¹ This paragraph is based on a survey of field reports in Boxes 77-81 1962 to 1974 and Box 118, 1981-1984, COFI, UBCSC, and Minutes and Report Plywood Committee, 985-86, Box 21, Delta Plywood Collection (DC), RBCM. The change in emphasis is illustrated in *Plywood World*, which in 1970 was given a new title, *Wood World* and included articles about a variety of wood products, not just plywood.

¹⁸² J. R. Wilson, London to Directors, May 13, 1963, Field Reports Jan-June 1963, Box 77, COFI, UBCSC.

retail price of Douglas Fir Plywood does not appear to be competitive with other plywood..." and that "saving in labour is still considered negligible in France."¹⁸³

Promotion efforts, nevertheless, continued in France.

Elsewhere, Germany seemed a better option and received far more attention. An agent appointed in 1961 visited government agencies to seek approval for use of plywood and visited the architects, builders, engineers and manufacturers who might be able to use plywood. The British Columbia plywood producers assisted this process when possible. MacMillan Bloedel's Alberni Plywood operation, for example, made an attempt in 1988 to produce to new German specifications, but it was insufficient to delay the plant's closure in 1991.

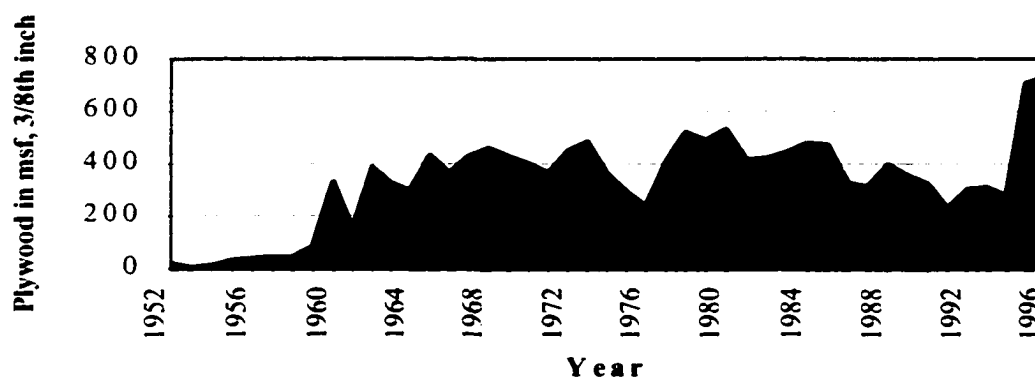
Canadian plywood manufacturers realised that persistence in establishing export markets in Europe was necessary, despite the apparent lack of results. COFI targeted specific countries for intensive campaigns in the 1980s. In 1985 and 1986 the COFI Marketing Committee focused on Italy. Their agent made a special effort to interest Italian architects and builders in using Canadian plywood for concrete formwork. Meetings were held and, late in 1985, a display was put up at the Bologna Fair. The agent noted "the Bologna fair is in fact a meeting point and is a good opportunity for many of our clients to come to visit us for discussion and comments on the market. It

¹⁸³ R. Huc, Paris to the Directors, PMABC, May 20, 1963, , Field Reports Jan-June 1963, Box 77, COFI, UBCSC.

gives also a high profile image to COFI and to its products."¹⁸⁴

Sales by country varied year by year and only the United Kingdom consistently provided orders for plywood. A large order might be secured in Belgium, for example, and then no further orders of any size for several years. Despite the scattered nature of exports, the actual total amount of plywood exported did not greatly vary.

Graph IV- 6: British Columbia Plywood Exports, 1952-1996¹⁸⁵



Complications regularly threatened the tenuous European market for Canadian plywood. Germany's entry into the European Common Market was typical. Upon joining the European Common Market, Germany was subject to uniform European regulations and Canadian manufacturers needed to apply for certification under new

¹⁸⁴ "MP Activity in Concrete Formwork November," January 14, 1986, File COFI - PLYWOOD COMMITTEE MEETING, Box 21 DC, RBCM, 6.

standards and abide by new quota regulations.¹⁸⁶ Price competition was another serious problem all over Europe, including England. American plywood manufacturers, in particular, attempted to undermine the Canadian market position and Canadian leadership was tenuous. As the COFI's London agent noted:

There can be no doubt that we are obtaining a premium for our plywood, that quality is recognised by the market, and that the time and effort that COFI and the industry have put into developing this market in the past is paying dividends today.¹⁸⁷

Difficulties at home contributed to the problem as well. The 1986 International Woodworkers of America strike in British Columbia's solid wood products industry gave American plywood an opening in the English market. COFI's agent noted: "American produced plywood, but using Canadian nomenclature, found a home here when Canadian was unavailable."¹⁸⁸ Composite boards were also invading and they could potentially undermine the English plywood sales, just was occurring in Canada. Faced with these problems in England, the COFI Marketing Committee agreed to increase the staff in England. Its goals were to "establish a promotional program aimed at limiting the penetration of composite boards into plywood's established end uses."¹⁸⁹ This was at the

¹⁸⁵ Data from COFI Statistical files, Canadian Plywood Association..

¹⁸⁶ Plywood report from P. M. Desclos Rome, 17 July 1986. File COFI - PLYWOOD COMMITTEE MEETING, Box 21, DC, RBCM.

¹⁸⁷ Report from P. J. Metcalfe London 18 June 1986. File COFI - PLYWOOD COMMITTEE MEETING Box 21, DC, RBCM.

¹⁸⁸ P. J. Metcalfe, London to Plywood Committee, 21 January 1987, Memo 554 Ldn, File COFI - Plywood Committee Meeting, Box 21, DC, RBCM.

¹⁸⁹ Minutes of Subcommittee, 21 January 1986, File COFI - Plywood Committee Meeting, Box 21, DC.

expense of the extra efforts in Italy where results did not yet seem to justify the costs.¹⁹⁰

Manufacturers, Seaboard and COFI also looked at export markets outside of Europe in the 1970s and 1980s. A plywood mission was sent to the Middle East in 1983 and COFI investigated possibilities in China.¹⁹¹ In 1986, plywood was forwarded to China for testing. The Chinese expressed concerns about delamination and paint application but most importantly they wanted the panels cut into smaller sizes. They considered the panels too heavy. Although the Chinese continued to express an interest, no significant export orders were received.¹⁹² More importantly, in the 1980s and 1990s the COFI marketing program finally made inroads into the Japanese market. The potential of the Japanese market was immense and Canadian producers were growing desperate in the face of increased United States competition in Europe.

Winning sales in Japan was a long and expensive process. British Columbia building products faced a fifteen percent tariff, which raised the price of Douglas fir plywood above that of Japanese produced Lauan plywood. Certification problems, differences in building techniques, and the Japanese bureaucracy created other obstacles.

A 1976 report noted that Japanese building techniques employ 3 x 6 and 3 x 8 sizes not 4

RBCM.

¹⁹⁰ Minutes, 29 April 1986, File COFI - Plywood Committee Meeting, Box 21, DC, RBCM.

¹⁹¹ Minutes, 21 January 1983, WPD Managers Meetings 1981-1984, COFI, UBCSC. D. C. Cartwright, Vancouver to Plywood Committee, 28 January 1987, File COFI - Plywood Committee Meeting, Box 21, DC, RBCM.

¹⁹² D. C. Cartwright, Vancouver to Plywood Committee, 28 January 1987, File COFI - Plywood Committee Meeting, Box 21, DC, RBCM.

x 8. An extensive promotional effort would be essential to overcome this preference.¹⁹³

Not be deterred, COFI, initiated the Caravan Project between 1977 and 1979 with a major investment in time and money. COFI jointly organised the project with the Japan Wood Frame Housing Association with the objective of demonstrating platform frame construction and increasing its acceptance in Japan. The project sponsored construction of a number of houses and successfully raised interest levels among certain Japanese builders and communities. In 1977, for example, the Caravan Project constructed thirty-eight houses in nine different centres and the program expanded in 1978.¹⁹⁴ The Project was only one of several initiatives by COFI, but it seems to have been quite successful in making the frame house more acceptable to the Japanese buyer.

An equally critical part of the COFI program was to secure official approval for the use of Canadian plywood in Japanese construction. It was also important to secure acceptance of Canadian grade marks so that each order of plywood shipped did not require re-inspection in Japan and a special permit. Years of lobbying finally improved the certification issue, when in 1982 COFI received approval validating its plywood stamps. Pressure from the United States Government on behalf of American forest product manufacturers was critical to achieving success. The initial approval was only

¹⁹³ "An assessment of the COFI promotion of the '2x4" framing system and Associated B.C. Wood Products in Japan," Nov 1976. Box 112, COFI, UBCSC. Many of these programs received significant Canadian Government support, as well. The size is in feet and are length by width. Production of the smaller sizes would have required special production runs and equipment adjustments by the producing plant. The producers were unwilling to instigate such a program.

for construction use, but as a COFI report noted:

While the standard will allow our plywood to be used for construction purposes, the effect of the official stamp of approval on our plywood should permeate to all end users.¹⁹⁵

An agreement was finally in place that permitted individual mills to be certified in Canada instead of each shipment requiring certification in Japan.

Despite the years of work and some gains by the early 1990s, exports to Japan were still modest. Canadian building techniques were successfully introduced and certification problems reduced but further effort was required.¹⁹⁶ COFI began to use a field representative, similar to the successful programs in Canada and Europe. The COFI appointed representative visited architects, builders and importers. He met tour groups, arranged advertising and in general promoted Canadian plywood. He investigated construction sites and found, for example, that in one case the nailing "not so good" and suggested improvements to the builder.¹⁹⁷ As a major world consumer of plywood, Japan was an important market to British Columbia plywood manufacturers. Table IV-16 demonstrates the dramatic growth in exports to Japan following 1990. Growth in the Japanese market was curtailed by the Asian economic downturn of the late-1990s.

¹⁹⁴ Caravan Project 1978, Box 112, COFI, UBCSC.

¹⁹⁵ FMG, Aug 1982, File Monthly Reports, 1981-1982, Box 112, COFI, UBCSC.

¹⁹⁶ Joseph P Caron to D.N. Chapotelle/A.W. Kempthorne, February 25, 1986, File Inter Office Correspondence, Box 21, DC, RBCM.

¹⁹⁷ Notes, January 26, 1982, File Staff Meeting Minutes, 1981-1982, Box 112, COFI, UBCSC.

Table IV-15: British Columbia Exports to Japan, 1987-1996.¹⁹⁸

Year	3/8 th s MM sq. feet	Percent of all exports	Exports as a Percent of total shipments
1987	41.2	13.3	1.6
1988	39.9	10.1	1.6
1989	51.6	14.6	2.1
1990	68.0	21.2	3.1
1991	60.4	26.6	3.5
1992	79.9	26.6	3.8
1993	109.7	35.7	5.4
1994	108.2	39.4	5.2
1995	313.5	44.3	15.0
1996	506.7	69.4	24.7

The advertising focus of COFI and the manufacturers during the 1980s and early 1990s remained on the United Kingdom and Europe, despite the growing importance of Japan. Attention only shifted once the manufacturers realised that Japanese imports of Canadian plywood were greater than those of Europe. The mid-1980s COFI promotion budget, for example, still emphasised Europe.

TABLE IV-16: COFI Product Promotion Budget, 1985.¹⁹⁹

North America	\$ 173,600
Advertising operations	185,600
Europe	114,600
United Kingdom	213,200
Germany	70,200
France	101,300
Benelux	69,900

¹⁹⁸ Information from Annual Statistical Tables, published by the COFI.

¹⁹⁹ Report to Council of Forest Industries, Plywood Committee, June 27, 1986. Box 21. Delta Plywood Collection (DC), RBCM.

Italy	155,400
Total Europe	724,600
Japan	139,000
China	0
Others	20,300
Total overseas	883,900
Total	1,284,700

COFI continued the extensive overseas promotion programs the PMABC initiated in 1956, but the focus gradually shifted as COFI integrated its operations. The bulk of the Association's revenues came from the lumber sector and gradually, even in overseas market promotion, lumber assumed greater prominence. When lumber interests conflicted with plywood interests, lumber won out. Plywood manufacturers were somewhat disturbed by several COFI actions, but the Canada-United States Free Trade Agreement was particularly aggravating. COFI supported free trade, which was advantageous to the lumber and shingle groups, but the plywood manufacturers saw free trade as a potential catastrophe and strongly opposed it. Competition from the United States in Canada was rare, despite some wholesalers' attempts to use American imports as a threat to counter rising plywood prices. However, a tariff of fifteen percent combined with building code differences severely limited United States imports. The advent of free trade potentially changed a precarious balance at a time when United States imports were a growing concern. British Columbia Forest Products, in an internal memo suggested that a reduction of the Canada - United States' tariff to below ten percent

would eliminate the unionised coastal mills, largely due to American competition.²⁰⁰

The central issue of the Canada-United States Free Trade Agreement, however, was not tariff reduction, but the blending of plywood quality standards. Previously, the American manufacturers were unwilling to meet Canadian standards in order to compete in the relatively small Canadian market. The application of the Canada-United States Free Trade Agreement meant standards had to correspond and American plywood would be able to compete with Canadian plywood despite a lower standard of manufacture.²⁰¹

One of the major appeals made by Canadian manufacturers to hold their share in the world plywood market was a higher production standard. The Free Trade Agreement would eliminate this appeal.²⁰² One COFI member noted:

Canadian Standards are valid and must not be compromised;
to the detriment of overseas markets for Canadian producers,
and to the detriment of plywood markets in general in
relation to other competing panel products.²⁰³

The plywood manufacturers pointed this out to COFI and the Canadian Government. The main goal sought by COFI, however, was the elimination of trade

²⁰⁰ W. Pumpfrey to M. A. Douglas inter-office memo, April 1, 1987, File COFI Plywood Committee Minutes, Box 21, DC, RBCM.

²⁰¹ Interview with Art Kempthorne, Director Technical Services, Canadian Plywood Association, Vancouver, R. Griffin, February 10, 1999. Some United States plywood production was actually to a higher standard than required in Canada. One central difference was the extensive use of cold pressed plywood in the United States in applications where hot pressed plywood was only allowed in Canada.

²⁰² Minutes. Council of Forest Industries Plywood Committee, November 3, 1987. File COFI Plywood Committee Meetings, Box 21, DC, RBCM.

²⁰³ Minutes. Council of Forest Industries Plywood Committee, November 3, 1987, File COFI Plywood Committee Meetings, Box 21, DC, RBCM, 2.

barriers. The plywood committee received a memo that indicated the COFI policy: "in essence, we are pursuing a full free-trade philosophy and policy for wood-products."²⁰⁴

Protests, however, induced COFI President T. M. Apsey to write to Pat Carney, Minister for External Trade, requesting "in the strongest possible terms," the exclusion of plywood from the Free Trade Agreement.²⁰⁵ The Canadian Government, however, intended to pursue free trade regardless of the consequences to Canadian industry or the advantages gained by the United States.

The issues were resolved in favour of the United States and in theory tariffs on plywood were to be eliminated between the two countries. This meant that the problem of differing standards had to be resolved and a committee was formed to make proposals for consolidation. It became clear in the subsequent negotiations that the United States had no intention of reducing plywood tariffs. The whole process, at least from the Canadian perspective, was an exercise in foreign market control. The American plywood manufacturers wanted to eliminate Canadian standards as a competitive factor in export markets outside North America.²⁰⁶

British Columbia's plywood producers used competitive strategies to penetrate

²⁰⁴ P. G. Grant to the Plywood Committee, memo, April 21, 1986, File COFI Plywood Committee Meetings, Box 21, DC, RBCM.

²⁰⁵ Council of Forest Industries, Plywood Committee, Minutes, November 3, 1987, File COFI Plywood Committee Meetings, Box 21, DC, RBCM.

²⁰⁶ T. M. Apsey to Michael Wilson, June 24, 1992, Background files Free Trade, Canadian Plywood Association. Negotiations have been held to adjust standards and tariffs, but as of 1999 no final resolution had been reached.

export markets, different from those employed in domestic markets. Industry decision-makers opted for two distinct marketing strategies during the 1940s and 1950s. None of the plywood producers were in a position to successfully penetrate foreign markets as an individual company. MacMillan Bloedel attempted to market on its own, but it also supported the efforts of the PMABC to create an awareness of the potential uses of plywood, in contrast to MacMillan Bloedel's attitude in domestic markets. MacMillan Bloedel's willingness to enter a restrictive trade agreement also suggests that the company was well aware that the task of foreign market penetration was beyond even its ability. The PMABC adopted similar tactics in both the domestic and export markets to attract business. The manufacturers, however, used a different strategy to expand Canadian export market share. Co-operation both in export quotas and reliance on PMABC to spearhead market development resulted in little competition amongst the Canadian manufacturers. As well, producers did not create a network of foreign-owned wholesalers such as existed in Canada. Instead the manufacturers relied on local distributors to convey their product to the consumer.

Substitution: Panels not Plywood

Substitute panels such as oriented strand board were blamed for declining plywood sales and especially for the virtual demise of coastal production. British Columbia panel manufacturers, except for MacMillan Bloedel, made relatively little

effort to produce these panels until the 1990s. The important place given to alternative panel in explaining problems within the plywood industry, however, means that they must be examined if we are to understand plywood manufacturing, promotion and sales.

Alternative, non-plywood panel products bear little resemblance to plywood, but they do compete in the same markets. The strategies of plywood producers toward these panels were varied. British Columbia Forest Products and Crown Zellerbach Canada, followed by Fletcher Challenge, largely ignored it and subsequently withdrew from plywood production due to product competition and corporate reorganisation.²⁰⁷

Canadian Forest Products developed and maintained a small presence in speciality panel production, but effectively removed itself from the competition that emerged between waferboard/oriented strand board and plywood. MacMillan Bloedel, perceiving itself as a panel producer and a developer of oriented strand board production, moved its panel production into these new areas. Weldwood, although producing non-plywood panels, remained a major plywood producer and, in contrast to MacMillan Bloedel, increased its plywood production. Despite MacMillan Bloedel's early involvement in non-plywood panels, few British Columbia firms entered the industry until the late-1990s.

Substitution has long concerned solid wood producers. Plywood was sold as an alternative to lumber and, although initially more expensive than lumber, its savings in labour and its other advantages, resulted in the virtual replacement of lumber in

sheathing, furniture manufacture and similar markets. The development of waferboard, hardboard, particleboard, fibreboard and chipboard meant that plywood had to maintain certain cost levels if it was to compete. Expensive coastal Douglas fir priced itself out of the market. This had already occurred by the 1970s with speciality production when coated and faced hardboards replaced most speciality plywood. Waferboard, although not as satisfactory a product, replaced plywood in many construction applications.

The plywood industry knew of the danger of product substitution even as it campaigned to substitute plywood for lumber. In 1950 one report noted the threat of hardboards.²⁰⁸ In 1962 a MacMillan Bloedel researcher pointed to the threat from aspenite (a type of chipboard), which was moving aggressively into the Prairies.²⁰⁹ A second survey commissioned by MacMillan Bloedel in 1962 noted the same problem:

Fir plywood is becoming increasingly vulnerable to inroads from new panel products, which are being produced closer to the consuming area, such as particle boards, fibre boards and local species plywood.²¹⁰

The problem of substitution by these new panels initially seemed of little importance to the large plywood manufacturers. The first non-plywood panel sales replaced specialised products of little concern to the large Douglas fir plywood

²⁰⁷ British Columbia Forest Products operated a waferboard plant in the United States.

²⁰⁸ G. Bowell, "Report on Plywood Project," October 20, 1950, Box 854-2, MB, UBCSC.

²⁰⁹ R. L. Barclay, "Specialty Plywood Products, Canada Market Survey," June 29, 1962, Box 121-25, MB, UBCSC.

²¹⁰ J. S. Blake and J. A. Bergstrom, "Sylvaply Plywood, Canadian Market Survey and Sales Forecast 1962-1966," January 15, 1962, Box 121-21, MB, UBCSC,

manufacturers. Substitutes initially replaced panel products for interior sheathing such as mahogany, oak, and birch faced plywood, and plywood destined for the furniture manufacturers. Because the speciality users purchased little Douglas fir plywood, the sales lost were only a tiny fraction of total sales. The early fibreboards were unsuitable for exterior panel applications and so did not directly compete with the Douglas fir in its largest market, building materials.

The increased manufacturer of particle and hardboards is quite understandable in a competitive framework. The two largest suppliers of speciality plywood products were Weldwood and Crown Zellerbach Canada, while MacMillan Bloedel and Canadian Forest Products developed hardboard substitutes. Canadian Forest Products and MacMillan Bloedel initially developed their particleboard and hardboard production to use waste material, but the companies recognised its potential as a product capable of undermining Weldwood's and Crown Zellerbach's speciality plywood production. MacMillan Bloedel and Canadian Forest Products also recognised that hardboard was not competitive in the large Douglas fir builder market.

Waferboard and subsequently oriented strand board were the most serious substitution threat to plywood. Developed in the early 1950s by the Potlatch Corporation at Sandpoint, Idaho, waferboard's initial high production cost seemed to limit its danger as a substitute. Plywood manufacturing costs decreased in the 1950s and raw materials

were comparatively easy and cheap to obtain.²¹¹ The potential danger from waferboard, however, was clear by the 1960s. Canadian government agencies, such as the Canadian Forest Service and the Canada Mortgage and Housing Corporation, recognised waferboard as early as 1962 when they accepted it as a substitute for plywood in floor and wall sheathing. Waferboard, unlike plywood, did not depend on the best logs, but utilised small wood and even waste. The use of heretofore waste material, more than anything else, worked in the favour of waferboard on two fronts. First of all, it undersold plywood because the raw materials were cheaper. Secondly, by using waste materials waferboard was seen as a conservation measure and therefore received considerable government support in the form of research and a ready acceptance into building codes whenever it seemed to meet grade standards.²¹² By the 1980s plywood was being presented as a product with little future. Two senior forest products company executives confidently predicted that waferboard would replace plywood. Adam Zimmerman, Chairman of Noranda, for example, stated that: "waferboard is a substitute for plywood and has all the same uses."²¹³ *Hiballer Forest Magazine* added to the debate when it pointed out in 1980, "plywood has become a maligned product over the past couple of

²¹¹ Bengsten, David N., Hans M. Gregersen and John Haygreen, "Seesawing Across the 49th Parallel: International Diffusion of a Wood-Based Technology," Paper presented at the 1986 Forest History Conference, Vancouver, 1986, 2-3.

²¹² *Ibid.* 5-8.

²¹³ "Canada Japan Businessman's Conference, Kyoto, May 12, 1980," Box 112-6, COFI, UBCSC.

years with many predicting its demise."²¹⁴ It was hardly surprising that a decline in plywood production occurred and other board production increased when leading forest products companies, including MacMillan Bloedel, predicted its decline and produced alternative panel products.²¹⁵

The substitution of hardboards, particle boards and waferboards for plywood was an uneven process. Canadian Forest Products established British Columbia's first hardboard plant in 1948 at New Westminster. The company built the plant originally to use veneer waste from the plywood plant. It expanded the plant at various intervals, but its production remained small when compared with plywood on a square foot basis. Canadian Forest Products continued to operate its hardboard plant for at least fifteen years after it shut down its plywood plant.²¹⁶ The plant became particularly profitable with development of overlays in the 1960s. Overlaying the hardboard with a face gave the panels a decorative hardwood appearance and they were sold as interior wall panelling, at considerably less cost than hardwood faced plywood. Canadian Forest Products primarily sold through their own warehouse system, but at times supplied other distributors.

MacMillan Bloedel built British Columbia's second non-plywood panel plant in 1961. The Powell River Company developed a particleboard, originally called

²¹⁴ *Hiballer Forest Magazine* 31/12 (December 1980), 68.

²¹⁵ "Canada Japan Businessman's Conference, Kyoto, May 12, 1980," Box 112-6, COFI, UBCSC.

²¹⁶ The plant is operating in 1999.

flakeboard.²¹⁷ MacMillan Bloedel on its merger with the Powell River Company acquired this process. Sales difficulties resulted in several years of erratic production before a rebuilt plant became profitable in 1965, producing a particleboard called K-3.²¹⁸ MacMillan Bloedel expanded its involvement in board production with the purchase of the Hudson's Bay Forest Products in Saskatchewan in 1965.²¹⁹ It was at the Hudson's Bay plant that MacMillan Bloedel, the largest of the Canadian Douglas fir plywood producers, produced the first commercially successful waferboard.

Weldwood began particleboard production in 1964 when it bought the failing Columbia Forest Products plant at Sprague, Manitoba. This plant produced medium density fibreboard, but Weldwood quickly discovered that unless it operated at full capacity, it lost money. Months after rebuilding the plant, John Bene noted that they were "still finding out how intricate particleboard manufacture is...."²²⁰ Weldwood decided by the middle of 1965 that the plant was too small, lacked a sufficient raw material supply (despite help from the Manitoba Government), and was located too far from its markets.²²¹ Bene considered how much it would cost to walk away as early as mid-1966. Finally, in mid-1967 Weldwood closed the plant and returned it to the

²¹⁷ Robert H. Forbes, "Red Cedar 'Shavings' Make Board Product," *British Columbia Lumberman* 44 (April 1960), 53-54.

²¹⁸ Robert H. Forbes, "Wallboard from Waste," *British Columbia Lumberman* 49 (August 1965), 58-60. Articles in *Canadian Woodworker* (April 1962), copies on file, RBCM.

²¹⁹ "MB to Expand Sask. Particle Board Plant," *Canadian Forest Industries* 88 (April 1968), 23.

²²⁰ John Bene to Gene Brewer, "Report for Fiscal Year, Ending April 30, 1965, June 1, 1965," File Gene Brewer, Box 7B, WC, RBCM.

²²¹ John Bene to Gene Brewer, August 31, 1965, Report for Quarter, File Gene Brewer, Box 7B, WC,

Manitoba Government.²²²

Board production, however, continued to grow steadily outside British Columbia. Sixteen plants were in operation in Canada by 1970, while only the two original board plants still operated in British Columbia, owned by the same two British Columbia companies. Plywood production still dominated the British Columbia industry.

**Table IV-17: Panel Plants (Non-Plywood),
Operating in Canada in 1970.**²²³

Owner	Location	Product	Capacity In mmsf ²²⁴
Columbia Forest Products Ltd	Sprague Manitoba	PB	20.0
Flake Board Co.	Milltown N.B.	PB	34.5
MacMillan Bloedel	Vancouver	PB	40.0
MacMillan Bloedel	Hudsons Bay Sask.	PB	67.0
Rexwood products	New Liskeard Ont.	PB	25.0
Sogfor Ltd	Labelle Que.	PB	40.0
Abitibi Paper Co.	Sturgeon Falls Ont.	HB	130.0
Canadian Forest Products	New Westminster	HB	180.0
Masonite Co.	Gatineau Que.	HB	180.0
Building Products of Canada	Edmonton Alhta	IB	520.0
Building Products of Canada	Winnipeg Man.	IB	215.0
Building Products of Canada	Gatineau Que.	IB	?
Canadian International Paper Co.	Gatineau Que.	IB	154.0
Canadian Johns-Manville	North Bay Ont.	IB	100.0
Domtar	Donnacona Que.	IB	100.0
Domtar	Saskatoon Sask.	IB	40.0

PB= particleboard, HB = hardboard, IB = insulation board.

The board plants listed in Table IV-18 largely produced products which replaced plywood only in specialised applications and so did not seriously infringe on Douglas fir

RBCM.

²²² John Bene to Gene Brewer July 5, 1966 John Bene to Gene Brewer, July 28, 1967, File Gene Brewer. Box 7B, WC, RBCM.

²²³ Directory, *Forest Industries* 97/8 (July 1970) 92-97. British Columbia plants are in bold.

plywood sales. MacMillan Bloedel's plant at Hudson's Bay produced the only structural product competing with Douglas fir plywood. This was a growing industry, however, as the following two tables show. There were thirty-three board plants in production in Canada by 1980, and a similar number in 1990. The type of product produced and the companies involved changed significantly between 1970 and 1980 and subsequently to a lesser extent between 1980 and 1990. Much of the increase was in the structural panel area and directly substituted for plywood. The growth of non-plywood panel production is illustrated in Tables IV-19 and 20. The issue is clear, plywood production declined and waferboard and particleboard production dramatically increased. British Columbia, until the late 1990s, only participated in non-plywood panel production in a limited fashion.

**Table IV-18: Canadian Board Plants
(Non-Plywood), in 1980.²²⁵**

Owner	Location	Product	Capacity In mmsf
Parta Industries	Grand Forks BC	PB	20.0
MacMillan Bloedel Ltd	Vancouver BC	PB	54.0
Flake Board Co	Saint Stephen NB	PB	30.0
Pluswood Mfg Div.	Atikokan Ont	PB	55.0
Levesque Plywood Ltd	Hearst Onmt	PB	60.0
Domtar	Huntsville Ont	PB	50.0
Rexwood Products Ltd	New Liskeard Ont	PB	35.0
Great Lakes Forest Products	Thunder Bay Ont	PB	80.0
Mallette Lumber Inc.	Timmins Ont	PB	4.8
Sogfor Ltd	Lac Des Iles PQ	PB	52.0
Flake Board Co.	Saint Stephen NB	TPB	18.0
Pulpwood Mfg Ltd	Atikokan Ont	TPB	200.0

²²⁴ Mmsf = million square feet.

²²⁵ *Directory of the Forest Products Industry, 1980* (San Francisco: Miller Freeman, 1980). British Columbia plants are in bold.

Great Lakes Forest Products Ltd	Thunder Bay Ont	TPB	125.0
Alberta Aspen Board Ltd	Slave lake Alta	WB	100.0
Northwood Pulp & Paper Ltd	Chatham NB	WB	100.0
Silvaplex Ltd	Gravenhurst Ont	WB	?
Weldwood Of Canada	Longlac Ont	WB	110.0
Great Lakes Forest Products Ltd	Thunder Bay Ont	WB	76.0
MacMillan Bloedel	Thunder Bay Ont	WB	80.0
Waferboard Corp	Timmins Ont	WB	80.0
MacMillan Bloedel	Hudson Bay Sask	WB	95.0
Canadian Forest Products Ltd	New Westminster BC	HB	180.0
Masonite Canada Ltd	East River Point NS	HB	?
Abitibi Forest Products Ltd	Sturgeon falls Ont	HB	140.0
Masonite Canada Ltd	Gatineau PQ	HB	?
Waferboard Board Corp	Timmins Ont	MDF	7.2
Domtar	Huntsville Ont	CB	19.5
Stramit Corp Ltd	Edmonton Alta	IB	10.0
Building Products of Canada	Wabamun Alta	IB	54.0
Nordfibre Co	North Bay Ont.	IB	130.0
Domtar	Donnacona PQ	IB	110.0
Masonite Canada	Gatineau PQ	IB	?
Building Products of Canada	Pont Rouge PQ	IB	125.0

PB = Particleboard, TPB = thin panelboard, WB = waferboard, HB = hardboard
MDF = medium density fibreboard, CB = composite board , IB = insulation
board. Msf equals 1000 square feet.

**Table IV-19: Canadian Board Plants
(Non-Plywood), in 1990.²²⁶**

Owner	Location	Product	Capacity In mmsf
CANPAR Industries	Grand Forks BC	PB	100
Northwest Panelboard	Smithers BC	PB	42
MacMillan Bloedel Ltd	Vancouver BC	PB	54
Proboard Ltd	Atikokan Ont	PB	65
Rexwood Products Ltd	Haileybury Ont	PB	58
Levesque Plywood Ltd	Hearst Ont	PB	58
Domtar	Huntsville Ont	PB	58
Mallette Lumber Inc.	Timmins Ont	PB	56
Noranda Panelboard Inc	Lac Des Iles PQ	PB	85
Panval Inc	Saybec PQ	PB	140

²²⁶ *Directory of the Forest Products Industry, 1990* (San Francisco: Miller Freeman, 1990). British Columbia plants are in bold.

Forpan Inc	Val D'Or PQ	PB	140
Grant Forest Products Ltd	Englehart Ont	WB	180
Mallette Inc	Timmins Ont	WB	38
Normick Chambord Ltd	Chambord PQ	WB	?
Nomick Perron Inc	La Sarre PQ	WB	76
Nomick Perron Inc	Val D'Or PQ	WB	175
Atlantic Waferboard	Chatham NB	OWB	98
Lanofor Inc	St-Michel-Des-Saints	OWB	?
MacMillan Bloedel	Hudson Bay Sask	WB	185
Sturdy-Wood Inc	Drayton Valley Alta	OSB	250
Pelican Spruce Mills Ltd	Edson Alta	OSB	250
Louisiana-Pacific Panel Products	Dawson Creek BC	OSB	?
Mallette Inc	Timmins Ont	OSB	36
Mallette Inc	St -Georges-De-Champlain PQ	OSB	150
Blue Ridge Lumber (1981) Ltd	Whitecourt Alta	MDF	60
Domtar Construction Materials	Donnacona PQ	MDF	140
Panfibre Inc	Mont-Laurier PQ	NDF	68
Canadian Forest Products Ltd	New Westminster BC	HB	110
Canadian Pacific Forest Products	Chester NS	HB	310
MacMillan Bloedel	Sturgeon Falls Ont	HB	47
Canoxel Hardboard Inc	East River NS	HB	?
Nordfibre Co	North Bay Ont	IB	110
Building Products of Canada	Pont Rouge PQ	IB	225

PB = Particleboard, WB = waferboard, OWB = oriented waferboard, OSB = oriented strand board, HB = hardboard MDF = medium density fibreboard, IB = insulation board.

Despite the early initiatives by MacMillan Bloedel and Canadian Forest Products, British Columbia's participation in the non-plywood panel sector lagged behind other regions of Canada. MacMillan Bloedel was the only British Columbia plywood manufacturer that restructured to become a panel producer, rather than a plywood producer. Each of the major producers, except Crown Zellerbach, engaged in non-plywood panel production in a small way, but British Columbia Forest Products, Weldwood and Crown Zellerbach remained committed to plywood production during the

1980s, while Canadian Forest Products ceased producing plywood.

A new particleboard plant, British Columbia's third non-plywood panel plant, opened in Grand Forks in 1968, but quickly ran into marketing difficulties. These were solved in the early 1970s by the procurement of contracts from an eastern Canadian furniture manufacturer.²²⁷ It was another decade before a fourth plant went into production at Smithers in 1981.²²⁸ In 1986 the British Columbia Government, much to the consternation of the rest of the industry, assisted Louisiana Pacific to construct a waferboard plant at Dawson Creek.²²⁹

In the late 1990s more British Columbia companies entered particleboard production. West Fraser Timber, for example, expanded into fibreboard production by purchasing a plant in Alberta and constructing a second plant at Quesnel in 1996. The new British Columbia forest industry leaders shifted into waferboard production, but most production capacity was built in Alberta where the companies used the available aspen forests. In British Columbia, the Ainsworth Lumber Company at 100 Mile House and Slocan Forest Products at Fort Nelson, opened oriented strand board plants in 1994 and 1996 respectively.²³⁰ Ainsworth and Slocan also produced plywood, but new capital

²²⁷ "From Waste to Profit: A Long Uphill Battle," *British Columbia Lumberman* 59 (November 1975), 16-17.

²²⁸ "From Waste Wood to Quality Board Products," *British Columbia Lumberman* 65 (May 1981), 38.

²²⁹ *Logging and Sawmilling Journal* 27/6 (September 1986), 7.

²³⁰ Ainsworth Lumber Company, Annual Report 1995, 12. Slocan Forest Products, Annual Report for 1995, at <<http://www.slocan.com/InvestorInfo/AnnualReports/1995/index.html>> (January 1999). Data on current plants is available at Structural Board Association's web page at <<http://www.osbguide.com/sba.manufacturers/sba.manufacturers.html>> (August 1998).

expenditures were directed to oriented strand board production, not plywood.

The growth in non-plywood panel production was not unexpected. Between 1989 and 1996 over thirty-five plywood plants in the Western United States and Canada closed, reducing plywood capacity by nearly one-third. During the same period, oriented strand board production dramatically increased.²³¹ The use of panels did not decline and so the panels formerly supplied by plywood manufacturers had to be made in the non-plywood panel plants. The dependence of oriented strand board on fibre sources not suitable for plywood production especially enhanced its value in the eyes of both government and industry. The costs of oriented strand board, however, rose during the late 1990s until at times plywood was nearly price competitive. Part of the price rises in oriented strand board, however, can be attributed to increased profit levels and are not all directly related to cost increases; as a result, oriented strand board still had more flexibility over price than plywood. Increased costs for oriented strand board resin, however, could offset cheaper fibre costs.²³² The extent to which oriented strand board can replace plywood in the market still remains in question in 1999.

Conclusion

Dr. Harry Schrader, Jr. noted in 1950, when asked why plywood was so good, that

²³¹ Henry Spelter, "Plywood Niche Narrows but Producers Still Have Ample Opportunities," *Plywood World* 38/5 (September 1997), 28.

²³² Increased demand for fibre has increased its cost to waferboard manufacturers, as well.

he wanted to reply, "What's so good about money when you need it?" He elaborated by pointing out that

plywood has basic advantages which only the combination of nature and man's ingenuity could produce, for plywood, while it is more than wood itself, maintains the intrinsic qualities of the natural product.²³³

Dr. Schrader's sentiments were reflected in producer attitudes during the 1940s and 1950s. But it was not a simple task to convince Canadian consumers that plywood warranted such a prominent place in the market. Plywood found its niche by supplanting lumber in certain more cost-effective construction roles. This required hard work and costly promotion to convince building inspectors, contractors, architects and homeowners that plywood was the product to use. The promotion program was successful, but the sales strategy chosen by plywood manufacturers meant that plywood was subject to the same competition from substitutes, especially on a cost basis.

The first two softwood plywood producers already produced and sold other forest products when they began plywood production. Past business experiences caused MacMillan Bloedel to focus on domestic markets and control of wholesale networks and this established the direction in which plywood promotion developed. Initially, door production was the critical factor; subsequently substitution for lumber became the focus of plywood promotion. This placed plywood squarely in traditional building material

²³³ Dr. O. Harry Schrader, JR., "Plywood Faces '50," *British Columbia Lumberman* 34 (April 1950), 49.

markets and created the basis for its subsequent decline.

British Columbia's plywood industry established standards and assembled a complete promotion package, which helped to create sales for softwood plywood. The advertising campaign convinced buyers that it was better in certain applications than lumber. The industry supported sales with a unique infrastructure, different from traditional forest products selling methods, but not outside the experience of the companies involved. The plywood manufacturers created a new, cross-Canada, manufacturer-owned, wholesale distribution network to sell their production. The distribution network expanded into complete building materials supply wholesalers. Plywood became only one of a variety of products offered to retailers, but it remained the most important. The warehouse system gave a competitive advantage to certain manufacturers over other plywood producers. Competition was intense, even though the industry was clearly an oligopoly and dominated by one firm, MacMillan Bloedel. Prices fluctuated, profits rose and fell, and these conditions only stabilised in the plywood industry's fading years when substitution of new products for plywood reduced the industry to a secondary role.

Competition for British Columbia's Douglas fir manufacturers came from a wide variety of sources. Classed as a building product, any new product that could do the job cheaper or better would quickly supplant it, just as plywood had supplanted lumber in certain construction applications. Competition from substitutes initially undermined a

speciality sideline, that of decorative panels. Veneered or printed overlays on hardboard and particleboard were considerably cheaper and gradually replaced plywood as the most prevalent decorative panel. There were several reasons for this change but the most important was cost. Plywood production concentrated on construction grades and paid little attention to changes in the marketplace. The industry also made comparatively little effort to promote Douglas fir panels for decorative purposes. Decorative panels, even in plywood, were panels faced in exotic woods such as oak or mahogany. British Columbia producers, with one exception, found it cheaper to produce overlaid hardboards rather than plywood and developed this product as the Canadian standard.

Construction industry sales competed on technical and cost factors, as these panels were rarely visible. Douglas fir plywood faced competition not only from alternative products such as waferboard, but also from plywood faced with other softwood species. Interior produced plywood, faced in spruce, pine and interior Douglas fir, was cheaper to manufacture during the 1980s and 1990s than coastal Douglas fir plywood and maintained a fragile market hold against competing products, such as oriented strand board. Competition for raw materials from lumber devastated coastal Douglas fir plywood production. The value of Douglas fir lumber increased as the resource base diminished driving the cost of plywood production beyond what the consumer would pay. Douglas fir logs, for the first time, became more valuable as

lumber rather than as plywood.²³⁴

Many senior forest industry company executives during the late 1970s and early 1980s perceived waferboard as the product with a future, coastal plywood production seemed a drag on company profits. These company executives knew plywood had replaced lumber and now expected that the new waferboard would replace plywood. The largest of the coastal British Columbia softwood plywood producers, MacMillan Bloedel, led the way and closed the largest capacity plywood plant in British Columbia in 1983. The new plants built after 1980 were oriented strand board plants, not plywood plants. The Canada-United States Free Trade Agreement exacerbated this situation by undermining the distinctiveness of Canadian softwood plywood in export markets.

Producers saw export sales as an alternative for shrinking Canadian sales, but export sales were difficult to secure. Differences in building techniques, competition from world-wide production, especially from the United States, and different economic conditions, such as lower labour costs, kept exports from assuming major importance to Canadian producers. During the late 1990s exports to Japan improved the situation but still remained too uncertain to offset major changes in Canadian consumption. The coastal industry also considered specialisation. Woodbridge, Reed and Associates in 1987 suggested the coastal industry

suffers from very high log costs. Even with every technological advance, the coastal industry would find it difficult to compete in

²³⁴ Interview with Rick Franco, Manager of Sales, Weldwood, Vancouver, R. Griffin, July 1997.

the sheathing market. The answer could lie with the sanded market and an expansion of speciality products.²³⁵

The last completely new coastal plywood plant, however, went into operation in 1972.²³⁶ Coastal plants were generally old, although technological improvements were made. MacMillan Bloedel closed its Vancouver plant not long after rebuilding its Alberni plant in 1979-1980. Coastal producers were generally not prepared to invest the substantial sums required to make the coastal industry competitive. Faced with studies that argued coastal plywood production was not viable, the coastal industry virtually closed its doors, leaving Richmond Plywood as the only producer at the end of 1999.

The companies saw plywood as a product that had substituted for lumber and so readily accepted that a substitute product could and did replace plywood. The demise of coastal plywood production, however, cannot be completely blamed on substitution. The managers of all the major companies, including Weldwood, by the 1970s and 1980s, were convinced that pulp and paper production and lumber were the key to satisfactory corporate performance. Plywood was left as an orphan product and one that could be eliminated without serious repercussions. The excuses were creditable, substitution in the market, lower profits or big losses, and a change in the resource base. Neo-classical economics would accept that these were the factors that induced the closure of the coastal plywood industry. The prosperity of the interior plywood industry, however,

²³⁵ Woodbridge, Reed, "A Strategic Analysis," 1987, 59.

²³⁶ Although Cantree went into production in 1974 it primarily depended on interior purchased veneer.

demonstrates that demand still existed for plywood and the failure of coastal plywood plants must be more complex than a simple process of new products replacing outdated products.²³⁷ Issues surrounding profit and loss and change in the resource base will be addressed in the next chapter.

²³⁷ Henry Spelter, "Plywood Niche Narrows but Producers Still Have Ample Opportunities," *Plywood World* 38/5 (September 1997), 28-31.

Chapter V
The Factors of Production:
Raw Materials, Technology and Labour

Introduction

Raw materials, technology and labour were essential elements of plywood production. Each played a significant role in the failure of the coastal industry, and conversely the continued success of plywood production in the interior. The interaction of these factors influenced corporate strategy and placed constraints on growth and even survival. The control exerted by the provincial government over the resource base, the confrontational approach in union-management relationship, and the uniformity of technology shaped corporate strategy in an evolutionary manner during the 1960s and on into the 1990s. Despite the appearance of homogeneity within the industry, corporate executives faced a series of choices and their choices, based on experience and available information, determined the direction and shape of British Columbia's plywood industry.

Logs were the critical part of British Columbia's forest industry; the quality and the cost of logs was a significant problem for plywood producers. Substitution took the blame for the failure of British Columbia's coastal industry, but problems in securing raw materials were a greater and more immediate cause of plant closure. Higher recovery values from logs converted into plywood created the large coastal plants and the perceived loss of this status abetted plant closure. The better logs, although poorer in quality than those of the 1950s, were no longer as valuable as plywood and were reassigned to the sawmills of the large integrated forest companies. The integrated producers did not depend on plywood to supply their panel sales needs and so the

complex machinery used in plywood production was shut down on the coast and often sold outside British Columbia, to Brazil or the Philippines.

The peeler logs supplied to the plywood plants were the best of the Douglas fir timber harvested in British Columbia and the Pacific Northwest. The industry, however, aware that supplies of old growth Douglas fir were limited, expanded into other species and to smaller and lesser quality logs. The role of government, through the agency of the British Columbia Forest Service, was vital in shaping how raw materials were allocated and supported British Columbia's plywood industry. In British Columbia's interior the plywood industry flourishes in the 1990s on spruce, pine and interior Douglas fir, at significantly less cost than the high quality old growth Douglas fir once used in the coastal plants.

Each production factor created dynamic interactions in a variety of ways. The market operated to create internal connections amongst plywood producers as they competed for customers. Raw materials, labour and technology created links to other agencies, and activities melded or fragmented the forest products industry. Raw materials and the labour process acted to unite the plywood sector with its associated industries creating forces to homogenise production. Technology acted to separate plywood production from the solid wood products sector by its distinctiveness. Technology, however, acted as unifying force within the plywood industry by linking the plywood plants of coastal and interior British Columbia with the Pacific Northwest. Managerial control over each plant and the organisation of each plant reflected the unique aspect of plywood production. The shape of that control, however, granted plywood plants little leeway within the integrated structure of the larger producers. The integrated

plants strove for profit, and each plant, regardless of its unique situation, was expected to be profitable.

Logging Peelers

Plywood is a wood-based product and logs were the essential to the manufacture of plywood and lumber. Until the 1980s coastal plywood manufacture used the best logs available. While lumber made from better logs was better lumber, coastal plywood, as a specialised product, could only be made from the best Douglas fir logs. These peelers, as the logs were called, were logs of at least thirty inches diameter with little twist in grain. In a 1950s circular, addressed to its Caycuse logging camp, British Columbia Forest Products noted that No. 1 peelers were “old growth Fir, suitable for the manufacture of clear Veneer stock.”¹

This section focuses on the strategies used by the plywood manufacturing companies to secure a suitable log supply and to examine how these requirements changed between the 1930s and the 1990s. Forest management and harvesting techniques were identical regardless of the final destination of the log and have been extensively studied elsewhere.²

Resource economists consider the forest a renewable resource. The trees cut down are replanted and within a specific period of time grow to be harvested once again. British Columbia’s commercial forest has been purportedly managed in this fashion since the late 1940s with mixed success.³ However, before sustained yield became the

¹ Undated Memo, Caycuse Collection, Kaatza Historical Society.

² Drushka, *Tie Hackers to Timber Harvesters*. Drushka, *Working in the Woods*. Rajala, *Clearcutting the Rain Forest*, 7-80.

³ See Rajala, *Clearcutting the Rain Forest*, 189-204.

standard practice, the forest was literally mined of its best trees for use in sawmills and other wood factories. One issue with significant implications for the plywood industry is that sustained forest renewal and use is based on optimum economic resource turn over projections for lumber production. Using a quick turn over timeframe adversely affected plywood profitability. Canadian Western's logging manager noted in 1930 that only the "real old growth...has the veneer stock."⁴ The issue was alluded to twenty-five years later by British Columbia Forest Products, which defined No. 1 peelers, and in fact No. 2 peelers as well, as old growth Douglas fir. The harvesting of old growth Douglas fir and its replacement by second growth has meant that the resource base and quality of this base changed over the last one hundred years.⁵ In 1999 comparatively little high quality old growth coastal Douglas fir remained to be harvested. The coastal plywood industry survived by using a lower grade of logs which made plywood production more costly and returns not as high as when the prime old growth fir was available.

The problem of finding the right kind of logs in sufficient quantities has remained chronic in the plywood industry. Even during the 1920s and 1930s, Canadian Western had difficulty ensuring a supply of the right type of logs, despite owning and harvesting from one of the prime coastal Douglas fir sites. In 1929, Robert J. Filberg, Canadian Western's logging superintendent, pointed out to Henry J. Mackin, the company's general manager, that logs suitable for veneer production were scarce and were going to get scarcer.⁶ In 1930 Filberg reinforced his message by noting that it was "getting tough

⁴ R. J. Filberg to H. J. Mackin, September 26, 1930, File Mackin 1930, Comox Logging Collection, Courtenay Museum.

⁵ Richard Rajala, *The Legacy & the Challenge: A Century of the Forest Industry at Cowichan Lake* (Victoria: Lake Cowichan Heritage Advisory Committee, 1993). Rajala provides a regional example of how the industry changed over the last 100 years.

⁶ R. J. Filberg, Comox to H. J. Mackin, Fraser Mills, December 4, 1929, File Mackin 1929, Comox Logging Papers, Courtenay Museum.

to find big clear logs.”⁷ Filberg even suggested that Mackin buy logs from the Victoria Lumber and Manufacturing Company at Chemainus. Mackin had sought to buy peelers on the open market, but with little success.⁸ It was only after this failure that Canadian Western unsuccessfully tried to buy from the uncooperative John Humbird of Victoria Lumber and Manufacturing Company.⁹

The pressure to locate peeler logs continued unabated over the next decades, even with old growth forest to harvest. John Bene, while employed at Pacific Veneer, noted in 1943 that

the amount of so-called peeler logs will grow scarcer every year whether there is a war or not, and the plants will have to change their technique so that they can make plywood from a lower grade of logs than they now use.¹⁰

In 1947, while president of Western Plywood, he reaffirmed his belief by stating that “peeler logs of very large diameter will become...rare.”¹¹ In 1950 Bene again pointed out that even the most optimistic expected the fine old growth timber to be cut out within twenty-five years, causing considerable change in the plywood industry.¹²

The provincial government’s sustained yield policy in the post-war period supported the creation of integrated forest product companies.¹³ The large timber

⁷ R. J. Filbert to H. J. Mackin, October 30, 1930, File Mackin 1930, Comox Logging Collection Courtenay Museum.

⁸ H. J. Mackin to R. J. Filberg, November 28, 1929, File Mackin 1929, Comox Logging Papers, Courtenay Museum.

⁹ R. J. Filberg to H. J. Mackin, November 28, 1930, File Mackin 1930, Comox Logging Papers, Courtenay Museum.

¹⁰ John Bene to Norman Wright, London, July 15, 1943, File Leary, Box 9B, WC, RBCM.

¹¹ John Bene, “Plywood Industry Trends,” *West Coast Lumberman* 74 (July 1947), 68.

¹² John Bene, “Douglas Fir Substitutes for the British Columbia Plywood Industry,” *British Columbia Lumberman* 34 (August 1950), 49.

¹³ Integration was part of a growth agenda of post-war corporate managers. Forest Policy, although adopting different approaches in both the United States and British Columbia supported the development of integrated forest complexes. See Rajala, 167-216 although he questions both policies in terms of their effectiveness in regulating harvesting and reforestation. It is also clear that American policies did not prevent the continued liquidation of the forest even by the large operators such as Georgia Pacific and

holdings that the large companies harvested were based on two forms of tenure, Forest Management Licenses and Public Working Circles (later called Sustained Yield Units). The British Columbia government implemented these forms of tenure following the 1945 Royal Commission into British Columbia's forest resources with the objective of implementing a program of sustained yield forest harvesting. Under the terms of tenure, companies holding a Forest Management License obtained long-term harvesting rights within that License, but were obligated to cut under provincially approved harvesting plans. The companies were responsible for reforestation activities within the licensed area. The provincial government accepted reforestation responsibility within the Public Working Circles/Sustained Yield Units. They allocated cutting rights by a bidding process and limited harvesting agreements based on the British Columbia Forest Service's (the government regulatory agency) information regarding the amount of timber that could be cut in perpetuity.

The British Columbia Forest Service required each large company to manage its Management Licenses using a working plan based on sustained yield principles under which production and reforestation were regulated. The Forest Service objective was to create a stable industry with log production channelled to the most appropriate production facility: pulp logs to pulp mills, peelers to veneer plants, and sawlogs to the sawmills. An added incentive to consolidate timber holdings was introduced in 1951. The companies could consolidate their non-Forest Management License holdings into Tree Farms, which if managed in an approved fashion, provided significant tax savings. Undoubtedly, this

Weyerhaeuser, see William Robbins, *Hard Times in Paradise: Coos Bay Oregon, 1850-1986* (Seattle: University of Washington Press, 1988), 134.

form of tenure encouraged many of the large producers to consolidate and increase their timber supply.

Every large plywood firm, except Western Plywood, quickly moved to take advantage of the new tenure regimes by securing large blocks of timber. Company growth strategy, by and large, was directed toward achieving the goal of large-scale integration in which plywood played a relatively small part. MacMillan Bloedel, British Columbia Forest Products, Canadian Forest Products and Crown Zellerbach Canada all sought to become integrated forest product producers. They quickly became four of the province's leading firms. They each combined large timber holdings with integrated production facilities and channelled their log supply to the appropriate processing facility. In contrast, Western Plywood decided its expertise rested in the plywood industry and chose a strategy of timber procurement intended to satisfy plywood production. It was only following their acquisition of Canadian Collieries in 1964 that the company became an integrated operation and emulated the other large plywood producers on the coast by procuring most of their timber from their own timber limits.

MacMillan Bloedel, British Columbia Forest Products, Canadian Forest Products, and Crown Zellerbach Canada by 1976 had direct control of over fifty percent of the coastal forest resource.¹⁴ Each company used a similar strategy to build its coastal timber supply. Each major producer acquired timber when it was available and each producer purchased other companies in order to secure additional timber holdings. Canadian Forest Products, for example, began operations entirely dependent on purchased logs but during its initial acquisition phase, in the mid-1940s, purchased several sawmills and

¹⁴ Peter H. Pearse, *Timber Rights and Forest Policy in British Columbia*, Vol. 1, *Report of the Royal Commission on Forest Resources* (Victoria: Government of British Columbia, 1976), 39.

logging companies. Canadian Forest Products' main timber supply area became the Nimpkish Valley on Vancouver Island where the company still logged in 1999 and planned to do so for an indefinite time in the future. Supplementary timber bases at Harrison Lake in the Fraser Valley and Sechelt were developed. The coastal log supplies of the other large producers tended to be more widely dispersed than those of Canadian Forest Products, but each company developed a peeler supply that could be directed to its plywood plants. MacMillan Bloedel, for example, built their plywood plant at Alberni in order to exploit the very fine logs of the nearby Beaufort Forest.

Canadian Western was one of a few post-war sawmill companies that acquired most of its timber rights prior to World War II. The company logged at Comox and later at Ladysmith on Vancouver Island.¹⁵ The acquisition of the company by Crown Zellerbach in the early 1950s expanded its available timber holdings throughout the coastal region. Key to the acquisition, however, was the establishment of Forest Management License No. 2 at Duncan Bay on Vancouver Island.¹⁶ Crown Zellerbach Canada also had operations on the north coast supplying logs to their pulp and paper mill at Ocean Falls, but the logs harvested on the north coast were generally unsuitable for plywood production.

In 1959 the largest of Crown Zellerbach's south coast operations was in the Ladysmith area, the main source of fir peelers for its Fraser Mills plywood plant. On average, the operation yielded one hundred and thirty million feet of logs a year with a crew of four hundred and sixty-eight. They operated twenty-four miles of railroad and

¹⁵ *Canada Lumberman* 56 (April 1 1936), 33.

¹⁶ Duncan Bay Forest Management License, Agreement between the Minister of Lands and Forests of the Province of British Columbia and Canadian Western Timber Company, January 24, 1949, clause 45. File Canadian Western, History Section, RBCM.

one hundred and twenty-five miles of working roads.¹⁷ During the same period a smaller camp was opened at Nitnat behind Cowichan Lake; it operated with one hundred and twenty men and produced some ninety million feet per year.¹⁸ The timber was excellent, as George French of United States Plywood wrote to Gene Brewer in New York: "it would chill you to go through the Canadian Western Plywood plant." French's problem was that Canadian Western's timber was so good that it had "enough grade with an average panel thickness at 1/2" to put an A grade on every face and B grade on every back!" French considered using veneer in this way a great waste of materials.¹⁹

The approach adopted by Crown Zellerbach Canada was typical of the large south coast operators. Each large company sought to expand its timber resources as the opportunity arose. Crown Zellerbach Canada purchased Bendickson Logging in 1971, which included Tree Farm License No 12. This license was adjacent to the earlier established Forest Management License No 2.²⁰ Additions by each company continued until the large companies held all south coast timber not reserved by the British Columbia Forest Service for small operators.

Crown Zellerbach Canada managed their timberlands on a regional basis. Company management established three groups, two operating on the coast and a third in the interior.²¹ Profits and losses were not only examined from the perspective of divisions, of which logging was one, but also on the basis of region, especially coast

¹⁷ "Ladysmith Loggers Perfect Hi-Lead Pre-logging," *British Columbia Lumberman* 44 (May 1960), 10,16.

¹⁸ "Nitnat Logger Sires Shrinkable Snorkel," *British Columbia Lumberman* 45 (April 1961), 10-14.

¹⁹ George French, Vancouver, to Gene Brewer, New York, March 24, 1960. File General Correspondence USP, 1960-1962, Box 8B, WC, RBCM.

²⁰ "Crown Buys Pioneer Log Firm," *British Columbia Lumberman* 55 (August 1971), 7. Tree Farm Licenses were an amalgamation of various timber holdings and included a variety of tenures that when managed in a sustained yield harvesting manner yielded a significant tax advantage.

²¹ The coast was divided into two groups, one of which included logging and all solid wood products, while the second comprised the pulp and paper operations.

versus interior.²² This form of organisation continued into the 1990s when Fletcher Challenge divested itself of its solid-wood products divisions.²³

Several of the smaller producers followed the larger companies' approach to timber acquisition. Canadian Collieries and Evans Products both acquired Forest Management Licenses in their efforts to gain an assured timber supply. Other small operators also worked with the tenure system; Sooke Lake Lumber (Victoria Plywood) obtained a Tree Farm License. Very few plywood producers, apart from Richmond Plywood, a co-operative, completely depended on purchased logs.²⁴

British Columbia Forest Products, in contrast to the Vancouver based plywood mills, built its plywood plant close to its log supplies. The Victoria plywood mill, as the group manager noted, was intended to make "better utilization of our raw material...".²⁵ Peelers from the Cowichan region were sorted and sent to a veneer lathe attached to the company's sawmill at Youbou. The veneer was then trucked down to Victoria. The peelers from the company's west coast operations, primarily around Port Renfrew, were towed to Victoria for peeling. The timber harvested, however, was of such a type that integrated processing was crucial for profitable operations. British Columbia Forest Product's Cowichan logging budget, between January and March in the mid-1950s, indicated, for example, that only about ten percent of production was suitable for peeling.²⁶

²² Management Meeting Minutes. April 1, 1985 to December 2, 1985, Coast Wood Products Division, File Crown Zellerbach, History Section, RBCM.

²³ Key Results Report, Coast Wood Products, Fletcher Challenge Canada, December 1990, DC, RBCM.

²⁴ "A Private Enterprise Industrial Democracy in Distress," Richmond Plywood Corporation, Brief submitted to James A Neilsen, March 22, 1978, 3

²⁵ H. E. Hobson to H. G. Munro, June 21, 1951, Circular No 26, Caycuse Collection, Kaatza Historical Society.

²⁶ Cowichan Division, 2nd Quarter Logging Budget, Caycuse Logging Collection, Kaatza Historical Society.

The growth of Weldwood into a significant coastal operator has a much more circuitous history than that of the other major plywood producers. The predecessor companies, Western Plywood and J. R. Murray, owned very little of their coastal timber supply. Instead the two companies worked with various tied logging contractors who operated on timber sales and licenses in which all parties had a vested interest. Western Plywood also brought logs to the coast from its interior lumber holdings and purchased others on the open market. Following Western Plywood's acquisition of Murray in 1955, Western Plywood acquired additional timber sales, but generally used the tied logging system that Murray had implemented.²⁷ Western Plywood's relationship with Pretty Timber was typical.

Pretty, one of the larger Fraser Valley contract loggers during the 1950s, first entered into a contract with Murray in 1954. Murray helped Pretty acquire a timber block known as the Clark Property at Harrison Lake by loaning Pretty \$100,000. The loan was repayable in 1962 and Murray obtained first refusal on all logs harvested until 1974.²⁸ In 1959 Western Plywood, now owners of Murray Limited, loaned Pretty an additional \$350,000 to buy a timber block known as the Corbett Holding in the Coquihalla area. The loan was to be repaid by reduced log prices and first refusal on all harvested logs over the next twenty-five years. In 1962 Western Plywood, now Weldwood, provided Pretty with a further guarantee to the Bank of Montreal for \$200,000. These financial dealings in effect gave Western Plywood the right to Pretty's timber harvest and guaranteed it a supply of logs based on the timber harvest quota the British Columbia

²⁷ E. E. Gregg, "Timber Position of Western Plywood Company Limited and Subsidiaries, August 23, 1956, File Montreal and Toronto Stock Exchange Listing Applications, Box 13B, WC, RBCM. Al Kilde to John Bene, August 26, 1960, File AL Kilde Memos, Box 25A, WC, RBCM

²⁸ Pit Dejardins to John Bene, January 10, 1962, File Pretty Timber, Box 10A, WC, RBCM.

Forest Service allocated to the Pretty Timber Company. Weldwood eventually acquired Pretty and added this quota to its timber holdings. In 1960 for example, Western Plywood owned four coastal timber sales and Pretty was one of the contractors involved in harvesting the sales.²⁹ The number and size of these holdings were frequently added to, in an effort to increase Western Plywood's controlled harvesting quota.

Western Plywood/Weldwood's connections to its contractors were often based on personal relationships and flexibility. The variety of company relationships suggests a one by one program of timber acquisition and agreements in which Weldwood, as one of its negotiators noted, played a "paternal" role.³⁰ Sometimes the company purchased the timber license for the contractor, sometimes they loaned the contractor money to buy equipment or timber, and sometimes it was a simple and straightforward contract of cash for timber. Table V-1 illustrates the range of Weldwood's contract relationships.

**Table V-1: Weldwood Contractor Relationships,
1959-1963.³¹**

CONTRACTOR	DATE	AGREEMENT TYPE
Star Logging	1962	Loaned money
Mahood Logging	1960	Paid timber sale deposit
P&L Logging	1959	Loaned money
Ramsay Logging and D&B Logging	1962	Loaned money for equipment
G.A. Munson	1956	Purchased license, loan
Nugget Logging	?	Loan
M& W Logging	1963	Log purchase agreement
Snow Camp Logging and Ethko Logging	1959	Paid timber sale deposit
Jennis Bay Logging	1952	Logging contract
Mahood Logging	1958	Paid timber sale deposit
Glacier Contracting & G. C. Ricketts	1959	Paid timber sale deposit
Onnes and Moral Lakburg	1963	Loaned money
Jennis Bay Logging	1962	Loaned money
Hadley Logging	1963	Logging contract

²⁹ Al Kilde to John Bene, August 26, 1960, File Al Kilde memos, Box 25A, WC, RBCM.

³⁰ Larry Marshall to T P Fee, Pit Desjardins and Frank Hahn, June 16, 1966, Logging Accounts, Mahood Logging, Box 27A, WC, RBCM.

³¹ Coast Timber Analysis, 1965-1967, Box 6B, WC, RBCM.

Emerson Bay & Imperial	1955	Sold timber license to them
Janet Logging	1961	Loan
Western Plywood	1956	Joint ownership
Columbia Coast Logging	1960	Bought timber sale from Western Plywood
Columbia Coast Logging	1959	Jointly owned timber sale

By 1960 Western Plywood developed a large enough timber base to interest United States Plywood. In fact John Bene reported to New York that “we control enough timber not only to carry out our present manufacturing program indefinitely but to expand it substantially if required.”³² However, this was clearly not the case and John Bene immediately began to seek options to solve the timber shortage Western Plywood/Weldwood faced. The company approached the Canadian Pacific Railway (C. P. R.) with an offer to buy additional timber. Considerable discussion took place and a variety of arrangements for veneer were discussed including purchase of the Sooke Lake Plywood mill in Victoria. The initial timber offered, north of Lake Cowichan, was deemed unsuitable and Weldwood decided not to submit a bid.³³ The C. P. R. remained undecided about its timberlands south of Lake Cowichan, although by 1965 it was logging the area itself.³⁴ Weldwood meanwhile had taken other action to alleviate its timber difficulties, the purchase of Canadian Collieries Resources. Bene justified the purchase to New York in a very straightforward fashion. “Acquisition of Canadian Collieries presents a unique opportunity to secure access for a S U S T A I N E D A N N U A L S U P P L Y of 180 M feet of timber on the British Columbia Coast.”³⁵

³² John Bene to John Schlick, New York, February 19, 1960, File General Correspondence USP 1960-1962, Box 8B, WC, RBCM.

³³ Frank Rush, “Report to Western Plywood Company on E&N Areas at: Oyster River, Browns River and Beaufort, “ November 1, 1962, File E&N Timber. John Bene, to Ian Sinclair, Vice President C. P. R., November 27, 1962, File E&N Timber, Box 8B WC, RBCM.

³⁴ Pit Desjardins to John Bene, memo January 21, 1965, File E&N Timber, Box 8B, WC, RBCM.

³⁵ John Bene to Gene Brewer, New York, February 24, 1964, File Gene Brewer, Box 7B WC, RBCM (capitalisation and spacing in original).

The smaller solid wood products processors on the British Columbia coast faced considerable difficulty in ensuring adequate wood supplies once the larger producers such as MacMillan Bloedel and British Columbia Forest Products had acquired most of the best timber. Canadian Collieries' owners developed the company with the intention of reselling it at a profit and an adequate timber base was essential. The Company purchased two sawmills in 1954 and these two operations included an associated timber supply and a Forest Management License at Toba Inlet. Combining the two sawmills, one primarily cedar and the other fir-hemlock, along with a fir plywood plant resulted in a reasonable mixture. Problems did exist: both sawmills were antiquated at the time of purchase and required rebuilding. In addition the company remained dependent on purchased logs, despite the 1961 acquisition of Tree Farm No. 38 near Squamish.

Table V-2 shows the percentage of logs purchased for use in the Canadian Collieries plywood plant prior to its acquisition by Weldwood. There was a decline after the purchase in 1961 of the Mount Baker Veneer plant because it processed balsam rather than fir.

Table V-2: Canadian Collieries Veneer Plant Consumption, Purchased Logs.³⁶

Year	Percent purchased	Year	Percent purchased
1957	74.0	1961	78.6
1958	82.0	1962	64.5
1959	71.4	1963	62.2
1960	69.7		

Canadian Collieries timber holdings were scattered over the south coast. By 1964 the company had a relatively good timber balance except in plywood peelers and this was

expected to improve after January 1964 when grade specifications allowed non-Douglas inner plies for sanded Douglas fir plywood.³⁷ The late development of the Canadian Collieries timber base meant that it was short on prime Douglas fir and heavy to other species, a problem that plagued Weldwood following its acquisition of Canadian Collieries. Table V-3 indicates the problem the company faced from an oversupply of balsam and under supply of Douglas fir. Canadian Collieries actually produced more logs than needed for its own consumption. The log market in the 1950s and 1960s, however, operated on a basis of trading three for four balsam or hemlock to a pulp company for one Douglas fir.³⁸ Table V-3 shows that even with over-production, the differences in timber value meant that the company produced insufficient logs.

**Table V-3: Canadian Collieries
Timber Supply, 1963 (MBM)³⁹**

Species	Needed	Controlled	Buy	Sell
Fir	77,800	37,640	40,160	
Cedar	69,500	81,400		11,900
Hemlock	52,900	50,290	2,610	
Balsam	10,500	32,940		22,440
Other		10,020		10,020
Total	210,700	212,290	42,770	44,360

Canadian Collieries' acquisition of the Squamish Timber License increased the timber available to the company from an estimated 2,717,141 million board feet (MBF) in 1959 to 5,100,294 MBF in 1963. This was a significant increase over the five year period, especially when we consider that about 834,000 MBF had been logged. However, the timber reserves were only satisfactory for about twenty-five years. Weldwood acquired Canadian Collieries in order to secure this timber for its own mills,

³⁶ Annual Reports, Timberland, Box 29D, WC, RBCM.

³⁷ Annual Reports ended March 31, 1964, Timberland, 6, Box 29D, WC, RBCM.

³⁸ L. T. Marshall, "Report to Management," July 25, 1966, 4 & 6, Box 6B, WC, RBCM.

which further increased demands on the timber reserves. Weldwood needed more peelable logs, however, than Canadian Collieries could supply.⁴⁰ Table V-4 shows Canadian Collieries requirements by mill, before and after the acquisition of the Squamish sawmill and Tree Farm License No. 38. It is compared to company requirements after the Weldwood acquisition. Because Weldwood did not close mills the timber base established by Canadian Collieries faced even greater depletion rates as the Weldwood plants began to consume Canadian Collieries timber.

**Table V-4: Weldwood
Mill Requirements, (MBM)⁴¹**

Mill	1958	1964	1966
Flavelle – cedar	51,147	69,500	65,750
Timberland lumber - fir	29,756	49,000	54,000
Empire Lumber – Hemlock	-	52,900	73,000
Timberland Plywood - fir	20,093	28,800	36,000
Mt Baker Veneer – Balsam	-	10,500	Closed
Kent Avenue – Weldwood			60,950
Ash Street – Weldwood			15,500
Total requirement	100,996	210,700	305,273

Weldwood immediately began a systematic review of its timber holdings and requirements. In an effort to develop a saleable company, Canadian Collieries had acquired and opened logging operations on a variety of widely distributed timber sites. Weldwood assessed each operation and determined how to balance harvesting and production and sought to close operations and sell the timber that was unsuitable for the company's needs.

³⁹ Canadian Collieries Resources, Proposed Purchase, April 3, 1964, 21, Box 6A, WC, RBCM.

⁴⁰ Valuation of Timber Holdings of Canadian Collieries, January 1960, Box 6A; Georgia Pacific Corporation Study of Canadian Collieries, Exhibit 1, Box 6A, WC, RBCM.

⁴¹ Annual report ending March 31, 1959, Box 27D; Valuation of Timber Holdings of Canadian Collieries, January 1960, Box 6A; Canadian Collieries Resources, Proposed Purchase, April 3, 1964, Box 6A, 20; Bob Wood to Pit Dejsardins, et al., January 26, 1967, File Coast Timber Supply, Box 6B, WC, RBCM.

The assessment showed that Weldwood had a severe shortage of good quality Douglas fir, which was about twenty percent of the company's logging production but was required in about fifty percent of the company's manufactured goods, especially in the plywood sector. Projections made in 1966, for example, indicated that the company's logging operations would supply less than fifty percent of Douglas fir requirements over the next years and that the remaining amount would have to be secured by trading surplus logs or purchasing logs from other companies.⁴² Weldwood adopted a log supply strategy similar to that of the other large producers during the later 1960s. In 1965 the company operated with thirty-three different contractors, who produced two-thirds of the company's logs.⁴³ Weldwood continued to be somewhat dependent on these contractors, but the contractors worked more and more on Weldwood controlled timber and by 1974 it was classified as the seventh largest timber holder in British Columbia.⁴⁴

The change in the nature of coastal log supply did not surprise the manufacturers. Predictions showing the changing nature of the coastal forest resource date back to around 1900 when complaints of British Columbia resource depletion first started. In the post-World War II period, increased rates of harvest and a diminishing land base increased the problems of regulating the harvest. The forest companies focused on short-term gains and over utilised the most desirable specie, Douglas fir, which resulted in its increased value. Plywood mills could no longer process and sell Douglas fir production profitably.⁴⁵ The difficulties of remaining in production in coastal British Columbia,

⁴² L. T. Marshall, "Report to Management," Weldwood of Canada, File Coast Timber Analysis, Box 6B, WC, RBCM.

⁴³ Al Kilde to Frank Hahn, July 21, 1966, Trading Department report for the year ending April 30, 1966. Year end report Coast Logging Division, Box 7B, WC, RBCM, 25.

⁴⁴ Peter Pearse, *Timber Rights and Forestry Policy in British Columbia*, Vol. 1, 1976, 39.

⁴⁵ Wayne Swanson, *Regional Changes in the British Columbia, Forest Industry*, FRDA Report 082 (Victoria: Forestry Canada, 1989), 12.

without a secure log supply, effectively deterred most plywood competitors from starting operations. Richmond Plywood, the sole remaining independent manufacturer in the late 1970s, was in desperate straits. In 1977 the company appealed to the provincial government for a secure log supply. It had to go as far afield as northern California and northern British Columbia to secure logs.⁴⁶ As early as 1984, a study by Carroll-Hatch noted, that the higher recovery values from lumber meant that fewer peeler logs were available to the plywood mills. The report stated that “the economic return from sawing the best logs for lumber is ... much greater than that derived from peeling....”⁴⁷ This, even more than substitution, meant the end of the coastal plywood industry. Higher recovery values in the sawmills helped to eliminate coastal plywood production from the large company’s product strategies.

British Columbia’s interior forest industry was relatively undeveloped until after the Second World War. During the late-1940s booming North American lumber sales caused new entrepreneurs to seek new opportunities. With much of the coastal timber resource tied to existing operations, new operators expanded into the interior. The industry quickly became a series of very small sawmills feeding lumber into central planing and shipping points. Several larger producers exerted regional leadership and in the Quesnel area, Western Plywood, which opened the first interior softwood plant, assumed a leadership role. In searching for timber supplies to feed to its large coastal mill, Western Plywood secured a significant stand of interior Douglas fir. John Bene saw an opportunity in the chaos of the interior lumber situation and decided to seek to emulate the coastal plywood operators at Quesnel.

⁴⁶ Richmond Plywood, Brief, 4.

Western Plywood reached an agreement in 1950 with the British Columbia Forest Service for the creation of Forest Management License No. 5. With this assured raw material supply the company constructed the plywood plant, even though the License did not meet all of its log requirements. Western Plywood began an aggressive program of acquiring a forest-harvesting quota using a three pronged strategy.⁴⁸ First, they employed a timber buyer. Extensive private forest holdings existed, primarily in association with ranches and First Nations land reserves. Western Plywood initially secured much of its requirements from these sources. Second, they began working with small local operations to secure timber licenses and jointly work the licenses. The small operators logged and cut the sawlogs, while the peelers were shipped to the Quesnel plywood plant. In certain respects this meant that Western Plywood played a unique role in the development of the Quesnel timber industry; it became a facilitator. Timber and harvesting quotas were acquired during the 1950s by a competitive and open-bidding process. Western Plywood, in its search for peelers from a wide range of sources, worked with other companies to reduce or eliminate competitive bidding from the timber sale process.⁴⁹ Third, during the 1950s and 1960s the interior industry restructured into a format similar to the coast, with large integrated operators in control of most of the timber base. The timber was hauled to a central location in which sawing, planing and shipping occurred. The means of securing this control, similar to the coast, was by the acquisition of smaller operators who had acquired quota rights. The British Columbia

⁴⁷ Carroll-Hatch (International) Ltd., "The Panelboard Industry in British Columbia," (Victoria: Ministry of Forests, 1984), 62.

⁴⁸ Quota was an amount of timber that the Forest Service in effect guaranteed a company could apply to harvest.

⁴⁹ See Robert Griffin, "Means to an end: Western Plywood's Timber Supply in the Central Interior 1945-1961," Kelowna, B.C. Studies conference paper, October 1994.

Forest Service was determined to create a stable and efficient forest industry and actively worked to facilitate the change in structure from small to larger operators. By the 1960s, for example, once a company had secured quota within a forest area the British Columbia Forest Service significantly reduced competition from the timber acquisition process.

Western Plywood acquired Cascade Spruce and subsequently the Likely area limits of H. J. Gardner. The Cascade Spruce arrangement included a sawmill and logging equipment, logs harvested and standing, harvesting quota, and a clause prohibiting Cascade from competing with Western Plywood in the Cottonwood Public Working Circle.⁵⁰

Eventually three operators controlled the total harvest from the Cottonwood Public Working Circle. Brownmiller Brothers held the largest share in 1965, while the remainder was divided between Beaver Planer Mills and Western Plywood (by this time Weldwood of Canada). The British Columbia Forest Service worked with the Cottonwood Forest Association, in effect the quota holders, to regulate the harvest.⁵¹

The implementation of government policy that incorporated long-term timber allocations intended to meet the needs of larger central plants greatly reduced the uncertainty for the interior operators. Not all operators' needs were fully met. Weldwood estimated that without any increase in production, a yearly shortage of logs would occur.⁵² The Forest Service warned the company in the strongest terms not to increase production capacity, as additional harvesting quota would not be forthcoming.⁵³

⁵⁰ E.E. Gregg, Western Plywood to Bull, Housser, Tupper et al, June 12, 1956, File Purchase –Cascade Spruce, Box 5, WC, RBCM.

⁵¹ Allocation Ledger, Cottonwood Administration File 0190093, Ministry of Forests, Victoria.

⁵² Five Year Cut Control projection, June 22 1973, File Coast Timber Supply, Box 6B, WC, RBCM.

⁵³ E.W. Robinson, B.C. Forest Service to A. Szalkai, Weldwood, July 27, 1973, File Coast Timber Supply, Box 6B, WC, RBCM.

Savona Timber, the smallest plywood manufacturer in the interior, followed a similar timber acquisition program. The company, however, was too small to manipulate the harvesting quotas in the manner of Western Plywood. Savona Timber used logs from its own timber limits, bought market logs, and acquired several firms; such as Gateway Lumber, the Ashcroft Lumber Company, and Highland Sawmills. Western Plywood, however, was the only interior operator in a position to use the volatility of the interior logging quota system to increase its flow of peeler logs.

The third interior producer of softwood plywood to begin operation, S. M. Simpson Lumber Company, followed a resource path similar to coastal producers. When the company began plywood manufacturing in 1956, a substantial sawmill was already operating. The company continued to expand its timber base by the acquisition of surrounding competition. All the interior plywood manufacturers, except North Central Plywood at Prince George and Western Plywood, were associated with previously existing sawmill operations. The decision to enter plywood production was based on an operator's belief that sufficient peelers could be secured within their existing limits to meet its plywood plant's requirements.⁵⁴

The interior logging companies, unlike the coast, continued to harvest extensively from the Public Working Circles (Sustained Yield Units/Timber Allocation Areas). Only about sixteen percent of the cut was harvested from Tree Farm Licenses in the interior in 1974.⁵⁵ The British Columbia Forest Service exerted a much greater control over the harvest in the Public Working Circles than in the Tree Farm Licenses and could allocate timber limits with peeler quality logs to companies with plywood plants. Savona Timber

⁵⁴ The Jens brothers explicitly stated that they only entered into plywood production once they had secured an adequate log quota. Interview with R. Pinton, PC, RBCM.

Company's license No. 73706 is an example of a typical sale. In this case the Savona Timber Company and the Kamloops Lumber Company made application jointly in 1958. The tender was accepted at the upset price. The sale was to operate for six years and included over nine hundred thousand cubic feet of fir timber, as well as smaller groups of other species. The eastern half of the sale was logged by the Kamloops Lumber Company while the west was logged by the Savona Timber Company. Each company submitted separate plans for their portion of the sale, which included the layout of roads and other activities.

Logging started in 1959. The sale included the standard clause of interior contracts; no highlead or overhead methods of logging were to be used. Savona Timber skidded with a TD-15 tractor and trucked the logs to their sawmill at Savona. Although the contract expired in 1964, Savona Timber asked for several extensions, which were granted. Savona faced a series of problems that were endemic when employing contractors to harvest a timber sale, including damage to seed trees, a failure to remove all merchantable timber, and a failure to adequately clean the landings. Logging was even suspended for a short period by the British Columbia Forest Service in 1961. Finally, in early 1967, all conditions were met and the sale was closed and deposits returned by the British Columbia Forest Service.⁵⁵ The British Columbia Forest Service monitored sales as closely as possible and regulated the cut to meet the needs of the existing mills.

Two factors seem central to the success of interior plywood plants and the failure of coastal plants. First, the log supply was different in the two regions. The interior

⁵⁵ Over fifty percent of the 1974 coastal harvest was from Tree Farm Licenses.

⁵⁶ TSX 73706, Box 5, Savona Timber Collection, RBCM.

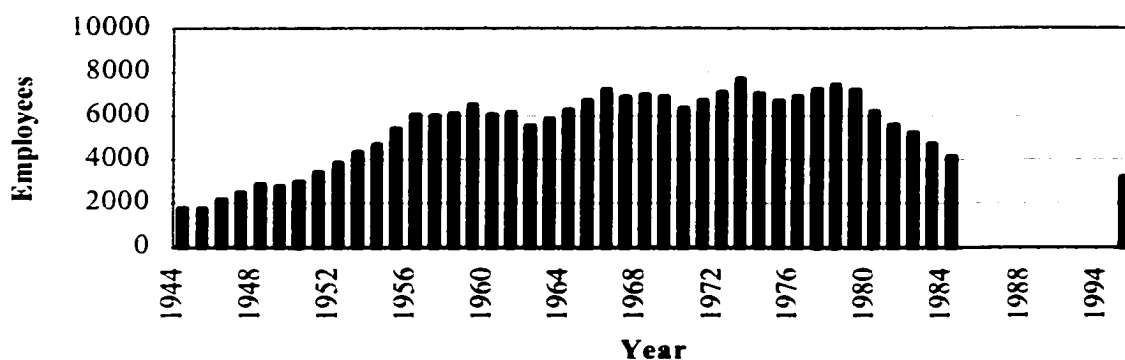
operations successfully thrived on smaller diameter logs, while the coastal plants did not. This suggests that the coastal operations needed to convert to small log operations, as did the Alberni plant of MacMillan Bloedel. The value of the logs as lumber, however, gave the coastal operators little incentive to undertake this expense. Second, the British Columbia Forest Service regulated each region differently. It generally managed the interior forests, while the large manufacturers generally managed the coastal forest. The survival of the interior industry suggests that the greater control by the British Columbia Forest Service facilitated successful plywood operations. The smaller timber blocks, the greater range of choice of harvesting areas, and lower log and logging costs supported the interior plywood industry. The British Columbia Forest Service sought community stability, and so had a greater incentive to ensure plywood plants remained in operation. The failure of the plant at Golden would be a major catastrophe for that community; the closure of MacMillan Bloedel's Vancouver Plywood Division had little impact on Greater Vancouver.

Working People

British Columbia's plywood industry, while not the largest employer in the forest sector, did provide steady employment for a significant number of people. Between the early 1950s and the early 1980s the industry consistently employed over five thousand workers per year. Peak employment for the industry was 1973 when 7,685 individuals were employed. The 1973 figure is slightly less than twenty percent of British Columbia's primary solid wood processing sector in that year. Wages paid totalled over \$78,000,000.

It is presently impossible to differentiate those employed in plywood from other industrial production in British Columbia. The impact of actual employment varied from community to community. In Greater Vancouver plywood production was one of many industrial facilities and, while plant closure severely affected the employees and created concern within the community, the direct impact on the Vancouver economy was limited. By contrast, the plywood plant at Quesnel was the largest regional employer during the 1950s, but during the 1960s the plant became

Graph V-1: Total Employment in the British Columbia Plywood Industry, 1944-1995.⁵⁷



part of a large forest industry base. By the 1970s it had lost its leadership as the community's largest industrial employer. Should the plant close, however, its impact on the local community would be severe. Finally, the Evans Forest Products plant in Golden

⁵⁷ Statistics Canada, 35-206.

remained the single largest employer in 1999 and the closure of the plant would significantly affect the whole community.

Labour relations within the plywood industry were formalised by the time most plywood mills went into production. The International Woodworkers of America (IWA) organised the coastal logging industry during the 1930s and subsequently the solid wood product plants during the 1940s.⁵⁸ A series of strikes during the 1940s, such as the Lake Logging dispute in 1941, created a confrontational environment which continued to influence future negotiations. The negotiating process became an adversarial relationship between two parties whose separate agendas were in conflict. The IWA negotiated on behalf of the employees while Stuart Research Service Limited, later Forest Industrial Relations (FIR), negotiated on behalf of the employers.⁵⁹

The 1946 strike was perhaps not the momentous event that Lembcke and Tattam have argued, but it did shut down the solid wood products industry and it established the tenor of future relationships.⁶⁰ Automatic check-off of Union dues followed the 1946 negotiations, and the road to bureaucratisation of bargaining, for both parties, was well underway.⁶¹ Stephen Gray argued that IWA District One (British Columbia) attempted to counter the road toward institutionalisation of the negotiation process, but it was also true the IWA failed in its attempt.⁶² Negotiations within the solid woods product industry quickly became a matter of routine. Negotiations remained adversarial, but each party

⁵⁸ A large segment of the interior logging industry is not unionised due to the extensive employment of independent contractors.

⁵⁹ Stephen Gray, "Woodworkers and Legitimacy: The IWA in Canada, 1937-1947," Ph.D. dissertation, Department of History, Simon Fraser University, 1989, 117.

⁶⁰ Jerry Lembcke & William Tattam, *One Union in the Wood: A Political History of the International Woodworkers of America* (Madeira Park: Harbour Publishing, 1984), 113-115. See Gray, "Woodworkers and Legitimacy," for an alternative discussion.

⁶¹ Gray, "Woodworkers and Legitimacy," 210-255 discusses the strike in great detail.

⁶² Gray, "Woodworkers and Legitimacy," 429.

knew what to expect from the other. This approach worked satisfactorily for plywood workers as long as plants remained profitable. However, once plywood plants lost their value-added edge over sawmills, neither union nor management was able to accept workable alternatives to keep the plants in production and workers employed. The IWA, unwilling to trust management and fearful of undermining its position in other sectors, refused management demands for lower wages. Management, unwilling to understand the IWA's desire to maintain certain standards, chose to close plants rather than seek new options in a downward economic spiral.

Bargaining did little to help plywood's situation. During negotiations in 1979, despite a clearly abysmal economic report by the solid wood products industry's bargaining agents, the IWA continued to ask for more money for plywood employees.⁶³ Senior IWA negotiator Syd Thompson, in a discussion about plywood job evaluation, bluntly declared that "there's not enough money for us."⁶⁴ Thompson complained: "When the companies take people out and the workload increases and the men get nothing for it, we have problems, we were the poor cousins of the Industry – now we're back where we were again – behind sawmills and logging."⁶⁵ The IWA had little choice but to ask for more, which exacerbated the economic problems in the plants and reinforced the industry position that the plants should close. The tactics employed on occasion by management did not help the IWA's situation. Management sometimes directly appealed to employees in an attempt to undermine the IWA bargaining position.

⁶³ D.A. Saunders, "Economic Presentation to the IWA, June 4, 1979, File Negotiations 1979, Box 3, Kent Ave., Collection, WC, RBCM.

⁶⁴ Comment by Syd Thompson, Minutes of Negotiation Meeting No. 9. May 23, 1979, File 1979 Negotiations, Box 3 Kent Ave Collection, WC, RBCM.

⁶⁵ Comment by Syd Thompson, Minutes of Negotiation Meeting No. 9. May 23, 1979, File 1979 Negotiations, Box 3 Kent Ave Collection, WC, RBCM.

Such tactics further strengthened the union's antipathy and distrust.⁶⁶ The growing economic crisis in plywood and its spread to other sectors during the 1980s and 1990s worried the IWA's head office, but the nature of the bargaining process gave the union little leeway in its dealings with an equally intransigent senior company management.

Despite the comparative rigidity of the labour-management situation some variation existed in the labour workforce. The most notable difference between sawmilling, logging, and plywood manufacturing was the employment of women on the plywood shop floor during the post-war decades. British Columbia's resource sectors, in particular, adopted the view that the employment of women in the industrial facilities was inappropriate. Women demonstrated their ability to fill even the most difficult tasks during World War II, but only in plywood production and paper converting plants were they able to retain production employment. The role of women in the plywood industry in Port Alberni has been studied extensively by Susanne Klausen and so does not need to be examined in depth here.⁶⁷

Klausen noted that a gendered division of labour continued to exist in the plywood plants. Women initially faced the attitude that they could not do the job as well as men. The attitude was also used as an excuse to pay women less when possible and subsequently reinforced the view that women were only suitable in certain job categories. For example, Ballentine, the president of MacMillan Bloedel's subsidiary plywood company, wrote to his sales manager in 1939 "it has always been our theory that men are

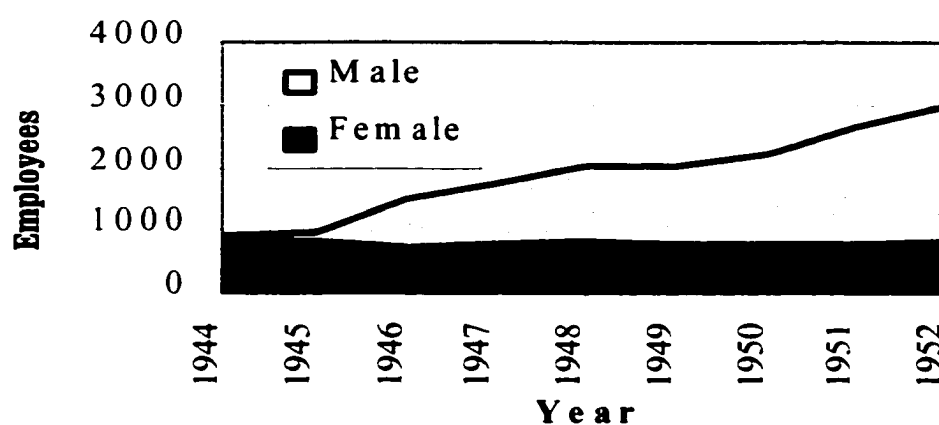
⁶⁶ Lance Ripley, Notice to all employees at Weldwood Kent Avenue Plant," August 25, 1986, File 1986 Negotiations, Box 3 Kent Avenue Collection. WC, RBCM. This was probably a move of desperation by the plant manager in hopes of quickly getting the facility back in production in the face of growing losses and permanent plant closures.

⁶⁷ See for example Susanne Klausen, "The Plywood Girls: Women and Gender Ideology at the Port Alberni Plywood Plant, 1942-1991," *Labour/Le Travail* 41 (Spring 1998), 199-235.

more use than girls around a Company that is growing....”⁶⁸ Certain early problems reinforced management’s view of women on the shop floor. The manager at Alberni Plywood decided that women were “unable to handle the very heavy panels alone and for that reason approximately twenty-five extra girls were hired.” This was used as justification for lower pay. The plant manager also found that a high rate of absenteeism occurred among the initial group of women hired and he reported that about twenty to thirty women absent on any given day.⁶⁹

Klausen documented considerable discrimination in plywood company practices in the post-war period. Female employment during the 1940s, a period for which statistics are available, remained relatively constant. However, when female employment is contrasted with male employment, which rose dramatically during the same period, the

GRAPH V-2: Female and Male Employment in British Columbia Plywood Plants 1944-1952.⁷⁰



⁶⁸ E. B. Ballentine to V. Moore, August 21, 1950, file 73-50, MB, UBCSC.

⁶⁹ Monthly Report Alberni Plywood Plant, January 1942. Box 1, Alberni Plywood Collection, Alberni and District Historical Society Archives.

⁷⁰ Table 1, Statistics Canada, S. I. C. 252, 1944-1952.

existence of hiring discrimination is clear. Given the attitudes of industry regarding the employment of women their continued presence in production tasks was an important step toward employment equalisation, despite the difficulties they faced. However, in 1957, when layoff of one shift occurred at Fraser Mills, most of the men affected were moved into the much larger workforce of the sawmill, while the women were terminated.⁷¹ This did not diminish the importance of women employees within the plywood plant. In 1958 seventy-five women were still employed on the Fraser Mills production floor, about twenty percent of a work force of about three hundred and fifty.⁷²

The employment of women in certain situations within industry was not new. British and American textile mills employed hundreds of women and many were employed in British chocolate factories. Patricia Cooper has documented the transition of cigar manufacturing from that of a largely male occupation to one dominated by women. Cooper suggested that cigar manufacturers held ulterior motives and consciously adopted hiring policies to encourage women to enter the industry.⁷³ British Columbia industry employed large numbers of women in fish canning and paper converting. The plywood industry, however, adopted policies intended to discourage women from working in the plants. The discrimination worsened after 1958 when the IWA secured equal pay for women.⁷⁴ According to Klausen, these policies remained in place until the 1970s when labour shortages reversed the situation.⁷⁵

⁷¹ "Plywood Production Cut to One-Third," *Crown Zellerbach News*, 1/7 (December 1957), 7.

⁷² "Women Earn More at Mill," *Crown Zellerbach News*, 1/9 (February 1958), 4.

⁷³ Patricia A. Cooper, *Once A Cigar Maker: Men, Women, and Work Culture in American Cigar Factories, 1900-1919* (Urbana: University of Illinois Press, 1987), 162.

⁷⁴ Klausen, "The Plywood Girls," 227.

⁷⁵ Klausen, "The Plywood Girls," 228.

The bureaucratised labour-management relationship that developed after 1946 resulted in numerous industry-wide improvements. These improvements included health plans, safety committees, increased Worker's Compensation Board authority, and the negotiation of problems at the plant level by joint committees. The IWA and FIR also initiated a program of job evaluation, similar to logging and sawmilling. Each task was evaluated on a scale. Wage rates were assigned based on the number of points accumulated. Core layers working at the hot presses in the Fraser Mills plant in the late 1950s, for example, were considered to perform three tasks. These tasks involved two decisions that were made continuously by visual observation. The core layers were also expected to handle a minimum of 8,700 board feet on a 3/8 inch basis per person per shift.⁷⁶

Each plant and each task within each plant was evaluated separately. Technology was similar but not identical and enough variation existed so that an individual working within the same plant might appear to have the same job but the actual difficulty level could vary enough to change the point rating and thereby the wage level. The lathe operators in Weldwood's Kent Avenue plant, for example, were paid at different rates. Weldwood's Kent Avenue plant operated two lathes, a Premier and a Merritt. The Premier lathe was the highest paid hourly rate in the plant, with the Merritt lathe next. Wage rate differences and increases are shown in Table V-5.

⁷⁶ Core Layer, Job Descriptions, File Job Descriptions, Box 2, FMC, RBCM.

Table V-5: Rates of Pay for Weldwood Kent Avenue Lathe Operators, 1973-1987.⁷⁷

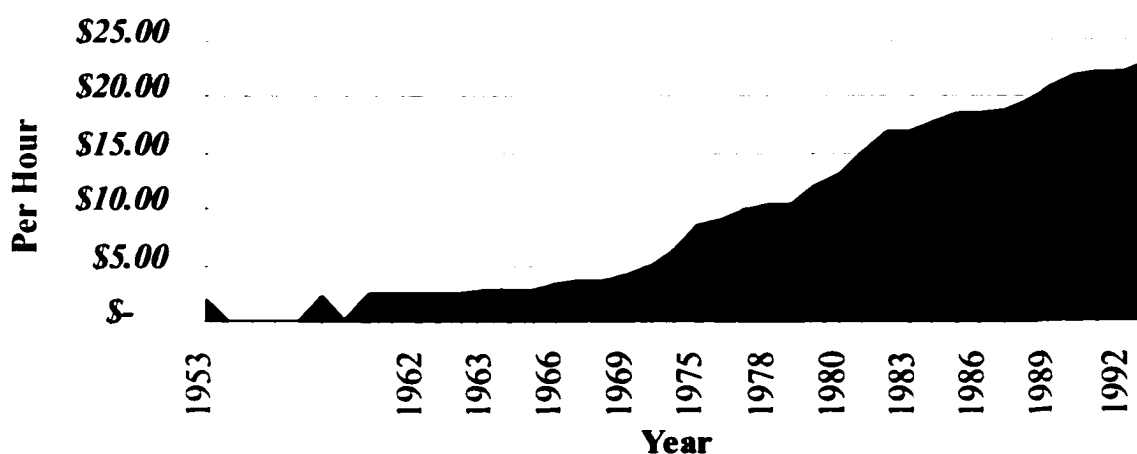
Year	Premier Lathe	Merritt Lathe
	Rate per hour	
1973	\$5.08	\$5.03
1974	\$5.45	\$5.40
1975	\$6.91	\$6.80
1976	\$7.95	\$7.84
1977	\$8.70	\$8.59
1978	\$9.42	\$9.31
1979	\$9.42	\$9.81
1980	\$9.97	\$9.86
1981	\$11.40	\$11.24
1982	\$12.48	\$12.31
1983	\$14.35	\$14.16
1984	\$16.22	\$16.00
1985	\$16.22	\$16.00
1986	\$16.87	\$16.64
1987	\$17.83	\$17.39

Plant management was under continual pressure to increase profit or reduce costs. In part, the formalised relationship contributed to management targeting labour, but is not the full explanation. Plant management realised that labour was the main cost over which they could exert significant control. Individual plants had little control over their raw material situation, which rested in the hands of the logging departments and with senior managers at head office who viewed the log situation in terms of allocating the logs to the most profitable plant. Plywood sales, as well, were handled by an outside agency which presumably obtained the best price possible. Plant managers had little control over this price except the refusal to ship. However, they could control labour costs by either increasing worker productivity or by replacing employees with technology.

⁷⁷ Negotiation Files, Box 3, Kent Avenue Collection, WC, RBCM.

Increases in wages are frequently blamed for management targeting labour for cost reduction. Graph V-3, showing lathe wages rates at Quesnel between 1953 and 1993, suggests that dramatic wage increases within the industry undermined profitability.

GRAPH V-3: Lathe Operator Hourly Wages Rates at the Weldwood Quesnel Plywood Plant, 1953–1993.⁷⁸



In fact the cost of labour, in relation to other factors, declined between the middle 1950s and the middle 1990s. During the 1950s labour represented over fifty percent of total plant cost. This declined to about forty-three percent during the 1960s and 1970s until in the early 1990s it was only thirty-four percent and in 1994 dropped to twenty-five percent of the cost of production.⁷⁹ The decline in the cost of labour by over fifty percent indicates that plant managers succeeded both in reducing costs and increasing

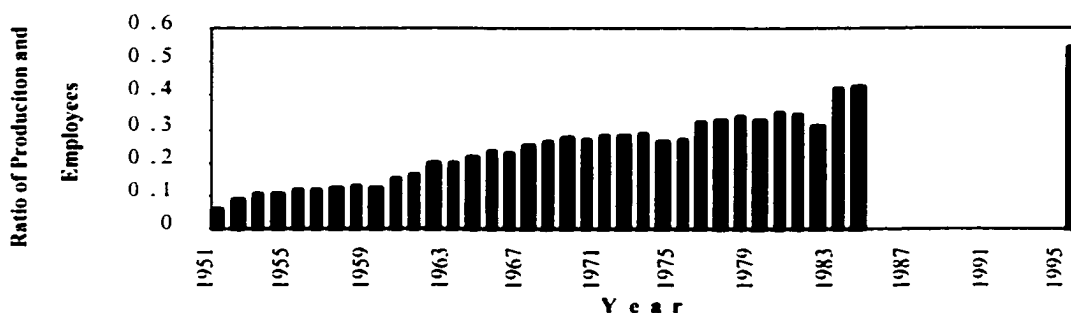
⁷⁸ Rate Binder, Personnel Office Quesnel, Weldwood of Canada.

⁷⁹ F. L. C. Reed and Associates, *Selected Forest Industry Statistics of British Columbia* (Victoria, British Columbia Forest Service, 1975). "Table 1C, Structural Indicators, SIC 2522, Softwood Veneer and Plywood Industry" (Ottawa: Statistics Canada, 1996).

productivity. It further demonstrates that other cost factors, especially raw materials, rose at an even faster rate than labour.

Local plant managers controlled labour allocation and initiated the selection of new technology to improve plant productivity. The industry objective during the boom years of the 1950s and 1960s was not necessarily to reduce the number of employees, but rather to increase production per employee. Graph V-4 illustrates the increase in productivity per employee that occurred after 1951. Some of the increased productivity

Graph V-4: Increased Productivity per Plywood Employee, 1951-1995.⁸⁰

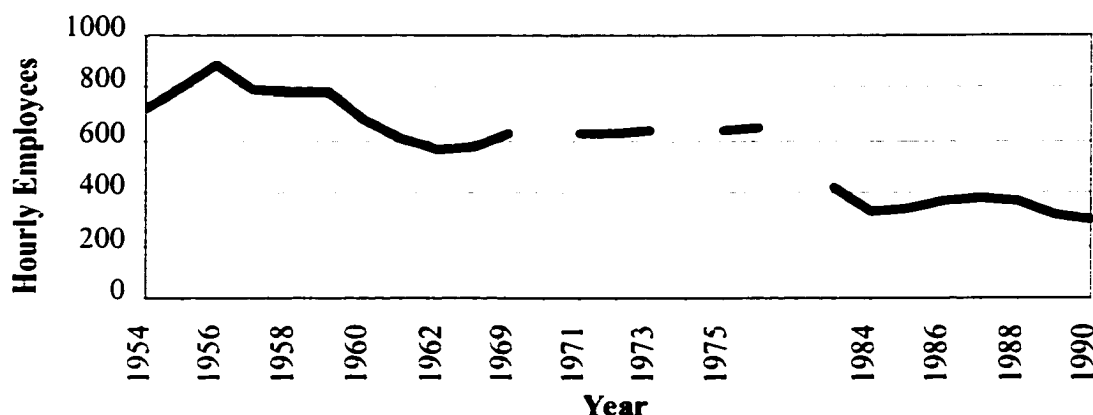


following 1983 resulted from the decreased production of sanded plywood.

A review of workforce levels and productivity increases at MacMillan Bloedel's Alberni Plywood Division demonstrates the approach to technical change adopted by management. A brief interval of crew reduction in the early 1950s resulted primarily from technological change in the finishing end. Crew levels then stabilised until

⁸⁰ Employment statistics from Statistics Canada Report 35-206. Production statistics are from COFI's annual statistical compilation. Total production has been divided by the number of employees in the industry.

**Graph V-5: Employees at MacMillan Bloedel's
Alberni Division, 1954 to 1969.⁸¹**



the 1980s when Alberni underwent a major modernisation that resulted in both crew reduction and additional productivity gains. Productivity gains by employee are shown for selected years in Table V-6. The pattern shown in this table is similar to that for the

**Table V-6: Productivity per Worker for Selected
Years MacMillan Bloedel's Alberni Division, 1954-1987.⁸²**

Year	Number of Employees (average per month)	Production in 1/16 th M square feet basis	Output per Employee
1954	718	540992	755
1958	779	720388	925
1963	578	768222	1329
1969	633	1049989	1659
1973	642	1026873	1600
1984	335	606978	1812
1987	384	954263	2485

⁸¹ Compiled from Monthly reports, MacMillan Bloedel Alberni Division, Alberni Valley Historical Society.

⁸² Compiled from Monthly Reports, MacMillan Bloedel Alberni Division, Alberni Valley Historical Society. Productivity is actually a variable figure and those selected from available information are intended to represent trends. Raw Material Quality, machinery breakdown and labour problems ranging from strikes to absenteeism all influence productivity levels.

industry as a whole as illustrated in Graph V-4. A continual increase in productivity occurs that includes a substantial jump in the 1980s when the production of relatively labour intensive sanded Douglas fir plywood declines.

Plywood plants were generally divided into three main departments, the green end, which included the lathe operations, the plywood assembly section, which included the dryers and the press, and the finishing end, which including patching and sanding.⁸³ Changes within the number of employees within a plant department varied depending on what production strategy the plant chose and the department targeted for technical change. Examination of deployment within British Columbia Forest Products' Victoria Plywood plant during the 1970s, contrasted with 1953, shows that employment reduction primarily occurred in the finishing end. The reduction resulted from the introduction of a new technology, synthetic patching, with the objective of improved through flow. In this case, however, the improvement was so dramatic that significant crew reductions also occurred. The increase in productivity, however, was the main objective and management viewed the crew reductions as an extra benefit.

Table V-7: Employees by Production Department and Productivity at the British Columbia Forest Products, Victoria Plywood Division.⁸⁴

Year	Green End	Plywood Assembly	Finishing	Output per employee on 3/8 ths M square foot basis
1953	32	53	43	183
1973	29	52	25	583
1974	24	49	24	533
1975	24	49	22	433
1976	25	50	21	534
1977	24	50	22	582

⁸³ See Appendix II for a more comprehensive discussion of plywood manufacturing technology.

⁸⁴ Compiled From Monthly Plant Reports, British Columbia Forest Products Collection, History Section, RBCM.

1978	25	50	29	599
1979	26	49	22	618
1980	26	47	21	613

The areas targeted for productivity increase and resultant crew reductions varied depending on the perceived bottlenecks in the production flow. The finishing end was especially a focus of attention. During the 1950s and 1960s when sanded high quality Douglas fir panelling was the highest return product, the objective was to increase worker productivity. During the 1970s and 1980s new technology changed the configuration of the plant and patching shifted from wood patches in veneer to synthetic resin patches in panels. The technology change was intended to reduce costs and gain increased efficiency. Higher productivity meant fewer employees. Weldwood's Kent Avenue plant eliminated its Raimann patchers in 1979, substituting a synthetic patch machine which resulted in a loss of seventeen positions.⁸⁵ The importance of the finishing department, however, was so great that crew reductions were not always necessary in order to justify technical change even in the 1980s. In 1984 Delta Plywood proposed to install the Synthetic Patch Line from the closed Vancouver Plywood Division of MacMillan Bloedel. Management hoped to increase productivity and eliminate a growing backlog of unpatched panels in order to recover higher plywood values. The manager, however, did reinforce his argument by assuring head office that it would also result in reducing the patch crew.⁸⁶

Expensive low quality logs induced plywood plant managers to shift their concern from plywood finishing costs to green end modernisation; a critical survival strategies

⁸⁵ Len Swenor to Bill Semler, memo, January 29, 1979, File Synthetic Patch Changeover, Box 1, Kent Avenue Collection, WC, RBCM.

⁸⁶ Appropriation Request, Delta Plywood, August 23, 1984, File Synthetic Patch Line. Box 4, DC, RBCM.

during the 1980s and 1990s. In its green end modernisation project during the late 1970s, Crown Zellerbach for example, installed a high speed modern lathe which caused a crew reduction of ten employees at the green end. This affected the entire plant. The higher productivity meant that plywood assembly crews were increased by twenty people, while the higher quality veneer produced meant the finishing end could be reduced by thirteen employees, but resulting in a total reduction of only three employees (five new supervisors were also employed).

Table V-8: Employees at the Crown Zellerbach Fraser Mills Plywood plant, before and after modernisation, 1978.⁸⁷

Area	Employees	Number of Employees After Modernisation
Boom & Barker	28.0	31
Green end	118.5	108
Plywood assembly	209.5	229
Finishing and shipping	88.0	63
Total hourly	428.0	420
Total supervisors	16.0	21
Total crew	444.0	441

In 1965, at Delta Plywood, similar green end modernisation resulted in nineteen positions being lost. The slow plywood market also meant that no new positions were created to mitigate the loss and total crew was reduced from two hundred and seven to one hundred and eighty-eight employees.⁸⁸

Technological change during the 1980s and 1990s was directed not at increasing plant capacity but at reducing crews, even if over-all production was less. MacMillan Bloedel's Alberni plant modernised in 1979 and 1980. The crew was reduced from six hundred and fifty-four in 1976 to three hundred and thirty-five in 1984. Production

⁸⁷ S. Piper to G. Morley, interoffice memo, Oct. 31/78, Box 2, Fraser Mills Collection (hereafter FM), RBCM.

dropped by about fifteen percent.⁸⁹ This contrasts with the 1960s when the objective was greater production as well as increased productivity.

The workers in plywood plants were primarily subordinated to formalised unionism and technological change. The IWA could do little to stem the flow of employees forced out of work in the closed coastal plywood plants. Companies faced with technological change, resource reallocation problems, and declining corporate revenue, deemed plywood plants uneconomical. Plant managers used technology to try and decrease their costs, maintain profits, and keep the plants in operation. The solutions to coastal plywood problems, however, were beyond the reach of either plant management or union action. Instead, government and the corporate owners needed to commit to a successful plywood industry and find the means to achieve successful plant operation. Raw materials had to be allocated at a competitive cost and markets needed to be developed in which to sell higher cost products such as sanded high quality Douglas fir plywood. The companies, however, were unwilling to reduce short term profits to prop up what they saw as a failing industry and with the provincial government in agreement, the large companies closed their coastal plants.

Technology and Plywood Manufacturing

The technology used to manufacture plywood in British Columbia was specialised but in common use.⁹⁰ The same machines appeared in each plant and in some cases, such as Raimann patchers, Globe glue spreaders, or Laucks moisture detectors, were used

⁸⁸ Analyses of Standard Crew Changes, for 1986, Green End Modernisation, Box 24, DC, RBCM

⁸⁹ Monthly reports, Alberni Plywood Collection, Alberni Valley Historical Society.

across the industry. Plywood equipment manufacturers frequently developed short-term competitive advantage by the development of new technology. The advantage persisted until displaced by a newer technology. Raimann veneer patchers, for example, dominated patching in the 1950s and 1960s, but during the 1970s and 1980s synthetic panel patchers frequently replaced them. Manufacturers did have some choice amongst equipment manufacturers, Coe or Moore dryers could be purchased, but the technical differences between equipment manufacturers' products were rarely of long duration. The comparatively small market limited competition among equipment manufacturers unless a technical breakthrough initiated equipment changes within the plants. The choice of equipment seems to have been based largely on which manufacturer could meet certain specifications at the cheapest price.

Technological development and choice in plywood manufacturing was based on a series of feedback mechanisms that induced change in each plywood plants.⁹¹ Diagram V-1 illustrates the network of interactions that induced technical improvements in plywood plants. Raw materials and labour concerns were the main factors causing technological change. Each plant manager sought to maintain high product standards, but with lower quality raw materials. In the face of rising costs plant managers chose to reduce labour costs. A feedback situation then ensued with plants and equipment manufacturers interacting to secure the best technology for each plant's requirements.

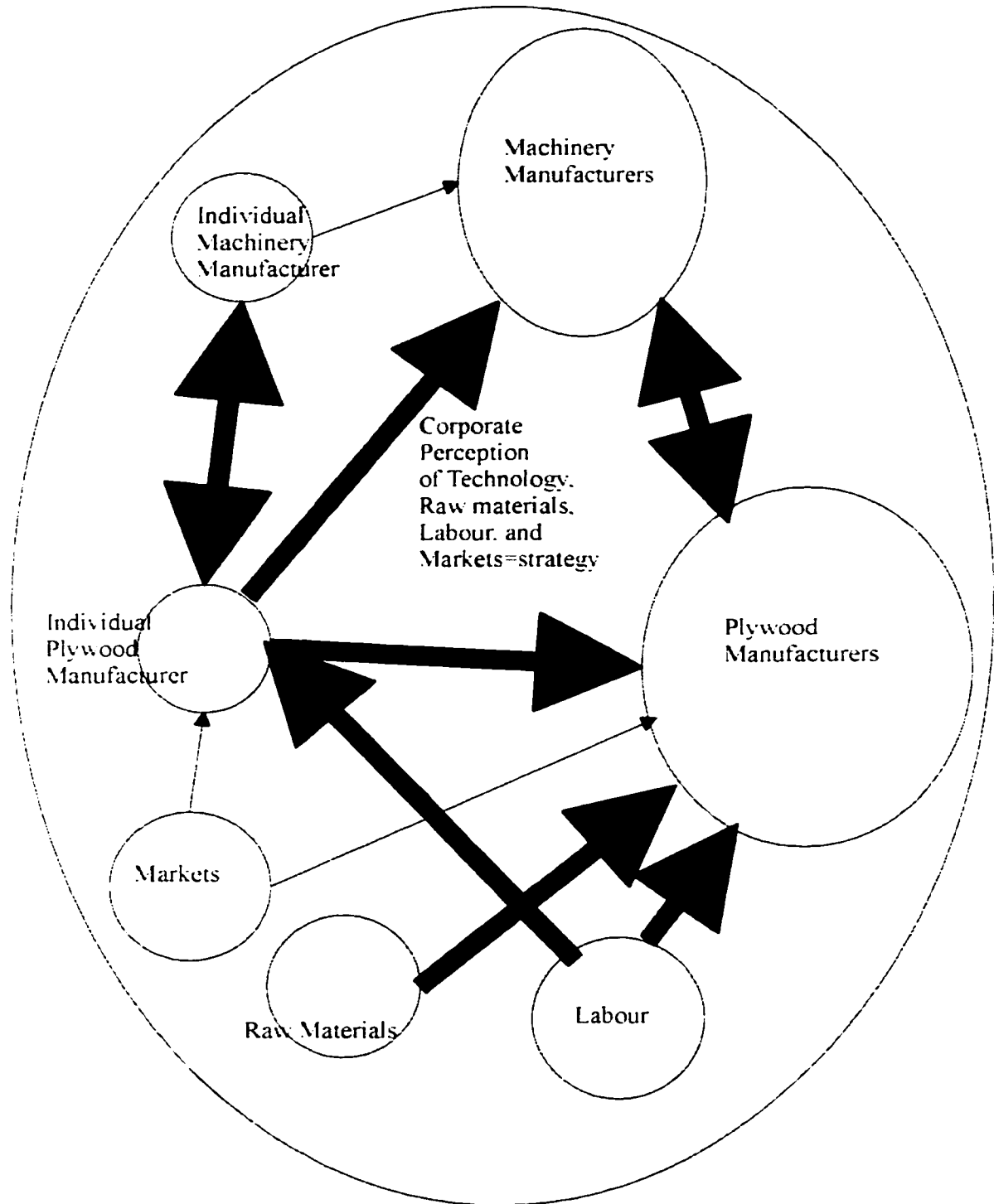
⁹⁰ See Appendix II for a general description of technology and technology change in plywood manufacturing.

⁹¹ Ross Thomson documented this condition in regard to the mechanisation of shoe manufacturing. Thomson, however, noted that improved sales played a large role in inducing improvements in sewing machines. This was not the case for plywood manufacturing. Ross Thomson, *The Path to Mechanized Shoe Production in the United States* (Chapel Hill: University of North Carolina Press, 1989), 116-117.

How each company perceived the various factors dictated what aspects of plywood manufacturing technology they adopted.

In the plywood industry, company personnel frequently visited other plants to inspect new machinery, learn about new techniques and determine what best suited their operation. The companies and the PMABC also actively engaged in information exchanges. Table V-9 shows the visits to other plants by MacMillan Bloedel's Alberni Division personnel over the twenty-one year period between 1954-1975. Staff from the Alberni plant visited plywood plants and machinery manufacturers at least two hundred and twenty-four separate times, averaging over ten visits per year. There was a tendency to group visits and the bulk of the visits were to the MacMillan plant in Vancouver, but visits to numerous other facilities were also undertaken. The visits were not limited to Vancouver Island and the greater Vancouver area but also to the United States and more rarely to interior plywood plants.

Diagram V-1: Network of Interactions Inducing Technological Change



Darker arrows denote closer relationships.

**Table V-9: Alberni Division, MacMillan Bloedel,
Plant Visits with Date and Reason for Visit,
1954-1975.⁹²**

Year of Trip	Plant Visited	Reason
1954	British Columbia Forest Products – Victoria	General*
1954	MacMillan Bloedel – Vancouver	Electrical
1954	MacMillan Bloedel – Vancouver	General
1954	MacMillan Bloedel – Vancouver	General
1954	Long Bell Lumber Co – Longview, Wash. Ancortes Veneer – Ancortes, Wash. Columbia Plywood – Kalama, Wash.	General
1954	MacMillan Bloedel – Vancouver	Brushing Machine
1954	MacMillan Bloedel – Vancouver	General
1955	Crown Zellerbach – Fraser Mills Canadian Forest Products - New Westminster MacMillan Bloedel – Vancouver Mount Baker Veneer – Vancouver Western Plywood – Vancouver	General
1955	Kosmos Veneer – Kosmos, Wash. Hardell Mutual Plywood – Olympia, Wash. Rainier Plywood Co. – Tacoma, Wash. Buffelen Manufacturing – Tacoma, Wash. Elliot Bay – Seattle, Wash. Three Rivers Veneer – Darrington, Wash. Ancortes Veneer – Ancortes, Wash. Western Plywood – Vancouver	Core lathe, gas fired dryers
1955	British Columbia Forest Products – Victoria British Columbia Forest Products – Youbou Victoria Plywood – Victoria	Chipping
1955	Ancortes Veneer – Ancortes, Wash.	General
1955	North Pacific Plywood – Tacoma, Wash. Buffelen Manufacturing – Tacoma, Wash. United States Plywood - Seattle, Wash. Elliot Bay Plywood – Seattle, Wash.	General
1956	Canadian Forest Products - New Westminster Crown Zellerbach - Fraser Mills Western Plywood – Vancouver Evans Products – Vancouver MacMillan Bloedel- Vancouver	General
1956	MacMillan Bloedel – Vancouver	Glue spreader
1956	MacMillan Bloedel – Vancouver Canadian Forest Products - New Westminster	Dryer feeders
1956	MacMillan Bloedel – Vancouver Canadian Forest Products - New Westminster	Various**
1958	MacMillan Bloedel – Vancouver	Various
1958	British Columbia Forest Products – Youbou	Clipping
1958	Western Plywood – Vancouver	Clipping
1958	MacMillan Bloedel – Vancouver	Clipping

⁹² Trips Files, MacMillan Bloedel Collection, RBCM.

1959	MacMillan Bloedel – Vancouver	Various
1959	MacMillan Bloedel – Vancouver	Maintenance
1959	British Columbia Forest Products – Victoria Victoria Plywood – Victoria	Sander
1959	British Columbia Forest Products – Victoria Victoria Plywood – Victoria	General
1959	British Columbia Forest Products – Victoria Victoria Plywood – Victoria	Various
1959	Nicholson Manufacturing – Victoria	Lathe charger
1959	MacMillan Bloedel - Vancouver Canadian Collieries-Surrey	Various
1959	Standard Veneer & Timber, Crescent City, Cal. Fortuna Plywood – Fortuna, Cal. Simpson Logging – Lyons, Oregon Western Veneer & Plywood – Lebanon, Oregon Santiam Plywood - Sweet Home, Oregon Matron Plywood – Springfield, Oregon U.S. Plywood – Eugene, Oregon Snelstrom Plywood – Eugene, Oregon Hub City Plywood – Albany, Oregon Coquille Valley Lumber – Portland, Oregon	Jointers
1960	MacMillan Bloedel – Vancouver Western Plywood – Vancouver	Various
1960	MacMillan Bloedel – Vancouver Canadian Forest Products - New Westminster	Bundling line
1960	MacMillan Bloedel – Vancouver	Imprinter
1960	MacMillan Bloedel – Vancouver Western Plywood - Kent Ave., Vancouver	Various
1960	MacMillan Bloedel – Vancouver	Various
1961	Canadian Forest Products - New Westminster	Lathe
1961	British Columbia Forest Products – Victoria	Car loading
1961	MacMillan Bloedel – Vancouver Western Plywood - Kent Ave., Vancouver Canadian Forest Products - New Westminster Crown Zellerbach – Fraser Mills	General
1961	Georgia Pacific – Olympia, Wash. St. Paul & Tacoma Lbr. – Olympia, Wash. Shifton Plywood – Seattle, Wash. Weyerhaeuser – Snoqualmie Falls, Wash.	New saw
1961	British Columbia Forest Products – Victoria Canadian Collieries – Surrey	Paint machine
1961	British Columbia Forest Products – Victoria Weyerhaeuser – Snoqualmie Falls, wash.	Examine grade chain
1961	Nicholson-Murdie – Victoria	Lathe charger
1961	MacMillan Bloedel – Vancouver	Lathe charger
1961	MacMillan Bloedel – Vancouver Western Plywood – Vancouver	various
1962	Crown Zellerbach – Fraser Mills MacMillan Bloedel – Vancouver	Lathe
1962	Canadian Collieries-Surrey Medford Co. – Medford, Oregon National Plywood – Roseburg, Oregon International Paper – Gardiner, Oregon U.S. Plywood – Mapleton, Oregon	General

	Lane Plywood – Eugene, Oregon Hub City Plywood – Albany, Oregon Three Sisters Plywood – Albany, Oregon Cascades Plywood – Lebanon, Oregon Coquille Valley Lbr. – Albany, Oregon Crown Zellerbach - St. Helens, Oregon Pope & Talbot – Kalama, Wash. Weyerhaeuser – Snoqualmie Falls, Wash. Canadian Forest Products - New Westminster	
1962	Crown Zellerbach – Fraser Mills Canadian Forest Products - New Westminster Canadian Collieries – Surrey	general
1962	- Tillamook, Oregon	Wet process
1962	British Columbia Forest Products - Victoria	Lathe
1963	Weldwood – Vancouver	Finishing End
1963	Weldwood – Vancouver	Sander
1963	MacMillan Bloedel – Vancouver Canadian Collieries – Surrey Canadian Forest Products – New Westminster	Various
1963	MacMillan Bloedel - Vancouver Canadian Collieries - Surrey Canadian Forest Products – New Westminster Evans Products - Vancouver	
1964	MacMillan Bloedel - Vancouver Crown Zellerbach - Fraser Mills	Skinner saw, sander
1964	MacMillan Bloedel – Vancouver	Grade line
1965	Shifton Plywood – Seattle, Wash.	Specialty saw
1965	Weldwood – Surrey Crown Zellerbach - Fraser Mills MacMillan Bloedel – Vancouver Canadian Forest Products - New Westminster Douglas Plywood – Vancouver	General
1965	Weldwood – Surrey Crown Zellerbach - Fraser Mills MacMillan Bloedel – Vancouver Weldwood – Vancouver Richmond Plywood – Vancouver	General
1965	MacMillan Bloedel – Vancouver	Various
1966	MacMillan Bloedel – Vancouver	Grade line
1967	MacMillan Bloedel – Vancouver	Maintenance
1967	Crown Zellerbach - Fraser Mills Canadian Forest Products - New Westminster	Various
1968	Victoria Plywood – Victoria British Columbia Forest Products – Victoria	General
1968	MacMillan Bloedel – Vancouver Richmond Plywood – Richmond	General
1969	Victoria Plywood – Victoria British Columbia Forest Products – Victoria	General
1969	MacMillan Bloedel – Vancouver	Various
1969	Richmond Plywood	Chipper
1970	British Columbia Forest Products – Youbou	Dryer
1970	MacMillan Bloedel – Vancouver Canadian Forest Products - New Westminster Crown Zellerbach - Fraser Mills Weldwood – Vancouver	General

	Richmond Plywood – Richmond	
1970	Weyerhaeuser – Longview, Wash. Simpson Timber – McCleary, Wash.	Core joining
1970	MacMillan Bloedel – Vancouver	General
1970	Weldwood – Vancouver	Moisture Detector
1970	MacMillan Bloedel – Vancouver Douglas Plywood – Vancouver	Clipper
1971	MacMillan Bloedel – Vancouver	General
1971	Victoria Plywood – Victoria	Press loading
1972	Victoria plywood – Victoria	Clipper
1972	Georgia Pacific – Toledo, Oregon Georgia Pacific – Springfield, Oregon	Veneer Handling
1972	British Columbia Forest Products – Youbou	Dryer
1973	Richmond Plywood – Richmond Cantree – Vancouver	New Dryer
1973	Crown Zellerbach - Fraser Mills Mount Baker Plywood – Bellingham, Wash. Everett Plywood – Everett, Wash. U.S. Plywood – Seattle, Wash. Jaype Plywoods – Pierce, Idaho Potlatch Forest Industries - St. Marie's, Idaho Evans Products – Golden Federated Cooperative – Canoe Crown Zellerbach – Armstrong Crown Zellerbach – Kelowna Richmond Plywood – Richmond	New Dryer
1975	Weldwood - 100 Mile House Crown Zellerbach – Armstrong Crown Zellerbach – Kelowna Riverside Forest Products – Lumby Crown Zellerbach – Omak, Wash.	General
1975	MacMillan Bloedel – Vancouver	Press Loader

*General means for more than one reason , most visits had some purpose and visits simply to see were rarer.

The small size of the plywood machinery market, when compared to sawmill equipment, limited the choices available. Dryers were manufactured by three companies: Coe in the eastern United States at Painesville, Ohio and the Moore and Prentice Companies in the western United States. Production of certain smaller machines was usually dominated by one company; glue spreaders were invariably manufactured by the Globe Machine Works at Portland, Oregon, while the Raimann patcher dominated patching lines until the introduction of synthetic patchers. This limited production resulted in considerable specialisation amongst some machinery manufacturers. Coe, the

longest established of the plywood machinery manufacturers, was noted for its lathes and kilns. During the 1960s and 1970s its dominance in these areas was supplanted on the West Coast, at least, by Premier and Merritt lathes and by Moore dryers. Small incremental technical changes sometimes induced the switch. Moore, for example, began production of a jet dryer, based on techniques the company developed for drying lumber. Certain very specialised equipment quickly spread through out the industry because the importance of the improvement, for example, moisture and defect detectors. Changes in equipment purchasing, caused by the down-sizing of the plywood industry, was clearly disastrous for these companies, Moore and Prentice have both gone out of business.

The British Columbia plywood industry also sponsored research into plywood manufacturing problems. The PMABC established a laboratory in North Vancouver, but its research was usually directed at plywood as a product and not on the development of new production equipment. Research into new production equipment was initially sponsored by the federal government's Western Forest Products Laboratory (Forintech), which worked with and was sometimes funded by industry. A major focus during the 1960s and 1970s was to improve veneer peeling. Retractable chucks, knife angles and nose bars were all extensively studied. A. O. Feihl, working at the federal government's Ottawa laboratory, published a study on improving knife profiles as early as 1959.⁹³ Over the next several years Feihl undertook intensive studies of problems in lathes and determined the best ways to set knife angles. In 1963 Feihl included Douglas fir in his studies and made some recommendations for improved knife settings.⁹⁴ He also

⁹³ A. O. Feihl, "Improved Profiles for Veneer Knives," reprinted from *Canadian Woodworker* (August 1959).. on file at the History Section, RBCM.

⁹⁴ A. O. Feihl, H. G. M. Colbeck and V. Godin, *The rotary cutting of Douglas Fir*, Department of Forest Publication No. 1004 (Ottawa: Ministry of Forestry, 1963), 24.

researched related issues, such as heat distortion in lathes.⁹⁵ Research continued throughout the 1960s, 1970s and 1980s primarily in ways to improve peeling, the most important innovations were retractable chucks, a heated nose bar, and steam injection near the tip of the veneer knife.⁹⁶

New technology induced a certain amount of variation within the industry. When new machines became available not all plants acquired the new equipment or techniques. The timing of change within each plant varied and depended on the priority management gave to the new technology. Occasionally certain machines only partially replaced the older machines. Synthetic patchers in many plants, for example, displaced the Raimann patchers. The Raimann patchers, however, used a wood patch instead of a synthetic resin patch compound and occasionally a customer required wood patched panels. Technical variation also emerged as plywood manufacturers processed smaller diameter logs and logs of different species. Lathes and lathe chargers varied sufficiently so that plants using small logs could not efficiently use the same machinery as plants processing large logs. Technological differences also appeared as the mills sought to develop flow through processes. Continuous panel assembly systems replaced the manual assembly of panels. The adoption of continuous lay-up machines was slow in Canada, however, in comparison to the United States where the technology was developed. MacMillan Bloedel rebuilt their Alberni plant in 1979-80 to include the Georgia Pacific lay-up line.

⁹⁵ A. O. Feihl, "Wear, Play, and Heat Distortion in Veneer Lathes," reprinted from the *Canadian Woodworker* (December 1960), *Setting Veneer Lathes with aid of Instruments*, F.P.L. Technical Note No. 14 (Ottawa: Forest Products Laboratory, 1959); O. Feihl and V. Godin, *Peeling Defects in Veneer: Their Causes and Control*, Technical Note No. 25 (Ottawa: Forest Products Research Branch, 1962).

⁹⁶ P. L. Northcott, C. Palka and W. V. Hancock, *Commercial Softwood Veneer Quality (Short report)*, Project No. V-134-2, Forestry branch, January 1967 or L. C. Palka and B. Homes, "Effect of Log Diameter and Clearance Angle on the Peel Quality of 0.125-Inch-Thick Douglas-Fir Veneer," *Canadian Forest Industries* 23/7 (July 1973), 33-41. D. C. Walser, "Steam-Injection Knife Improves Veneer Quality," *Forest Products* 24/9 (September 1974), 70-79.

Several interior operators also adopted continuous lay-up lines in their plants. Prentice and Georgia Pacific lay-up lines were installed at Riverside's Armstrong plant, while Tolko's Hefley Creek plant operated two Georgia Pacific lay-up lines.

Examination of individual plywood plants across North America would yield little variation in the plywood equipment in use. Globe glue spreaders, for example, were used in British Columbia and in North Carolina.⁹⁷ The differences in technology that existed between plants can be attributed to a failure to invest in the latest technology and to company and plant manager's perceptions of what technology worked most effectively in their situation.. Information was usually freely shared between companies, and there was little attempt to hide new processes and the quality of the plywood produced from competitors. The industry sought and achieved a standard product intended to meet specific market requirements and employed the technology that needed to achieve that standardisation.

Technology changed as the fibre supply changed. When log diameters shrank, lathes were designed to profitably peel the smaller diameter logs. Dwindling profits, however, caused plant managers to seek reduced labour costs. Companies' installed new patching devices and used new patching materials and new lay-up technology was developed. Dryers, lathes, clippers, and hot presses all were improved to increase speed, but still maintain product quality and meet Canadian grade specifications. The higher the grade sold the higher the profit, and companies strove to use technology to secure the best grade from each log. Reducing costs by substituting technology for labour, however, played an essential role in plant survival strategies during the 1970s and 1980s.

Conclusion

Raw materials, labour and technology exerted varying degrees of influence over the strategies of British Columbia's plywood industry. Raw materials, especially, played a vital role in determining the coastal industry's success and failure. The availability of old growth Douglas fir logs encouraged the emergence of plywood production as an important industrial sector. The cost of the old growth Douglas fir fifty years later was important in the decline of the coastal plywood industry. Control of raw materials also shaped the British Columbia forest industry and the modes of controlling the forest harvest, established by the provincial government, supported corporate managers' desire for increased growth and integrated forest product companies. Plywood became a product to be used and discarded depending on its profitability.

Technology provided the means for plywood production, but the early industry leaders decided what role plywood would play and used the technology that supported their choice of product. Technology was used to create a standardised product and technology shifted production closer to the classic model of assembly line production. The industry actively pursued a course designed to homogenise new technology. A network of information exchanges resulted in the adoption of technology intended to meet the objectives established by plant managers and corporate strategists.

The basic shape of plywood technology was in place by the 1940s when British Columbia's plywood industry began to expand. The producers refined and reshaped the existing technology, usually at the expense of labour, to suit their production needs. Plywood technology improved as raw materials declined in quality, which extended the

⁹⁷ The Davis Wood Products Plant at Hudson, North Carolina, for example, used Globe glue spreaders as

life of the industry and promoted the exploitation of the interior forest regions. So successful was the technological shift from large high quality logs to smaller lower quality logs that interior plants remained profitable even as the coastal plants closed.

The labour process was unable to cope with the economic problems that resulted from changes in technology and raw materials. The coastal mills closed and union and company management did little more than seek alternative work for the displaced employees. The adversarial nature of the bargaining process created mutual distrust, which neither bargainer could overcome. This prevented the IWA from looking at viable alternatives and management from understanding the Union's unwillingness to compromise on wage and other issues.⁹⁸

The differences between coast and interior were not only in the type and quality of the raw materials, but also in the way companies managed these resources. The geographically scattered plywood plants in the interior meant that companies drew not only on their own timber resources but could also use those of other operators. The greater Forest Service scrutiny of timber sales in Public Working Circles and Sustained Yield Units may have encouraged the best use of logs. Very few logs, for example, went directly to the pulp mills; instead, pulp mills depended on chips supplied by other processing facilities. The choice was to saw or peel and as long as logging costs remained competitive plywood plants paid a premium to acquire the needed logs.

How industry perceived raw materials, technology and labour shaped industry strategy. The higher lumber values shifted the best peeler logs from the coastal plywood

did all British Columbia plants not using automatic lay-up lines. *DFPI: Directory of the Forest Products Industry, 1992-1993* (San Francisco: Miller Freeman Inc., 1993), 279.

mills to sawmills. Technology was developed to compensate, but on the coast failed to meet the test of profit. Raw materials were too costly for profitable plywood production, while in the interior, raw material costs were lower and plywood production was feasible.

⁹⁸ The one exception may be the transformation of Weldwood's Kent Avenue plant from corporate ownership into a co-operative. The effort, although unsuccessful, had the support of Weldwood, Government and reluctantly the IWA.

Chapter VI

Conclusion

British Columbia's softwood plywood industry was organised to take advantage of the higher profits generated from converting logs into plywood, not lumber. The industry first made plywood for door manufacture, but in the late 1930s and the 1940s shifted production from doors to panels. The rapid economic expansion of the post-World War II era stimulated plywood's transformation from small-scale production into a significant economic segment of the British Columbia forest industry. New technology, waterproof glued panels, enabled manufacturers to seek new markets. Plywood substituted for lumber in specific building applications, and it was promoted as a cheaper and more effective sheathing.

British Columbia's plywood manufacturers located additional domestic markets by targeting farmers and homeowners with special advertising and services. The industry, supported by the PMABC, created a strong marketing program across Canada which encouraged Canadians to become major consumers of softwood plywood. The larger manufacturers controlled sales by creating wholesale distribution networks to regulate competition and create demand for plywood. The PMABC supported the industry by using advertisements and field experts to promote the superior qualities of plywood. The PMABC also established standards and provided quality control, reassuring buyers that the product met their needs.

British Columbia's plywood industry was usually organised into branch plants. Only six of the twenty-seven softwood plywood plants operating in British Columbia between 1913 and 1999 started as independent single plant plywood producers: Canadian

Forest Products, Western Plywood's Vancouver plant, Richmond Plywood, North Central Plywood, Canadian Plywood Corporation, and Douglas Plywood. Richmond Plywood remained the only single plant, non-integrated plywood producer; all of the other plants within ten years of commencing operation were part of an integrated forest company.

The choices industry made for the organisation of production and distribution were based on past experience. The company-owned warehouse distribution system was only one of the choices available to industry. The managers in MacMillan Bloedel, however, came from the wholesaling part of the firm, and they chose to remain wholesalers. The decision to organise the PMABC and to establish close co-operation among the producing plants was based on the prior example of the lumber industry. Plywood production grew as part of an integrated forest industry and even the choice to focus on domestic sales was based on the prior experiences of the lumber manufacturers.

Plywood mills, when compared to a small sawmill or shingle mill, are capital intensive. Plywood equipment is expensive and technically sophisticated, requiring considerable expertise to operate and maintain. A plywood manufacturer unlike a small sawmiller or shingle manufacturer, could not purchase a few simple machines and begin production. A complex and expensive plant had to be built. The requirement for large capital investment was not unusual in industry, but even capital-intensive industries were often organised into single plant companies. Ohanian notes that in 1940 eighty-five percent of paper companies in the United States operated a single mill.¹

The industrial organisation adopted by British Columbia plywood producers was related to the structure of the British Columbia forest industry and not specifically to circumstances in plywood production or sales. Each plywood producer adopted distinct

strategies for growth. The large producers adapted plywood to support their overall corporate goals, while the smaller operators made plywood a central focus of their business strategy. The inducements of provincial forest policy and the business practices of the 1950s and 1960s, however, resulted in the dominance of large, integrated forest product companies. In 1970, for example, British Columbia Forest Products operated one plywood plant, six sawmills and one of the largest pulp and paper mills in British Columbia. Plywood played a small, but strategic role in large company strategies, a role that was significantly reduced once the large companies began pulp and paper production.

The strategies chosen by the large producers to distribute plywood production were different from the strategies chosen to sell lumber or shingles. A separate marketing, distribution and sales network was created. The large Canadian plywood producers constructed a warehouse system to distribute domestic sales. These warehouses were sometimes acquired in a haphazard fashion, and additional facilities often resulted from economic necessity, not planned expansion. Sales competition was fierce, while co-operation existed at the production end.

British Columbia plywood makers adopted a different competitive strategy in export markets. Dissension existed between the two largest export organisations, MacMillan Bloedel and Seaboard Lumber and Shipping Company, but each organisation focused on retaining market share for Canadian plywood, against competition from other countries. Canadian plywood manufacturers targeted traditional British Columbia export markets, including the United Kingdom, Europe, and Japan. Canadian manufacturers built their reputation and sales based on quality, not price. Maintaining higher standards

¹ Ohanian, 57.

than the United States, Canada retained a significant export presence, despite competition from the less expensive American plywood.

During the 1980s and 1990s the organisation of the British Columbia plywood industry changed. The coastal plywood plants closed and new owners operated many of the interior plants. Industry, government, and researchers attributed the failure of coastal production to two causes. The most important, it was argued, was the issue of substitution. New and cheaper products such as oriented strand board replaced plywood in many applications. Increased production from interior plywood plants, while coastal plants closed, suggests that substitution only exacerbated the problem and was not the main reason for the closing of coastal plywood plants. The large integrated companies of British Columbia's plywood industry had alternative uses for the raw materials used in plywood manufacturing. When lumber provided a higher profit, the better logs were directed to the sawmills. Unable to obtain the high quality logs, plywood plants, constructed for large log processing, were no longer economical.

The immediate reason for plant closures were the operating losses, caused by an inadequate log supply and product substitution. The continued success of interior production, however, suggests that these causes were only part of the reason coastal plywood plants closed. In order to discover the underlying cause we must turn to evolutionary economics and its argument that to understand the present we must look to the past. The large coastal-based companies developed plywood sales by substituting it for lumber and so it now made sense that plywood should be replaced by another product. Coastal plywood production was then viewed as unprofitable and unable to again become profitable and so should be eliminated. The continued success of interior production,

however, supports the argument that it was how corporate executives and government viewed plywood production, not raw materials and substitute products, that caused the near elimination of coastal plywood production.

Survival of the interior producers is credited to the different raw material base available to interior plywood manufactures. Again evolutionary economics suggests we need to look at the industry's past. The interior plant's always used small logs. Successful sales programs were developed to sell plywood of different species and quality. Industry success was such, that as coastal production declined, interior production increased. The British Columbia Forest Service also promoted the interior industry as an important element of community stability.

This summary suggests that plywood manufacturing supports Chandler's ideas about managerial capitalism and mass production. The plywood industry was dominated by mass production, and it was an industry run by managers during most of its existence. But this study also makes clear pattern is buttressed by diversity. Plywood managers made choices and the choices made were different. The choice of large log technology on the coast contributed to the closure of most coastal plywood plants. Corporate decisions also varied. Fletcher Challenge and MacMillan Bloedel provide a recent example. Fletcher Challenge chose to exit from solid wood products and concentrate on pulp and paper, while MacMillan Bloedel chose to concentrate on solid wood products. The closure of MacMillan Bloedel's and Weldwood's coastal plywood plants provides another example. Both companies operated in the same environment, but with different resources and experiences, chose different strategies. MacMillan Bloedel, with no

interior plants, exited from British Columbia plywood production, while Weldwood focused on interior production.

Business history demonstrates a similar viewpoint. Patterns exist, but the further we search beneath the pattern the greater is the diversity in decision-making and adaptation to economic pattern. Each major plywood producer, for example, chose a different way to cope with the issue of downsizing. MacMillan Bloedel closed one plant but operated its second plant until the company decided the losses were too great. Canadian Forest Products merged its wholesale arm with Weldwood's, and Weldwood shifted its reliance on plywood to its interior plants. Fletcher Challenge closed its coastal plants, and sold its interior plants. The strategies chosen by the new panel producers, Riverside, Tolko, Slocan, Ainsworth, and West Fraser, ranged between the strategies of MacMillan Bloedel and Weldwood. Riverside, like Weldwood in 1999, decided to be a major plywood producer. West Fraser adopted MacMillan's strategy and opted to produce the newer panels such as waferboard, and did not acquire or build a plywood plant in British Columbia.² The other major new interior operators acquired or built a combination of plywood and substitute panel plants. The diversity in industry thus is a key to understanding the emergence of overall pattern within the industry.

The business strategies used by plywood producers were not unique to the plywood industry. Other industries created markets for new or different products. The history of business is filled with patterns that can be applied to British Columbia's plywood industry. The plywood industry established a strategy to lure customers away from their traditional products and methods, just as the National Cash Register Company expanded its market in the early 1900s by using a similar strategy. Initially it convinced

purchasers that cash registers would stop theft. It subsequently broadened the cash register market to include accounting and inventory control.³ British Columbia plywood producers convinced builders that plywood was cheaper. The industry then broadened the market by convincing homeowners that plywood was more convenient by supplying plans for the building of special products such as boats and farm buildings.

This study is a history in which pattern and diversity are intertwined. An industry, many economists and historians argue, follows a pattern. Yet within this pattern a complex network of diversity exists. What can diversity tell us about patterns? Business history suggests that diverse patterns of behaviour can emerge from the same environment, while similar patterns of behaviour can emerge in different environments. A brief review of foreign ownership will demonstrate the implications.

British Columbia's largest plywood producer in the 1990s was Weldwood, a foreign controlled company. It was, however, another foreign controlled company, Fletcher Challenge, that dismembered a large segment of the British Columbia plywood industry. The different survival strategies suggest that the issue of foreign control is more than a "yes" or "no" situation. Graham Taylor has pointed out that Canadian Industry Limited's (CIL) relationship with its American head office was based on bargaining, not fiat.⁴ Weldwood, under John Bene, had a similar relationship with United States Plywood; he was encumbered by restrictions, as was Arthur Purvis, President of CIL. Bene, similar to Purvis, sought to circumvent these restrictions and shape Weldwood into the Canadian company he perceived could successfully operate within

² West Fraser purchased the Edmonton plant of Zeidler Forest Products in 1999.

³ Walter A. Friedman, "John H. Patterson and the Sales Strategy of the National Cash Register Company, 1884 to 1922," *Business History Review* 72 (Winter 1998), 559.

the corporate framework provided by United States Plywood and the Canadian economy.⁵ These issues, however, did not affect the other major plywood producers, except perhaps Crown Zellerbach Canada and its American parent.

Foreign owned firms differed in the plywood industry just as they differed from foreign controlled firms in other Canadian industries. John Baldwin has argued that foreign owned firms tend to acquire linked firms, while domestically owned firms tend to build.⁶ This was clearly not the tendency of British Columbia's major plywood producers who all acquired when possible and built only when they had no other choice, regardless of ownership. The numbers of purchased and acquired plants is illustrated in Table VI-1. The two foreign owned companies both built more plywood plants than they bought while the Canadian owned Canadian Forest Products was the only company to buy more plywood plants than it built.

Table VI-1 Plants by Company and Type of Acquisition, 1913-1999.

Company	# Built	# Purchased
Weldwood (foreign ownership)	4	3
B. C. Forest Products (foreign ownership)	2	1
Crown Zellerbach (foreign ownership)	2	1
CANFOR (B.C. Ownership)	1	2
MacMillan Bloedel (B.C. controlled)	2	

The British Columbia softwood plywood industry was a large industrial network, but it one that remained hidden within the environment of British Columbia's integrated forest industry. The plywood manufacturers transformed Canadians into consumers of

⁴ Graham D. Taylor, "Management Relations in a Multinational Enterprise: The Case of Canadian Industries Limited, 1928-1948." *Business History Review* LV/3 (Autumn 1981) 339.

⁵ Taylor, 347.

plywood, but as coastal production disappeared during the 1980s and 1990s the only people who noticed were those directly affected by the closed plants. A dynamic industry appeared, created a new and remarkable distribution and sales network, and then disappeared within the space of fifty years. The province's interior based plywood industry partially filled the void in the 1990s, but it did not have the scope of the coastal industry.

Perception of a new opportunity resulted in a new industry, but it was an industry limited by past experience and an uninspired understanding of available capabilities. As a result the coastal Douglas fir industry, built on the great peeler logs of the 1950s and 1960s, did not exist in 1999.

⁶ John R. Baldwin, *The Dynamics of Industrial Competition: A North American perspective* (Cambridge: Cambridge University Press, 1995), 268.

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 Richard Franco, sales manager, Weldwood Vancouver, at Vancouver
 Ches Goodwin, retired, sales manager, Weldwood Vancouver, at Royston
 Herbert Harris, retired, Savona Timber Company, at Kamloops
 Floyd Houston, retired logger, Weldwood Quesnel, at Quesnel
 Harry Lester, retired manager, Timberland, at Surrey
 John McKelvie, retired, employed at Weldwood Quesnel, at Quesnel
 Arne McKitrick, retired, employed at Weldwood Quesnel, at Quesnel
 Wayne Paul, plywood manager, Riverside Forest Products Lumby, at Lumby
 Len Rinvold, retired, plywood manager, At Vernon
 Lance Ripley, retired, manager, Weldwood Vancovuer, at Vancouver
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Appendix I:
British Columbia Veneer and Plywood Plants.

All British Columbia's softwood plywood plants are included in this index. All the plants that were verified as producing either softwood or hardwood veneer and hardwood plywood are also included. There are several plants, such as C. T. Coy and Clardon Woodworkers, whose activities are unclear, and these operations have not been included. Clardon, for example, made cabinets in Vancouver and may have manufactured veneer or plywood to produce the cabinets.

Softwood Plywood	Softwood veneer	Other
Alberni	Atco	Beaty
Armstrong	Coastland	BC Veneer
Canim Lake	Crestbrook	Forwest
Canoe	Fullerton	Hammond
Cantree	Hedberg	Hardply
Cariboo	Lavington	Lama
Delta	Lillooet	Lamatco
Douglas	Merritt	Mitchell
Golden	Merritt-Canfrod	Modular Products
Hefley Creek	Mt Baker	Mouldcraft
Kent	Takla	Surrey Veneer
Kootenay	Zeidler	Tilbury
Merrill Wagner		West Coast Hardwoods
Murray		Western Pad & Drum
North Central		Western Veneer
Pacific Veneer		
Richply		
Savona		
Simpson		
Sooke		
Tackama		
Timberland		
Vancouver MB		
Vancouver Evans		
Victoria, BCFP		

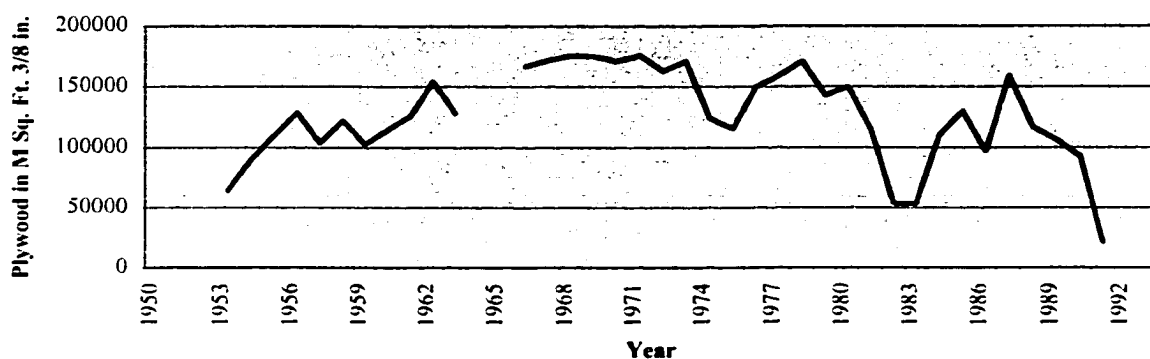
The Graph accompanying each plant description shows plant production between 1950 and 1993. Statistical data obtained from the Canadian Plywood Association (scale is in MMBF – Million Board Feet).

Alberni Plywood Plant (Alberni), 1942-1991

Products: Softwood veneer and plywood
 Owner: MacMillan Bloedel, 1942-1991

Alberni Plywood was the H.R. MacMillan Export Company's second plywood plant in coastal British Columbia. Veneer was first peeled in January 1942, and it operated continuously, except for upgrades and periodic shutdowns, until 1991. The plant went through major upgrades approximately once a decade. The first upgrade occurred in 1953 and included a new lathe and two dryers. In 1964-65 another major upgrade increased production by twenty-six percent and finally in 1979-80 the plant was rebuilt to peel small logs and an automatic lay-up line was included.

Port Alberni - MacMillan Bloedel

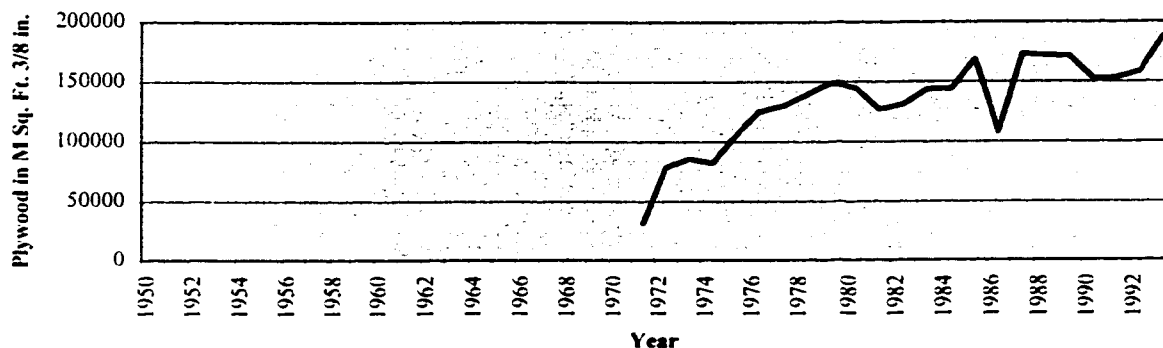


Armstrong (Armstrong), 1971-operating

Product: Softwood veneer and plywood
 Owners: Crown Zellerbach Canada, 1971-1983
 Fletcher Challenge, 1983-1992
 Riverside Forest Products, 1992-

Crown Zellerbach reorganised its scattered interior operations during the late-1960s and centralised at Armstrong and Kelowna. A new plywood plant opened at Armstrong in 1971 and it was expanded in 1974. Fletcher Challenge sold the operations to Riverside Forest Products, when Fletcher Challenge decided to refocus on pulp and paper production.

Armstrong - Crown Zellerbach/Riverside



Atco (Fruitvale), 1980-operating

Products: Softwood veneer
 Owner: Atco Forest Products, 1980-operating

Beaty Laminated (Richmond), 1947-1970

Products: Hardwood plywood
 Owner: Beaty Laminated, 1947-1962
 Crown Zellerbach Canada, 1962-1970

John Beaty graduated in chemical engineering at UBC and joined MacMillan Bloedel's Vancouver Plywood Division. He decided to establish a small hardwood plywood plant. He sold speciality production to other plywood companies, mainly Western Plywood and Crown Zellerbach. Crown Zellerbach purchased the company in 1962 and in 1970 it merged the operation into its Fraser Mills plant and closed the factory.

British Columbia Veneer Works (Nelson), 1926-1945

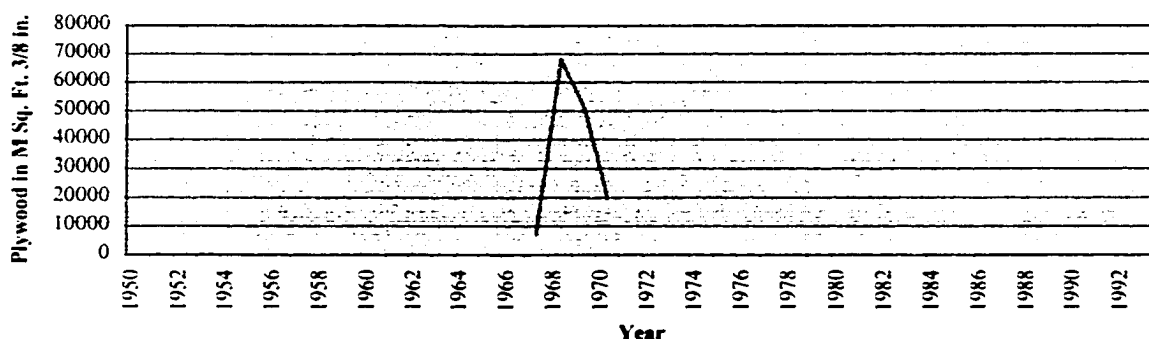
Products: Hardwood veneer and plywood (some softwood production)
 Owner: British Columbia Veneer Works Limited, 1926-1945

Organised in 1926 the plant manufactured cottonwood plywood. This was third plywood plant to begin production in British Columbia. It closed in 1945.

Canadian Plywood Corporation (Richmond), 1967-1971

Product: Softwood veneer and plywood
 Owners: Canadian Plywood Corporation, 1965-1971
 See Delta Plywood after 1971.

Richmond - Canadian Plywood Corporation



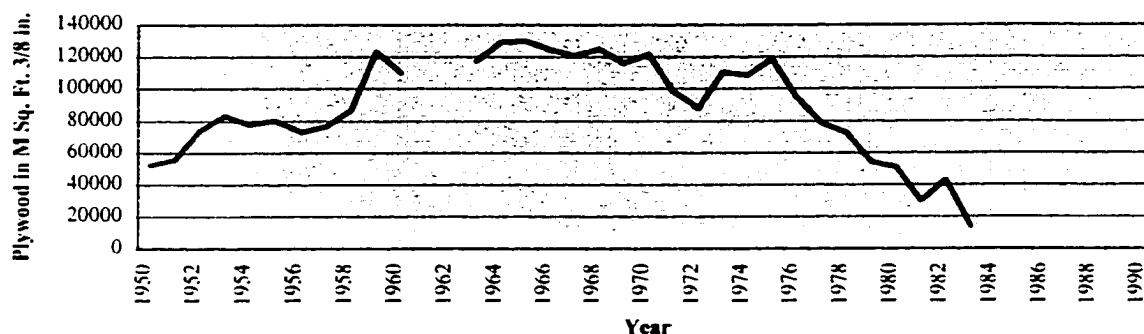
The Canadian Plywood Corporation organised as a co-operative in 1965. The original financing collapsed and even once in production the company did not reach expected profit levels, and went into receivership. British Columbia Forest Products purchased the plant to rebuild as Delta Plywood in 1971.

Canadian Western /Crown Zellerbach (Fraser Mills/Coquitlam), 1913-1989

Product: Softwood veneer and plywood
 Speciality plywood
 Owners: Canadian Western Lumber Company, 1913-1951
 Crown Zellerbach, 1951-1979
 Fletcher Challenge, 1979-1989

The Canadian Western Lumber opened the first plywood plant in British Columbia. Early production was mainly used to manufacture doors. The company also developed sales for plywood as interior panelling. Despite its early advantages, including installation of the first hot press to use the new phenol glues, Canadian Western lost its lead to MacMillan Bloedel and subsequently moved to fifth place amongst the top plywood producers. The company sold its plywood through an extensive chain of company-owned retail stores on the Prairies and to independent wholesalers. It also maintained a warehouse in the major centres of eastern Canada. Fletcher Challenge consolidated its coastal plywood production at Delta plywood following its acquisition of British Columbia Forest Products and closed the Fraser Mills plant..

Fraser Mills - Canadian Western/Crown Zellerbach

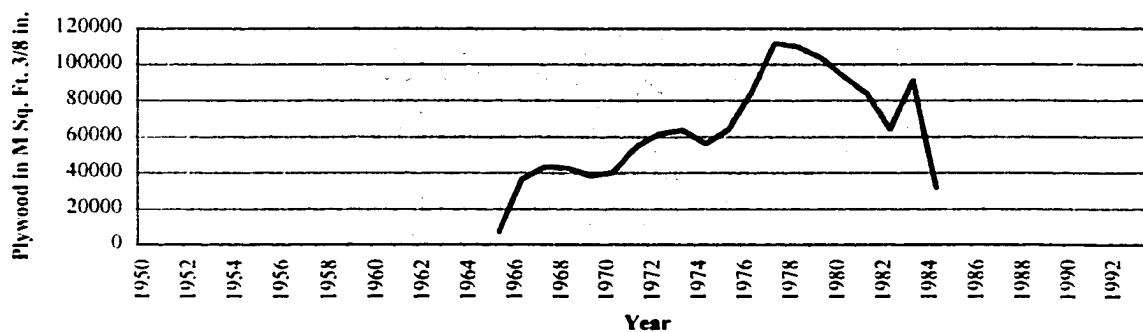


Canim Lake (100 Mile House), 1965-1984

Products: Softwood veneer and plywood
 Owners: Canim Lakes Sawmills, 1965-1970
 Weldwood of Canada, 1970-1984

In 1935 Theodore and Rudy Jens, arrived in Vancouver from Saskatchewan and they found employment delivering fuel. They started their own operation in 1937. In 1940 they cut and shipped cordwood from the Lone Butte/100 Mile House area to Vancouver and in 1942 entered the sawmill business. In 1947 they moved their sawmill to Canim Lake and in 1948 built a planer mill at Exeter on the Pacific Great Eastern Railway. In 1953 they decided to build a plywood plant but a reduction in their timber harvest quota delayed the plan. It was not until the early 1960s that sufficient quota was again available to the brothers. The plywood plant began production on August 19, 1965. In 1970 Weldwood purchased Canim Lake Sawmills. Production was increased in 1977, but in 1984 Weldwood closed the plywood plant in a reorganisation of its Cariboo operations.

100 Mile House - Canim Lake/Weldwood

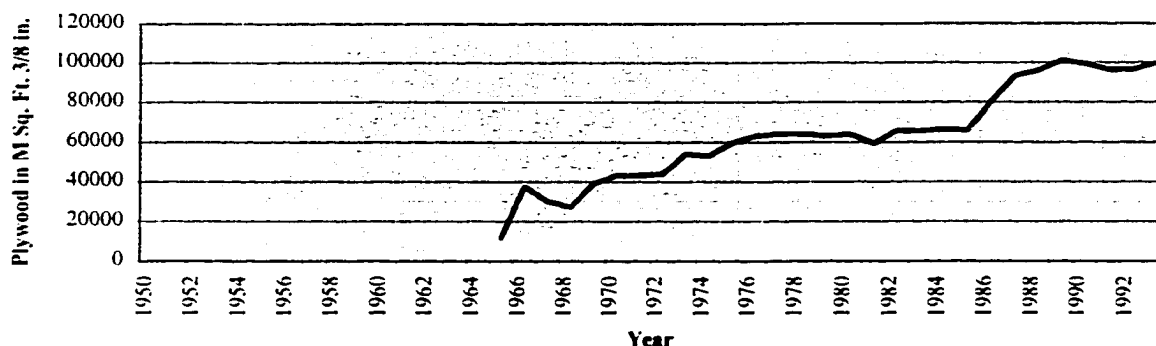


Canoe (Canoe), 1965-operating

Products: Softwood veneer and plywood
 Owner: Federated Co-operative (Saskatoon) also called
 H.K. Lumber Company, 1965-

Federated Co-operative purchased a sawmill at Canoe in 1945 (Shuswap Lumber Company). Prior to building its own plywood plant in 1965, it purchased plywood from Western Plywood and subsequently Weldwood. Federated Co-operative supplies its own retail outlets and sells excess plywood on the open market.

Canoe - Federated Co-operative

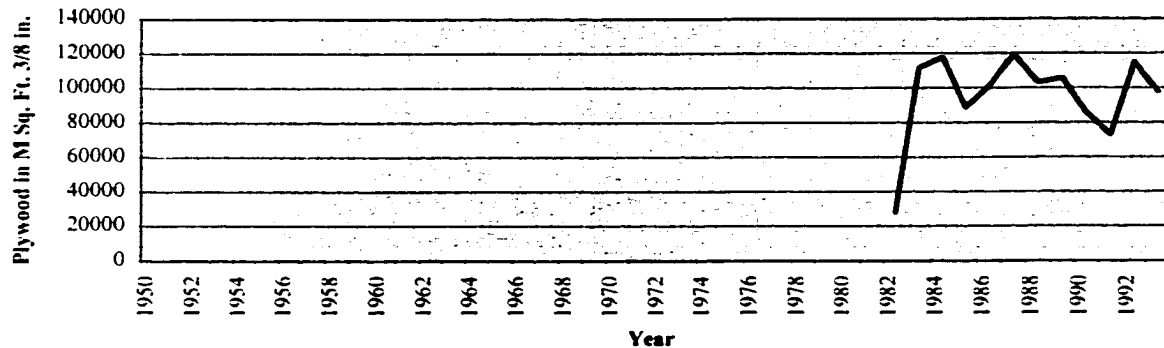


Cantree (Richmond), 1970-1998

Products: Softwood veneer 1970-1974
 Softwood plywood, 1974-1998
 Owners: Alpine, 1970-1977
 Reed, 1977-?
 Tackama Forest Products, 1977(?) - 1987
 Slocan Forest Products, jointly with Riverside Forest Products from 1989-1998

Alpine established a re-dry operation for veneer, and were convinced to add a lay-up plant. The Alpine Company was primarily a veneer broker. The plant was purchased by Tackama Forest Products, who were in turn purchased by Slocan Forest Products in 1987. Riverside Forest Products acquired fifty percent in 1989. It was operated as plywood plant with no veneer production facilities. Veneer was shipped from the interior to the plant for manufacture into plywood.

Richmond - Cantree (Riverside/Slocan)

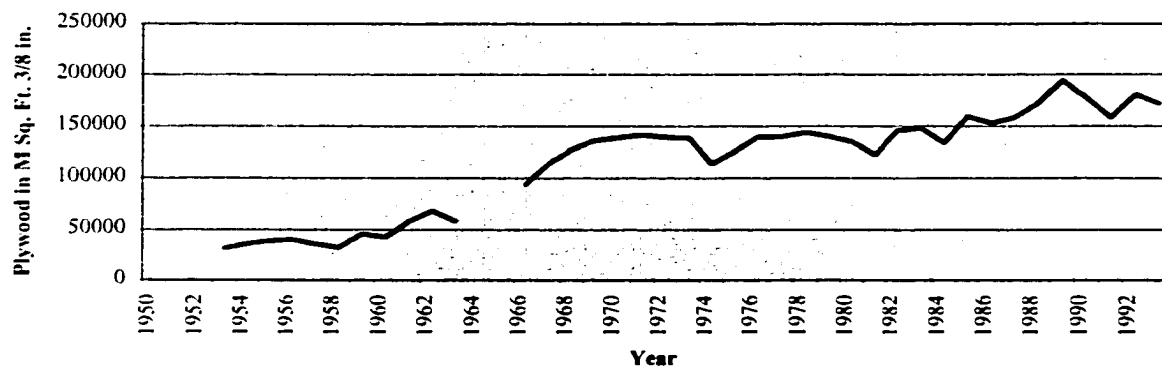


Cariboo Plywood (Quesnel), 1951-operating

Products Softwood veneer, 1951
 Softwood veneer and plywood, 1951-
 Owners: Western Plywood, 1951-1961
 Weldwood of Canada, 1961-operating

The first plywood came off the press on November 22, 1951 in Western Plywood's Quesnel plant. This was the first softwood plywood plant built in British Columbia's interior and the second interior plant to go into operation. Quesnel initially depended on high quality interior Douglas fir logs but the company solved the problem of peeling small diameter logs and shifted production to smaller diameter materials.

Quesnel - Western Plywood/Weldwood



Coastland (Nanaimo), 1988-operating

Products: Softwood veneer
 Owners: Coastland Wood Industries Limited, 1988-operating

Don McKay, realised an opportunity existed for coastal production of veneer from low quality logs. The company purchases logs for processing.

Crestbrook (Creston), 1963–1991

Products: Softwood veneer
 Owners: Creston Sawmills Company, 1963-1965
 Crestbrook Industries, 1965-1991

Creston Sawmills established the veneer plant in 1963 at Creston. A plywood plant was opened in Fort MacLeod, Alberta in a former hanger and it remained in operation until 1991. The company was reorganised as Crestbrook Timber and subsequently Crestbrook Forest Industries with Japanese capital financing a pulp mill at Skookumchuck. The company operated several sawmills and the veneer plant at Creston along with a plywood plant at Fort Macleod.

Davidson (Vancouver), 1952-1954?

Product: Plywood
 Owner: Davidson Manufacturing Company, 1952-1954

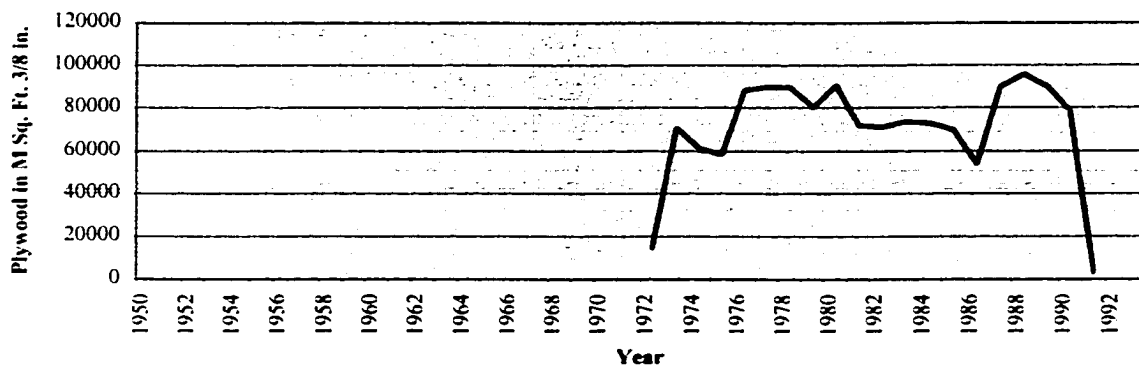
Davidson appears to have manufactured plywood for use in the company's boat building business.

Delta (Delta), 1967-1991

Products: Softwood veneer and plywood
 Owners: British Columbia Forest Products, 1972-1986
 Fletcher Challenge, 1986-1991

British Columbia Forest Products purchased Cattermole logging which included the Douglas Plywood plant. The plant caught fire, but British Columbia Forest Products rebuilt, in order to maintain the Douglas Plywood customer list. They purchased the Canadian Plywood Corporation's idle plant and built a new facility. Delta Plywood was the last new veneer and plywood plant built on the coast, dependent on coastal logs. In 1989 when Fletcher Challenge closed Fraser Mills the Delta plant supplied all the company's coastal requirements for plywood, but it closed in 1991.

Richmond - Delta Plywood (British Columbia Forest Products)

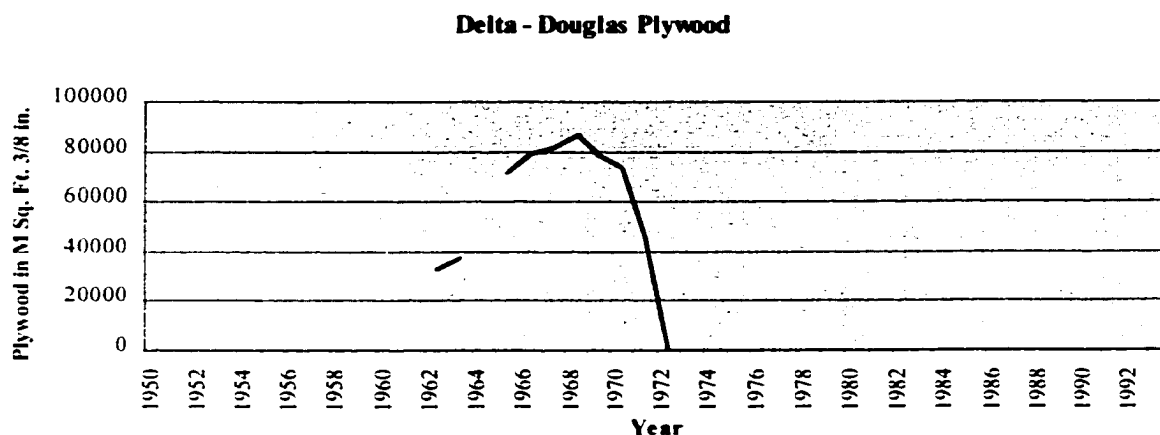


Douglas Plywood (Richmond), 1956-1971

Product: Softwood veneer, 1956-1958
 Softwood veneer and plywood, 1961-1971

Owners: Great West Veneer, 1956-1958 receivership
 Douglas Plywood Company, 1961-1963
 Cattermole Timber Company (Tretheway Wells
 Timber), 1963-1971
 British Columbia Forest Products, 1971

The Douglas brothers, worked for J. R. Murray and subsequently Western Plywood when it purchased Murray. They decided to establish their own business in 1960 when it became clear United States Plywood was going to purchase Western Plywood. They bought the bankrupt Great West Veneer plant and added lay-up facilities. In order to secure an assured log supply they entered into a partnership agreement with Cattermole Timber, who eventually sold their operations to British Columbia Forest Products. When the Douglas plant burned in 1971 British Columbia Forest Products acquired another plywood plant, which they rebuilt at Delta.



Forwest (Terrace), 1996-operating

Product: Sliced veneer
 Owner: Forwest Veneer Inc., 1996-

Produces speciality sliced veneers, primarily softwood.

Fullerton Lumber (North Vancouver), 1956-1962

Product: Softwood veneer
 Owner: Fullerton Lumber Co also King Lumber Company, 1956-1962

King Lumber sold their North Vancouver sawmill to Fullerton Lumber Company.

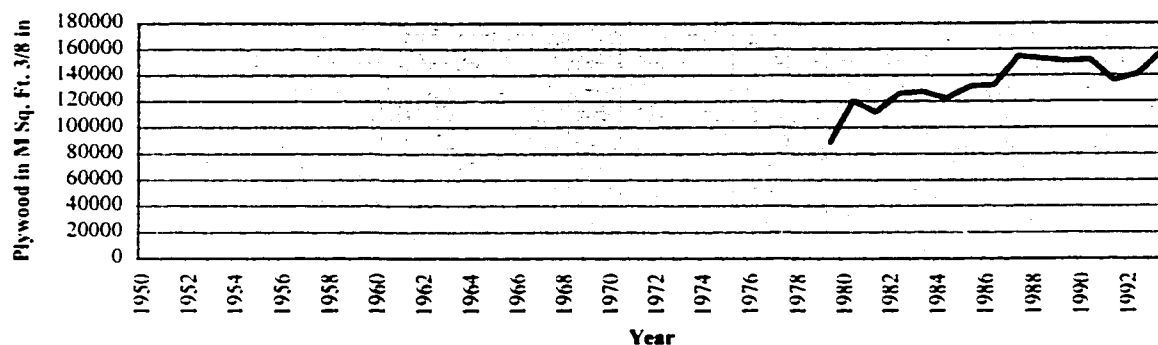
Golden (Golden), 1966-operating

Products: Softwood veneer
 Softwood veneer and plywood
 Owners: Kicking Horse Forest Products
 Evans Products, 1969-1987
 Evans Forest Products, 1987-1999
 Louisiana Pacific, 1999-operating

Cyprus Mines Corporation of Los Angeles purchased the Golden Lumber Company, and renamed it Kicking Horse Forest Products. A veneer plant was added in 1966. The company intended to build a plywood plant in Calgary, but did not proceed. Evans Products bought the operation in 1969 and added a plywood plant, which went into operation 1971. Evans Products went bankrupt in 1985 and in 1987 an employee owned

company, Evans Forest Products, acquired the assets. The company again nearly closed in 1996 because of financial and log problems. Reorganised the company has shifted into

Golden - Evans Products



a combination of plywood and laminated veneer lumber production. In 1999 it was sold to Louisiana Pacific.

Hammond Furniture (Vancouver), 1946-1951?

Product: Hardwood veneer and plywood
 Owner: Hammond Furniture Company, apparently
 operated under the name of Skyline
 Manufacturing, 1946-1951

Produced cottonwood plywood for the Hammond Furniture Company. Previously Hammond had purchased its veneer and plywood.

Hardply Industries Limited (Burnaby), 1973-1977?

Products: Veneer
 Owner: Hardply Industries Limited, 1973-1977

Hedberg (Valemount), 1962-1973

Product: Softwood veneer
 Owners: Hedberg Veneer Limited, 1962-1973

August Hedberg operated veneer plants in California and Oregon. He joined his brother in Valemont, British Columbia in 1961 and built a veneer operation. The company's

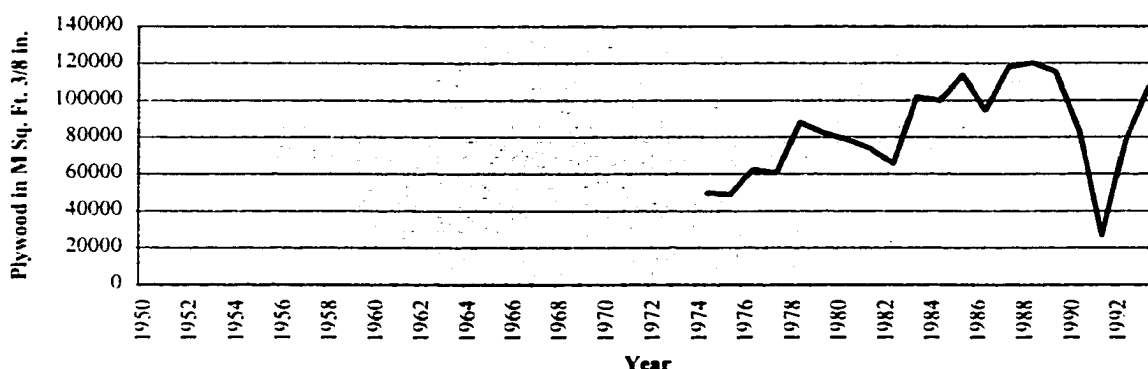
major customers were Richmond Plywood and Zeidler Forest Products in Edmonton. The plant burned in 1973 and was not rebuilt.

Hefley Creek (Hefley Creek), 1970 - operating

Products: Softwood veneer, 1970-1973
Softwood veneer and plywood, 1973-
Owners: Balco Industries, 1970-1973
Canadian Forest Products 1973 majority interest
Tolko Industries Limited 1987 - operating

The Balison family operated a portable sawmill at Hefley Creek in 1946. In 1966 the company amalgamated with six regional companies to form Balco Industries. Veneer production began in 1970 and a plywood plant was later added. In 1973 Canadian Forest Products bought fifty-one percent of the company. In 1977 the company acquired Integrated Forest Products which included a new plywood plant at Merritt. The Merritt plywood operation was closed and the veneer shipped to Hefley Creek. In 1987 Canadian Forest Products sold its interest in Balco to Tolko Industries.

Hefley Creek - Balco/Canfor/Tolko

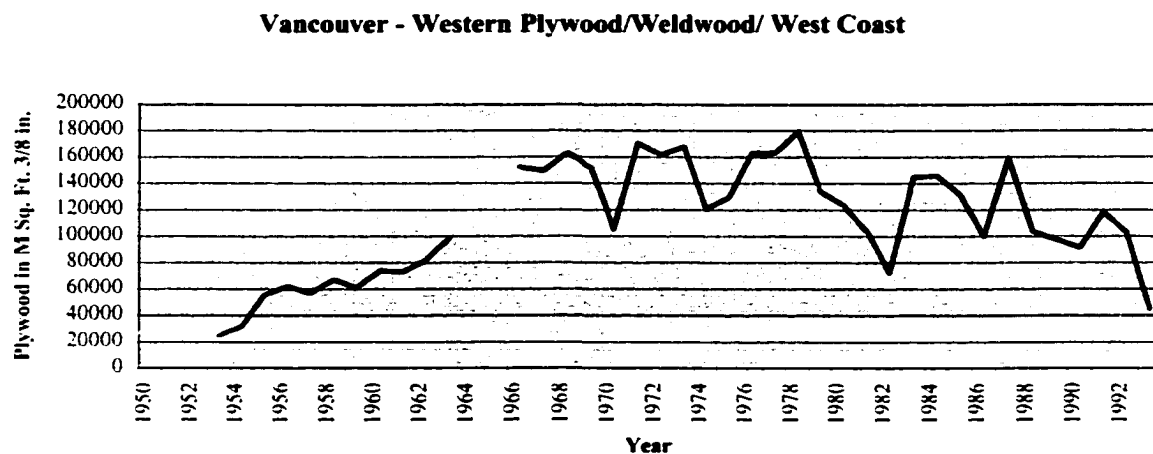


Kent Avenue (Vancouver), 1946-1996

Products: Hardwood veneer and plywood (cottonwood)
Softwood veneer and plywood
Owners: Western Plywood, 1945-1961
Weldwood of Canada, 1961-1989
West Coast Plywood Company, 1989-1996

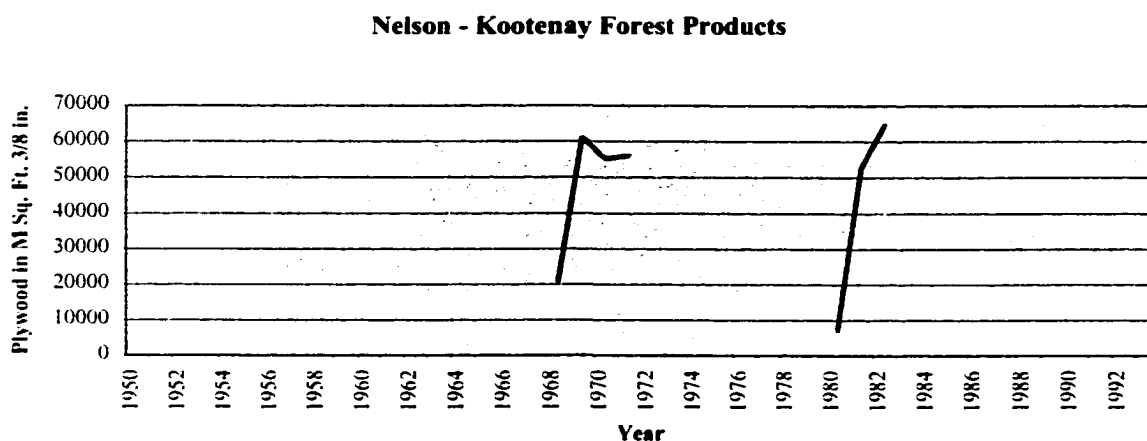
Kent Avenue was Western Plywood's first plant, it began production in 1946. The plant initially peeled cottonwood harvested in the Quesnel area, and gradually converted to Douglas fir. Weldwood assisted its employees acquire the plant as a worker co-

operative. The Co-operative was unsuccessful in reducing costs and locating new customers and closed in 1996.



Kootenay Forest Products (Nelson), 1966-1982

Product: Softwood veneer and plywood
 Owners: Eddy Match Company, 1966-1974
 BC Cellulose, 1974-1978
 British Columbia Resources Investment Corporation, 1978-1982



In 1958 the Eddy Match Company purchased Kootenay Forest Products. The plant was acquired by the British Columbia government in 1974 and became part of the British Columbia Resources Investment Corporation's operations. British Columbia Resources Investment Corporation gradually closed the less profitable operations, including the plywood plant.

Lama Wood Products (Richmond), 1947-1952

Products: Veneer and plywood ?
 Owner: Lama Wood Products, 1947-1952

The company purchased the Edward Carlson veneer and plywood operation in 1947. It may have manufactured furniture veneer for the Richmond Furniture Company. It went into liquidation in January 1953.

Lamatco (New Westminster), 1916-1931

Products: Hardwood veneer and plywood
 Owner: Laminated Materials Limited, 1916-1931

Lamtco opened in New Westminster in 1916 and produced cottonwood plywood, which they sold across Canada and overseas. Boston investors owned the company. During the late 1920s the company expanded, but went bankrupt and was in receivership by 1931.

Lavington (Lumby), 1974-operating

Products: Softwood veneer
 Owner: Riverside Forest Products, 1974-operating

The veneer produced was initially sold on the open market, but following Riverside Forest Products acquisition of fifty percent of Cantree, considerable veneer was shipped to the coastal plant. The company also continued to sell veneer on the open market.

Lillooet (Lillooet), 1980-operating

Product: Softwood veneer
 Owners: Evans Products Limited, 1980-1986
 Ainsworth Lumber Company, 1986-operating

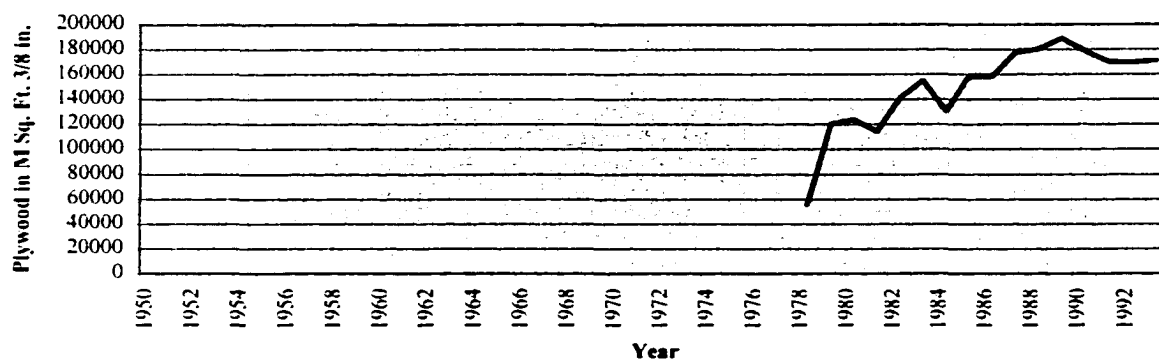
Evans Products build the veneer plant in association with its sawmill. The veneer was shipped to the plywood plant at Savona.

Merrill-Wagner (Williams Lake), 1975-operating

Products: Softwood veneer, 1965-1978
Softwood veneer and plywood, 1978-
Owners: Merrill Wagner Limited, 1965-1977
Weldwood of Canada, 1977-operating

Merrill Wagner, constructed a veneer plant in association with its sawmill at Williams Lake in 1965. The company intended to build a plywood plant, but did not complete the project. Weldwood purchased the assets in 1977 and immediately began construction of a plywood plant that opened in 1978.

Williams Lake - Weldwood



Merritt Plant (Merritt), 1972-?

Products: Softwood veneer, 1972-1977
Softwood plywood, 1977
Softwood veneer, 1977-
Owners: Nicola Valley Sawmills 1971-1974
Integrated Wood Products, 1974-1977
Balco Industries 1977-1987
Tolko Industries 1987-

Nicola Valley Sawmills, owned by Integrated Sawmills, opened a veneer plant in 1971. A plywood plant was added in 1977, but was closed shortly after their acquisition by Balco. The veneer was shipped to Balco's Helfley Creek plant thereafter.

Merritt-Canford (Canford), 1959-1960?

Product: Softwood veneer
 Owners: Merrit-Canford Lumber Company, 1959-1960

The Merritt-Canford Lumber Company may have operated a veneer lathe in conjunction with their Canford sawmill as early as 1956.

Mitchell Veneer Products (Vancouver), 1962-1965?

Products: Softwood veneer
 Owner: Mitchell Veneer Products, 1962-1965

Modular Products Limited (Burnaby), 1973-1980?

Products: Furniture
 Owners: Modular Products Limited, 1973-1980

Mouldcraft Plywoods (North Vancouver), 1946

Products: Moulded plywood for furniture
 Owners: Mouldcraft Plywoods Limited, 1946

Jack White and Bob MacKenzie made moulded, laminated furniture from hardwood veneer. They worked with plywood and in aircraft construction during World War II, and transferred their skills into furniture manufacture.

Mount Baker (Surrey), 1954-1964

Product: Softwood veneer
 Owner: Mount Baker Plywood Limited, 1954-1961
 Canadian Collieries Resources, 1961-1964
 Weldwood of Canada, 1964

The Mount Baker Plywood Company of Bellingham, Washington built the Mount Baker veneer plant in order to obtain additional veneer. Canadian Collieries acquired the plant in 1963 and it was subsequently sold to Weldwood. Weldwood consolidated the veneer plant into Timberland in 1964.

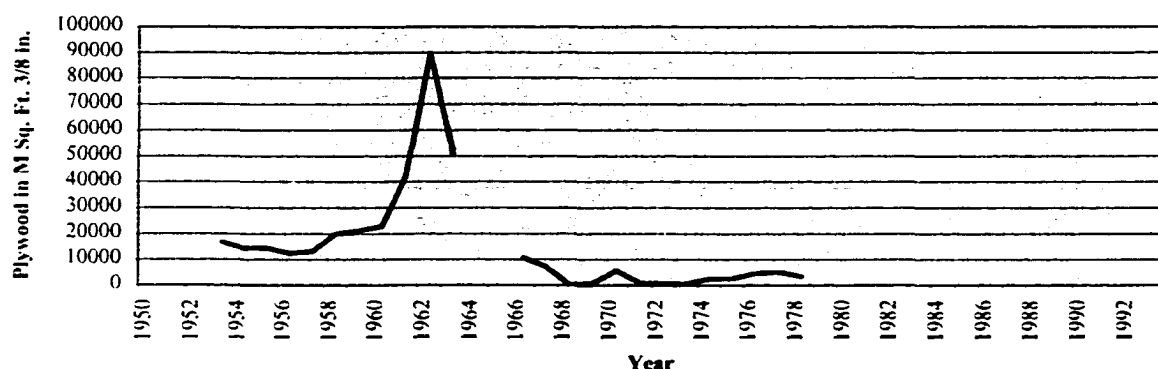
Murray Plywood/Ash Street (Vancouver), 1945-1978

Products: Doors
Softwood veneer and plywood
Speciality plywood

Owners: Pacific Coast Wood Products, 1928-1945
J.R. Murray 1945-1955
Western Plywood 1955-1961
Weldwood of Canada, 1961-1978

John Murray worked for Canadian Western before acquiring his own plant. He purchased the box and drum veneer plant of Pacific Wood Products in 1945. Murray

Vancouver - Murray/Western Plywood/Weldwood



initially produced doors, but soon began to manufacture plywood panels. In 1955 Western Plywood purchased the Murray plant in order to gain access to its log sources. Weldwood operated the plant as a speciality producer until 1978.

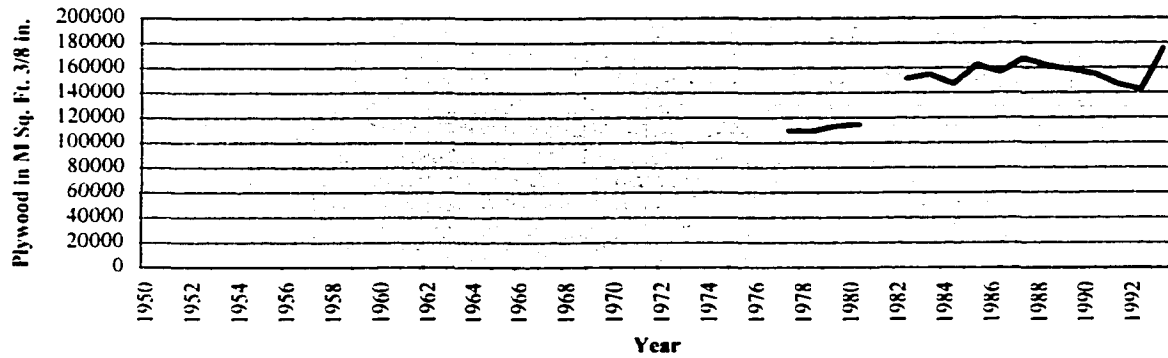
North Central (Prince George), 1970-operating

Products: Softwood veneer 1970-1973
Softwood veneer and plywood 1973-

Owners: North Central Plywood Limited, 1973-1980
Northwood Pulp and Timber Limited, 1980-operating

To obtain higher value from their logs and to obtain rights to third band timber, Don Flynn and an association of Prince George loggers, organised the company in 1970. It was acquired by Northwood in 1980.

Prince George - North Central/Northwood

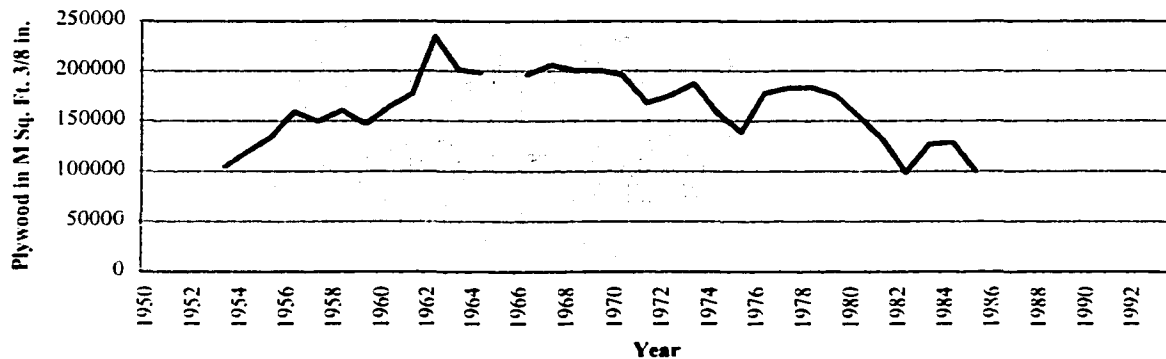


Pacific Veneer (New Westminster), 1939-1985

Products: Hardwood veneer, 1938
 Hardwood veneer and plywood, 1939-1944
 Softwood plywood, 1944-1985

Owner: Canadian Forest Products, 1939-1985

New Westminster - Canadian Forest Products



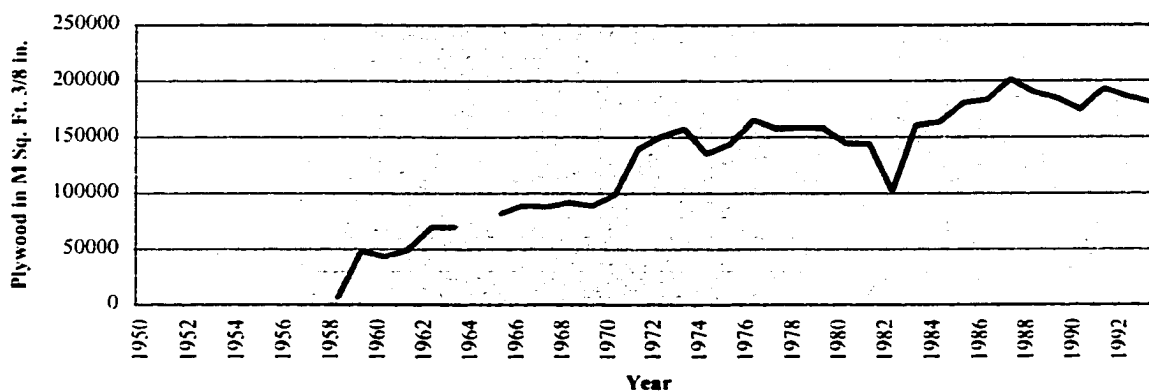
Canadian Forest Products' Pacific Veneer plant began production in 1938 manufacturing hardwood veneer and plywood intended for furniture manufacturers. During World War II it produced Birch plywood and in 1944 changed to softwood plywood production. This was British Columbia's second largest plant. It closed in 1985.

Richply (Richmond), 1957-operating

Products: Softwood veneer, 1957-1958
Softwood veneer and plywood, 1958-
Owner: Richmond Plywood Corporation Limited (Annacis
Plywood Corporation), 1957-operating

Richmond Plywood is a co-operative. The manager is a hired professional as are some of the foremen and workers. The plant is the only remaining coastal plywood producer.

Richmond - Richmond Plywood

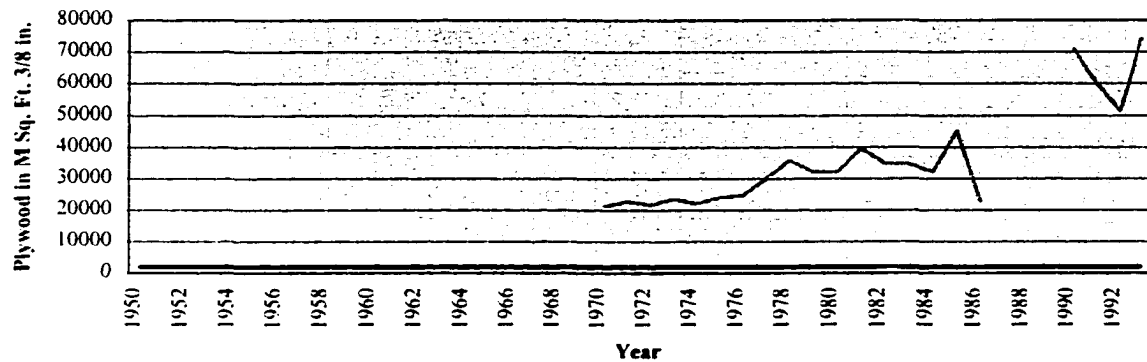


Savona (Savona), 1956-operating

Products: Softwood veneer and plywood, 1956-1987
Softwood plywood, 1987-
Owners: Savona Timber Company, 1956-1968
Evans Products Limited, 1968-1987
Ainsworth Lumber Company, 1987-operating

The King brothers formed the Savona Timber Company by purchasing a sawmill at Savona. In 1955 they expanded into the plywood production and built a small cold press plant. Initially unsuccessful, new management developed a customer list. The plant converted to hot press operation in 1965. Following the death of Don King, who was the primary partner, the plant was purchased by Evans Products, in 1968. The plant was sold to Ainsworth in 1987. The plant is the smallest operation the province and specialised in pour-form, a high density overlaid plywood for repeated concrete form use. The veneer plant shut in 1987 and all veneer was trucked from Lillooet.

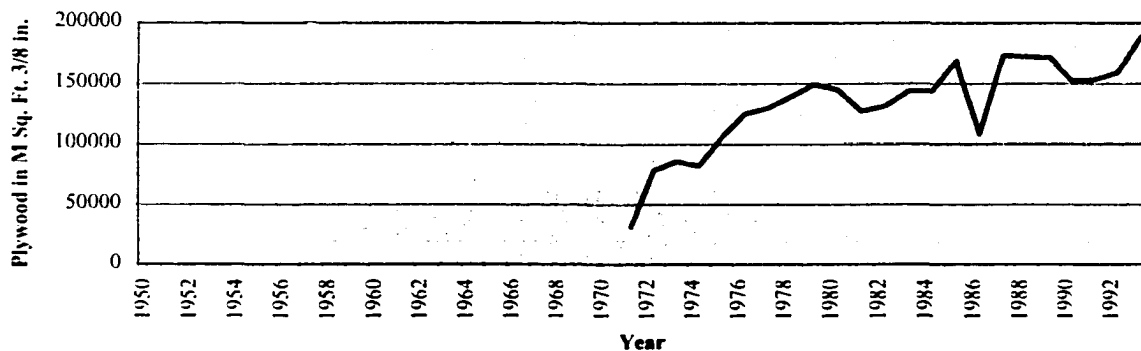
Savona - King/Evans/Ainsworth



Simpson (Kelowna), 1931-operating

Product: Softwood veneer, 1931-1957
 Softwood veneer and plywood 1957-
 Owners: S. M. Simpson, 1931-1965
 Crown Zellerbach Canada, 1965-1983
 Fletcher Challenge, 1983-1992
 Riverside Forest Products, 1992-operating

Armstrong - Simpson/Crown Zellerbach/Riverside



The S. M. Simpson company was a long established operation in Kelowna, the first sawmill went into operation in 1913. Simpson built a fruit box veneer plant at the site in 1931. The company opened a plywood plant in 1956. In 1965 the operations were sold to Crown Zellerbach and continued in production after 1992 under the ownership of Riverside Forest Products.

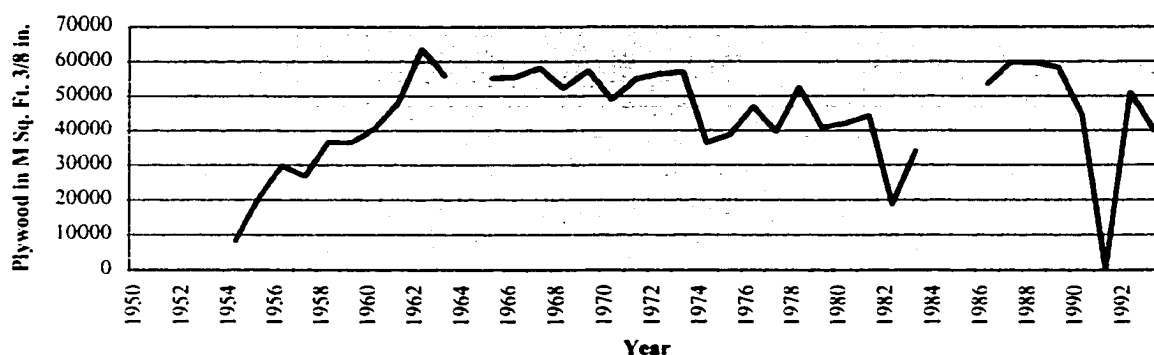
Sooke Lake Lumber Company (Victoria), 1952-1995

Products: Softwood veneer, 1952-1954
Softwood veneer and plywood, 1954-1995

Owners: Sooke Lake Lumber Company 1952-
Victoria Plywood Company, 1953-1980
Pacific Forest Products, 1980-1985
Victoria Plywood Cooperative, 1985-1995.

The Sooke Lake Lumber company was organised in 1947 by Newton Cameron, son of D. O. Cameron a partner in a large Victoria sawmill. The Victoria mill was sold to British Columbia Forest Products in 1946 and Newton Cameron repurchased a timber tract from British Columbia Forest Products. The veneer plant went into operation in 1952 and plywood production was added. The plant was sold to the Pacific Forest Products in 1980, a C.P.R. subsidiary. When the C.P.R. decided to close the plant in 1984 a worker

Victoria - Sooke/Victoria Plywood



co-operative was formed to acquire the plant. The co-operative soon faced production difficulties and had no assured log supply. The plant closed in 1995. The plywood was initially sold through MacMillan Bloedel, but subsequently sales were transferred to Canadian Forest Products.

Surrey Veneer (Surrey), 1980?-operating

Product: Sliced veneer

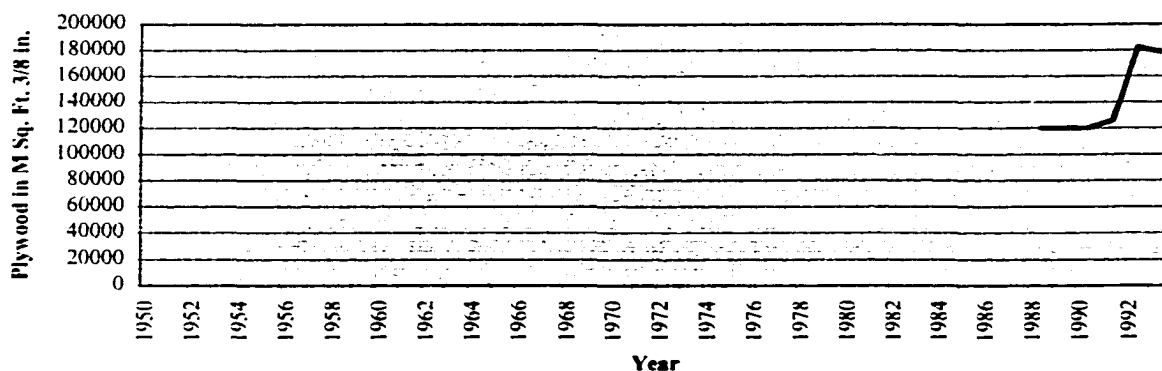
Owners: Surrey Veneer Limited
British Columbia Veneer Products Limited, 1997

Tackama Forest Products (Fort Nelson), 1977-operating

Products: Softwood veneer
Softwood veneer and plywood, from 1977

Owners: Tackama Forest Products, 1977-1987
Slocan Forest Products, 1987-operating

Fort Nelson - Tackama/Slocan



Takla (Fort St. James), 1969-operating

Products: Softwood veneer
Owners: Joint Reed Paper Group, Feldmuhle A.G. and
Canadian Forest Products, 1969-1978
Canadian Forest Products, 1978-operating

Tilbury Laminates (Delta), 1981-1984?

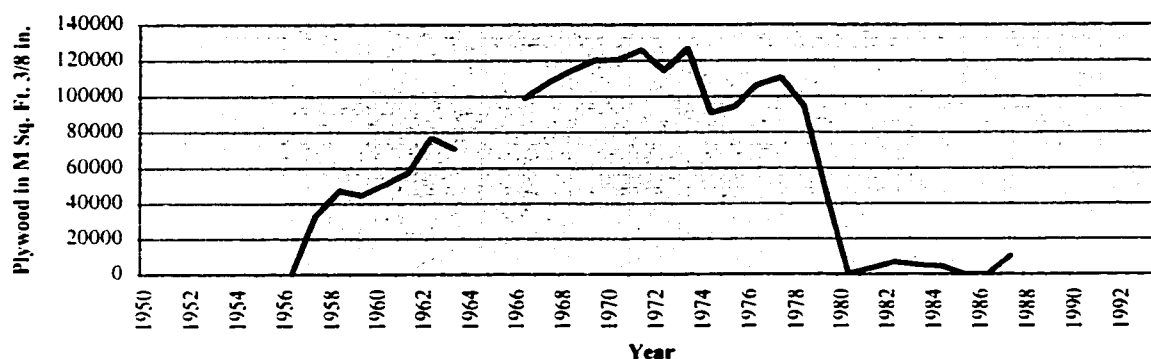
Products: Speciality sliced veneer
Owner: Tilbury Laminates, 1981-1984

Timberland Plywood (Surrey), 1956-1987

Products: Softwood veneer and plywood
Speciality plywood
Owners: Canadian Collieries Resources, 1956-1964
Weldwood of Canada, 1964-1987

Canadian Collieries expanded into the forest industry in 1954. The manager at Timberland convinced the company to invest in plywood production and a small plant was built next to the sawmill. The plant was acquired by Weldwood and later converted to speciality production. It closed in 1987.

Surrey - Canadian Collieries/Weldwood

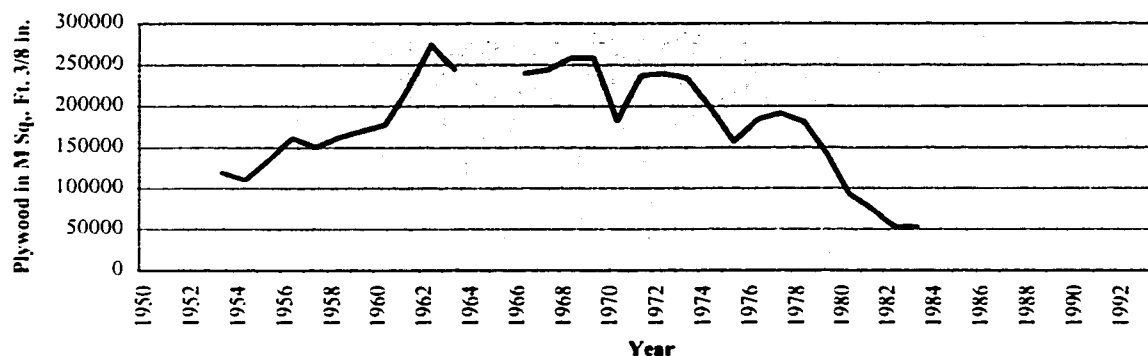


Vancouver, MacMillan Bloedel (Vancouver), 1935-1983

Product: Softwood veneer and plywood
 Owners: H.R. MacMillan Export Company, 1935-1951
 MacMillan Bloedel, 1951-1985

MacMillan's Vancouver plant went into production in December 1935. The company operated under several different names, Coast Mills Export Company, British Columbia Plywoods Limited, and MacMillan Industries, before becoming the Vancouver Division of MacMillan Bloedel. This was British Columbia's largest plywood plant. In 1978 MacMillan Bloedel announced it would close the plant. IWA protests delayed the closure until 1983.

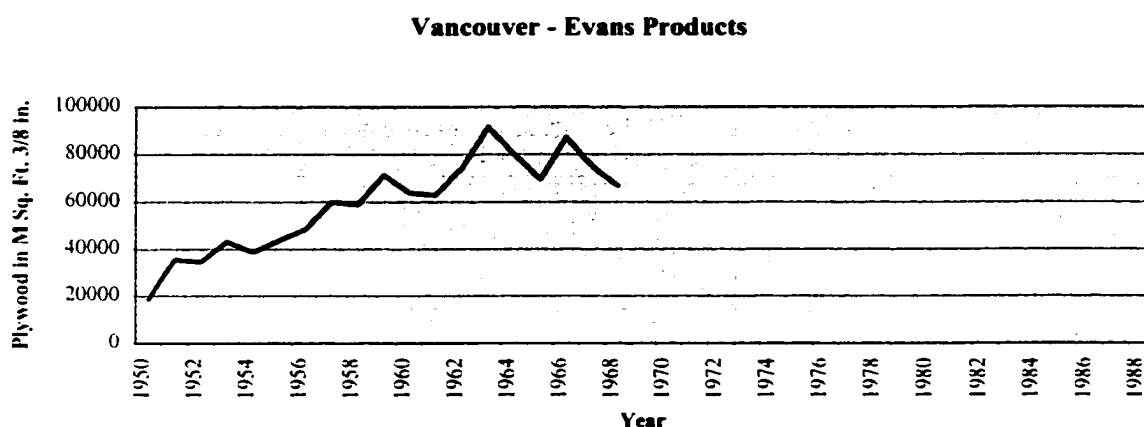
Vancouver - MacMillan Bloedel



Vancouver, Evans (Vancouver), 1955-1973

Product: Softwood veneer and plywood
 Owner: Evans Products Limited, 1955-1973

An American company, Evans Products expanded into British Columbia in 1931 with the purchase of a battery separator plant (Yellow Cedar Products). A sawmill was built in 1943, and destroyed by fire in 1948. The company rebuilt it as a plywood plant in 1955. The plywood was initially sold through Weldwood until 1964. In some respects the plant is an early indicator of the future problems in the coastal industry. The plant shut in 1973 due to a shortage of logs.

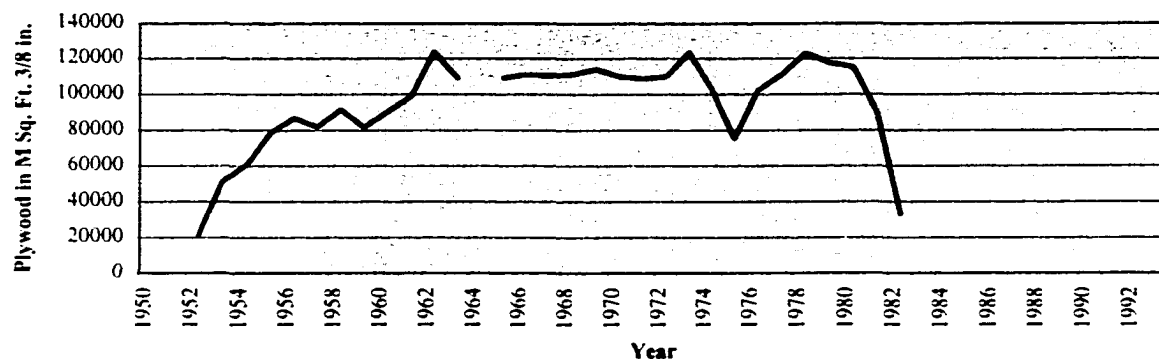


Victoria Plywood Division (Victoria), 1952-1982

Products: Softwood veneer and plywood
 Owners: British Columbia Forest Products, 1952-1982

British Columbia Forest Products built the Victoria plywood plant adjacent to its sawmill in 1952. The plant operated in conjunction with the company's veneer plant at Youbou. It closed in 1982, as a result of the downward demand cycle, while the more recently built Delta plywood plant was kept in operation.

Victoria - British Columbia Forest Products



West Coast Hardwoods Limited (Vancouver), 1958-1963?

Product: Veneer
 Owner: West Coast Hardwoods Limited, 1958-1963

Western Pad and Drum (Vernon), 1928-1965?

Products: Veneer (Fruit Boxes)
 Owner: Western Pad and Drum Limited, 1928-1965

The company started in Vancouver in 1928 and moved to Vernon in 1933. It operated in conjunction with the Wood Products Co-operative Association.

Western Veneer (Abbotsford), 1973-1977?

Product: Veneer
 Owner: Western Veneer Specialities, 1973-1977

Youbou (Youbou), 1952-1982

Product: Softwood veneer
 Owner: British Columbia Forest Products, 1952-1982

The Youbou veneer plant was operated in conjunction with the company's sawmill at Youbou on Lake Cowichan. The plant processed the peeler logs coming to the Youbou mill and forwarded the veneer to Victoria for manufacture into plywood. The veneer plant was closed when the Victoria Plywood plant closed.

Zeidler (McBride), 1965-operating

Product: Softwood veneer
Owner : Zeidler Plywood Company Limited also called
 McBride Veneer and Plywood Company, 1965-1999
 West Fraser Timber Company, 1999-operating

The Zeidler Company operated a plywood plant at Edmonton, Alberta. The company acquired timber limits, opened a veneer plant at McBride, and shipped the veneer to its plant at Edmonton and sold it on the open market. West Fraser is seeking a buyer for the plant.

Appendix II: **The Manufacture of Plywood**

Thin slices of wood called veneer are built into four feet by eight feet pieces and glued together to make plywood. Plywood is a series of laminated layers of wood, usually 1/8th of an inch, or less, thick and generally in three or more layers. The grain of the centre layer is at right angles to the layers between which it is sandwiched. The number of imperfections establishes the grade, while the surface finish establishes the type. Two main types of Douglas fir plywood were produced, sanded and unsanded. Other types include plywood with a paper layer or other finish and plywood made from softwood other than Douglas fir, but until the 1980s coastal Douglas fir was the most sought after type. Cost and scarcity of Douglas fir resulted in the introduction of other tree species as face layers, including spruce and pine. These types are now usually classified as Canadian Softwood Plywood; it does not include Douglas fir plywood.

Technological choice in softwood plywood production was comparatively limited. West Coast plywood production technology was developed to meet relatively high speed through flow strategies of production, which became essential to meet the demand created during the 1940s and 1950s. New technology was developed to improve product quality, to reduce the number of product failures and costly replacement, and to achieve the same quality with a lower grade of raw materials. Technology also changed to increase productivity and to reduce labour costs.

The manufacture of plywood, once the logs arrived at the factory, involved three major processing stages. The veneer was first cut on a lathe. It was then dried, glued, pressed into a panel, and then finished to the desired state. Each phase involved a

separate technology which could have been carried out at a separate plant. In practice the only division was the occasional production of veneer at a separate facility or as an independent operation. The green end or veneer cutting and drying operations was, even in combination plants, sometimes physically separated from the panel manufacture and finishing departments.

Veneer was a not a new product. The Egyptians used it and prior to the 15th century furniture makers used it. Veneer was once largely hand sawn. The development of the circular saw in the early 19th century greatly increased production, but resulted in nearly fifty percent wastage. The development of powered slicing or shaving machines improved the quality of the veneer available and reduced the waste.¹ In the second half of the nineteenth century slicing cut most veneer. The development of the rotary lathe during the late nineteenth century revolutionized veneer production. Over ninety percent of all veneer was produced on lathes by the 1940s,



MacMillan Bloedel's Port Alberni Plywood Plant. BC Archives I-26147

¹Thomas D. Perry, *Modern Plywood* (New York: Pitman Publishing Corporation, 1942), 23.

and this remained the preferred method of production.² The rotary veneer lathe made the high-speed production of plywood possible. British Columbia's softwood plywood plants used lathes as their primary means of producing veneer.

Plywood plants, like most industrial facilities, were in a process of continual change. The plants typically changed machine centre by machine centre. Changing one machine centre, however, created new bottlenecks and production problems elsewhere in the plant. Balancing the production of each machine centre to the rest of the plant was the pivotal problem faced by management. Delta Plywood, for example, faced this problem in 1985 when management decided to shift the plant to 100 percent sanded plywood. The sander could not accommodate the increased demand unless the crew worked overtime. This, in turn, resulted in higher costs. To solve the overtime problem, plant management upgraded the sander feed mechanism, improved the sander brake to reduce downtime, and improved sorting.³ Revising sorting meant that panels needing resanding or putty patching were stored in the same bin. This created problems at the putty patch line and necessitated the hiring of an extra shift per week. The solution was simple, construction of an extra bin.⁴ Balancing production could be costly. When Delta modernised its green-end the installation of three new platens in the press and a prepress was required.⁵ The problem of ensuring each machine area and department could process the same amount of plywood was exacerbated by the separation of the plant into three

² Perry, *Modern Plywood*, 1942, 101.

³ Project Expenditure, Preliminary Appraisal, Upgrade Sander, Budget Item 2, August 15, 1985, File Budgets, Box 24, DC, RBCM.

⁴ Benefit report, Upgrade Panel Sander, Finishing Department, August 15, 1985, File Budgets, Box 24, DC, RBCM.

⁵ Project Expenditure, Preliminary Appraisal, Press Expansion, August 14, 1985, File Budgets, 1986, Box 24, DC, RBCM.

departments. Each department operated independently and, while this localised problems, it made a steady and even production rate more difficult to achieve.

The Green End:

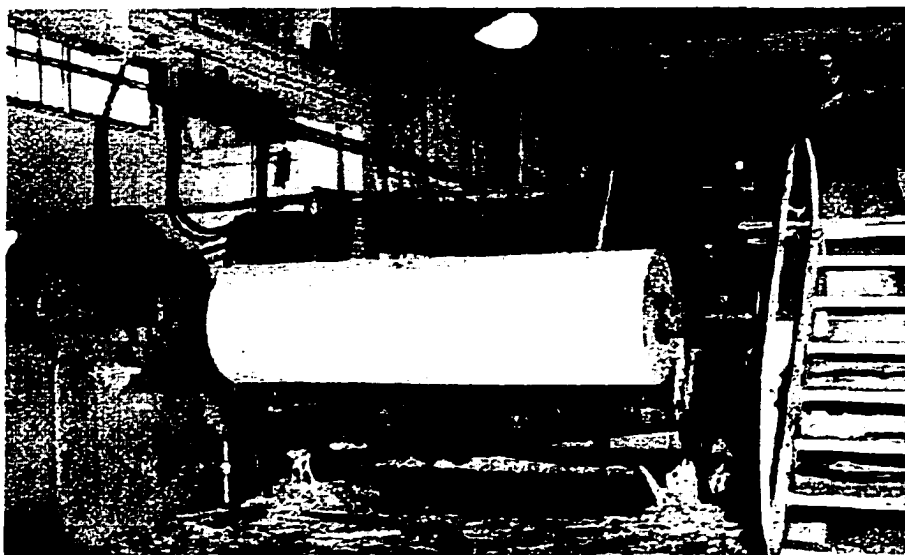
The veneer lathe was the key machine in the green end. The log rotated against a long knife and spun out ribbons of veneer. The lathe, however, operated in association with other machines; the green-end usually consisted of six stages. These included: cutting the log to length, barking the log, sometimes heating the log, cutting the veneer on the lathe, cutting the veneer to size, sorting the veneer, and drying the veneer.

The peeler logs varied in length. At the plant a circular or chain drag saw cut the logs into eight-foot blocks. The circular saw was developed as early as 1808 and became a standard tool for woodworking. The chain saw was a post World War II development. The saws used in plywood plants were of standard design and construction and in use in sawmills prior.

Barking was initially done by hand, but hydraulic and mechanical barkers quickly supplanted the hand method. Several mechanical barkers were available prior to World War II. Roser head debarkers rubbed against the log scrapping off the bark. Important technical advances made in the late-1940s, primarily to meet the requirements of the pulp industry for clean logs, dramatically changed barking methods. The hydraulic barkers, developed in British Columbia and Washington, forced high pressure jets of water against the log's surface literally blasting away the bark. Hydraulic barking was standard practice in all mills until the late 190s when stringent pollution regulations caused their repalcment. Mechanical ring debarkers subsequently replaced the hydraulic barkers and

used a scraping process to remove the bark. The logs or blocks were sometimes treated with hot water or steam. This loosened the bark making removal easier and aided peeling on the lathe.

The rotary veneer lathe made the British Columbia plywood industry possible. Rotary lathes were well established at the time British Columbia production began. The Coe Manufacturing Company, who supplied Canadian Western with its first lathe, began production as early as 1852.⁶ The lathe comprised five basic components: the drive system, the chuck system, the knife system, the nosebar and the charging system. Each component was greatly improved after World War II. Research, in Canada, was conducted at Ottawa and Vancouver by the federal government. A. O. Feihl, working



Veneer Lathe at Alberni Plywood. BC Archives I-26122

at the Ottawa Laboratory, published a study on improving knife profiles as early as 1959.⁷ Lathe manufacturing also developed in Canada. The first lathe manufactured by

⁶ "Development of Veneer Cutting Lathe," *The Timberman* xxx/4 (April 1931), 85.

⁷ A. O. Feihl, "Improved profiles for Veneer Knives," reprinted from *Canadian Woodworker* (August 1959).

Cargate of New Westminster was installed in 1965.⁸ Cargate and later Durand were British Columbia's pre-eminent plywood equipment manufacturers. The biggest problem faced by manufacturers was to reduce lathe spindle diameters and peel to a smaller diameter. In the 1940s MacMillan's Vancouver plant began using a spindle that could peel down to nine inch diameters, previously twelve inches was the minimum.⁹ Research aimed at peeling logs to an ever smaller core diameter intensified as log quality declined, and was critical for the success of interior production.

A plywood lathe spins the wood block or log against a knife blade set at angle to the block. The blade feeds into the spinning block at a set rate, while the block spins at a fixed speed, during the 1940s speeds ranged from thirty to sixty feet per minute. These speeds quickly increased to one hundred fifty and then to three hundred feet per minute and then four hundred feet by the mid-1950s. Twelve hundred feet per minute is not uncommon in the 1990s. As lathe speeds increased faster log charging systems were required. Initially each block was lifted by a chain hoist and placed between the lathe spindles. Automatic chargers were developed in the 1950s and these have increased in speed and precision until few seconds were wasted. The chargers made by Durand in 1990s hold two blocks and as one fed into the lathe the second moves into position. Knife holders were also improved to automatically adjust to the block's changing diameter.

As the veneer glides away from the lathe it passes by the clippers and onto the sorter. The veneer peels from the lathe in a great long sheet, and the long knife of the clipper cuts the veneer into suitable widths, and eliminates major defects. Clippers were initially manually operated, but became automated after World War II. The clipper

⁸ "Cargate 860-D Veneer Lathe," Cargate; New Westminster, nd.

⁹ *Harmac News* 2/5 (May 1948), 3.

developed at the Elliott Bay plywood plant in Washington became the standard on the West Coast. Automation initially involved the veneer passing a contact which would then drop the knife after a preset time i.e. a set distance past the point of contact.

Advances made by the Durand Machine Works in New Westminster culminated in the development of the rotary clipper, greatly improving clipping speeds. Sensors now detect defects and direct the clipper to cut with minimum wastage.

Past the clipper the veneer moves onto a long table or into a series of stacked trays, which allowed the veneer to accumulate piece by piece and reduced breakage.¹⁰ Veneer fed onto a chain and pullers loaded the veneer onto carts according to grade, separating heartwood from sapwood. Many mills still pulled by hand in the 1990s even though automatic stackers became available in the 1980s.

The drying process was usually considered part of the green end, although if the veneer was shipped away from the veneer plant to a lay-up plant it was re-dried. The moisture content of each piece was reduced to about 10% otherwise the veneer would check, split or delaminate when assembled into a panel. A variety of dryers were available but the West Coast softwood industry adopted the roller dryer. The dryers were long devices with multiple layers of rollers. The veneer was fed in at one end and was moved down the length of the dryer by the rollers. Heating coils and fans circulate the air causing the moving veneer to dry. Technical advancements were continuous. In 1920 Coe introduced a newly designed circulation system in their dryers to provide more

¹⁰ If the clipper was a bottleneck in the production flow trays were sometimes installed before the clipper.

uniform and effective drying.¹¹ Design changes focused on increasing dryer speeds and uniform drying.¹²



Veneer Dryer at Alberni Plywood. BC Archives I-28123

Coe Manufacturing of Painesville, Ohio, Proctor of Philadelphia and Merritt of Lockport, New York were early dryer competitors. Canadian Western and MacMillan both installed Coe dryers in their early plants. The Moore Dry Kiln Company of Portland, Oregon, noted for its lumber kilns, provided Coe with its first major competition on the west coast. Moore installed the dryers at Pacific Veneer in New Westminster in 1938. Proctor, long a competitor on the east Coast made inroads by selling through E.V. Prentice of Portland, a major West Coast supplier and manufacturer of plywood equipment.

¹¹ *West Coast Lumberman* 47 (May 1 1920), 190.

¹² See for example "New Coe Veneer Dryer," *West Coast Lumberman* 55 (May 1 1928), 175.

A new drying method, called jet drying, was introduced in the 1960s. Moore claimed that it had consistently reduced drying times by fifty percent by the use of jet circulation and heated rollers. Automatic controls, introduced in the 1960s, removed the guesswork from veneer drying. The automatic controls slowed the dryers if the average moisture content was higher than expected. Dryers were both expensive and a regular production bottleneck, the controls produced significant cost savings.¹³

Plywood machinery manufacture, such as dryers, falls between the custom work engaged in by the Baldwin Locomotives Works, but certainly meets the definition of batch production as established by Phillip Scranton. The two dryers installed by Coe in Western Plywood's Kent Avenue plant, for example, were based on a prior design and stock components, but it was custom built on the site. Once installed, problems unique to the situation developed and had to be corrected at Coe's expense. These two dryers, for example, were subject to an excessive number of fires. An investigation discovered that the zone one reheaters needed to be turned.¹⁴ As well, certain seals on dryer number two were bent or missing and required replacement.¹⁵

Plywood Lay-up

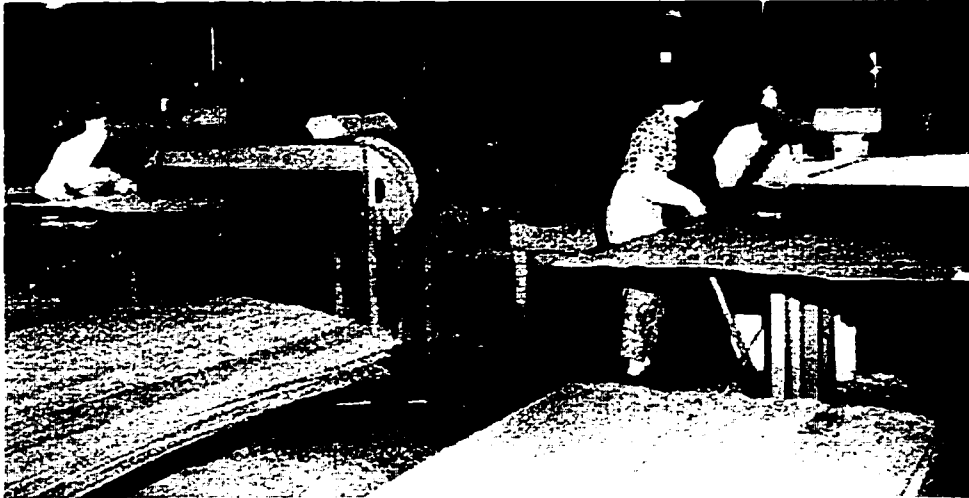
The veneer moved in several directions from the dryers. Sheets ready for use in panel lay-up were stored in readiness. Narrow pieces went to a taping or edge gluing machine. Tapers and edge gluers turned narrower widths of veneer core into full-sized

¹³ *Moore Uni-Jet Veneer Dryers*, advertising brochure, Portland; Moore Dry Kiln Company. nd (1967).

¹⁴ George Kibblewhite to J. D. McCarthy, September 10 1961, John Huberman to Norton C. Oehling, Coe Manufacturing Company, May 1 1962; Norton C. Oehling, Coe Manufacturing Co. to J. D. McCarthy, February 19. 1962, File Coe Manufacturing , Box 23A, WC. RBCM.

¹⁵ Norton C. Oehling, Coe Manufacturing Company, to George Kibblewhite, June 15 1962, File Coe Manufacturing, Box 23A, WC. RBCM.

sheets, by joining them along one edge. Tapeless gluing appeared by the 1940s and became common in Canada in the 1950s.



Raimann Patchers at Alberni Plywood, BC Archives I-26118

Veneer with defects was patched in order to improve its grade classification. Initially patching was done by hand, and as late as the 1960s, this was still sometimes the method used in Europe. The Douglas fir plants by the 1950s used machines that punched out a boat shaped cut, and then pressure fitted a similar piece in place. Loose patches were taped in place. Several manufacturers sold patchers but by the 1950s the choice was either a Skoog or a Raimann and the more efficient Raimann generally dominated.

The panel lay-up area included glue spreaders and the hot press. The glue spreaders made by Globe Manufacturing of Tacoma were the most common. Glue was spread on both sides of the interior layers which were then laid between face veneers until the desired thickness was achieved. The Globe machine consisted of rollers through which the veneer was fed, while the rollers spreading glue over its surface. A few

technical improvements were made to glue spreaders, such as glue levelers; Knight, however, described one in 1927 that appears nearly identical to those used in the post-World War II period.¹⁶

Good glue was critical to good plywood. Early glues were animal or casein glues which, when cold pressed, were not water proof, and even when hot pressed were only water-resistant. The development of resin glues during the 1920s and 1930s the industry with a product it could use to create new demand. When hot pressed the resin glues were waterproof and could be used for most exterior applications. Airplane construction required extremely thin plywood and the existing glues of the 1920s and the early 1930s sometimes caused shrinkage and warpage.¹⁷ New casein and blood-albumin glues reduced this problem but in the mid-1930s glue researchers began to study phenol resin glues.¹⁸ The first phenol resin plywood was made in 1934. The Harbor Plywood Corporation at Grays Harbor, Washington hired Dr. James Nevin and two assistants to improve glue quality in 1933. Nevin was familiar with research on phenolic resins, and following a year of grueling investigation developed a suitable formula. In late 1934 the first panels were produced on an improvised hot press. Days of strenuous testing, including boiling the panels for seven hours a day for fifteen days, followed. Convinced that the solution for waterproof plywood had been found Harbor Plywood went into commercial production in January 1935.¹⁹ Laucks, who had developed a soybean

¹⁶ E. Vernon Knight and Meinrad Wulpi, eds. *Veneers and Plywood: their Craftsmanship and Artistry, Modern Production Methods and Present-Day Utility* (New York: The Ronald Press Company, 1927), 280-281.

¹⁷ "Information on Glues, Plywood and Waterproof Coatings," United States Department of Agriculture, Forest Service, Forest Products Laboratory, Madison, May 1919, 66.

¹⁸ T.R. Truax, *Gluing Wood in Aircraft Manufacture*, Technical Bulletin No. 205 (Washington: United States Department of Agriculture, 1930), 42. *The Timberman* xxxv/12(December 1936), 47.

¹⁹ Robert M. Cour, *The Plywood Age: A History of the Fir Plywood Industry's First Fifty Years* (Portland: Douglas Fir Plywood Association, 1955), 88-92.

plywood glue, soon began manufacturing the glue at its Seattle factory. The resin glue cured two three-eighths inch panels per press platen in five minutes, minimum cold press time was twenty minutes and required twenty-four hours for curing. Canadian Western started hot press production with a Williams White fifteen platen press in 1936, and every five minutes produced thirty three-eighths inch plywood panels ready for shipment.²⁰

A new industry developed supplying glue to the plywood plants. The Laucks company's largest customer, for example, was the plywood industry. Monsanto acquired Laucks in 1944. In 1951 the Reichhold Chemical Company opened a plant at Port Moody and plywood adhesives were one of the main products. During the 1950s and early 1960s nearly eighty percent of Reichholds sales were to the forest industry.²¹ Canadian Marietta and Dow Chemical also manufactured and supplied adhesive to the plywood industry from plants in British Columbia.²²

The glue companies' services included more than adhesives, their technical advice and testing were essential for a successful plywood industry. The glueline was critical to quality control and delamination was the most difficult problem manufacturers faced. The glueline was guaranteed, and its failure necessitated replacement of the plywood. Canadian Marietta, for example, between January and December 1960 tested 524 panels from the Western Plywood Ash Street plant.²³ The glue companies assisted in determining press times and solving glueline failures. When Western Plywood began to produce spruce sheathing at its Quesnel plant in 1960, Canadian Marietta ran a series of

²⁰ I. F. Laucks, "New Mastic Process for Fir Plywood," *The Timberman* xxxvi/12 (December 1937), 46.

²¹ "Reichhold chemicals," *British Columbia Lumberman* 52 (October 1968), 38.

²² "BC Plywood Industry Promotes Unique Plant," *British Columbia Lumberman* 47 (August 1963) 48.

²³ "Panel Test Summary," Monthly, January to December 1960, J.R. Murray, File Canadian Marietta, Panels test-Vancouver, Box 24B, WC, RBCM.

tests to determine the shortest suitable press time.²⁴ When trouble developed with the spruce run, Canadian Marietta examined the panels to resolve the problem. It was determined that one of the glue spreaders had been run light and left too thin a layer of glue on the panel.²⁵ Plant visits helped to ensure optimum conditions for gluing and pressing. In early August 1961 two different representatives from Canadian-Marietta visited the Western Plywood Ash Street plant and studied both glue spread and the presses.²⁶ Western Plywood used the services of Canadian Marietta at its Ash Street, Quesnel and Edmonton plants, but used Reichhold at Kent Avenue.²⁷ Western Plywood also kept in contact with Monsanto. In 1960 the company used Monsanto adhesives part of the time at Kent Avenue and Quesnel.²⁸ Presumably this followed the discovery that Monsanto glue was cheaper. Western Plywood's quality control manager compared the three makes of glue – Canadian Marietta, Reichhold, and Monsanto - and found that Monsanto glue was about a half cent per pound cheaper.²⁹

Once the glue was spread on the veneer and the veneer sheets made into panels of the desired thickness, quick work was required to move the panels into the hot press. A smooth flow of plywood from lay-up to press was critical; if the panels sat too long dryout occurred and probable delamination followed. Hot presses were used in the eastern United States and Europe long before their introduction to Douglas fir panel plants. British Columbia's two cottonwood producers used hot presses and produced

²⁴ R. A. Grah, Canadian Marietta to A.A. Magnuson, Quesnel, June 30, 1960, File Canadian Marietta, Panels test-Vancouver, Box 24B, WC, RBCM.

²⁵ R. A. Grah Canadian Marietta to Ralph Douglas, Vancouver, September 12, 1960, File Canadian Marietta, Panels test-Vancouver, Box 24B, WC, RBCM.

²⁶ Mill Visits reports, August 4, 7,8 and 9 1961, File Canadian-Marietta, Panels test-Vancouver, Box 24B, WC, RBCM.

²⁷ File Reichhold Chemicals, Box 25B, WC, RBCM.

²⁸ File Monsanto, Box 23B, WC, RBCM.

²⁹ Roy Henderson to Ed Banning, memo, August 9, 1961, Box 23B, WC, RBCM.

water resistant plywood using blood albumin glue.³⁰ Blood albumin was expensive and tricky to use and gave way to Laucks soybean glue prior to the introduction of the phenol resins. The Douglas fir plywood producers only switched to hot pressing with the introduction of the phenol glues.

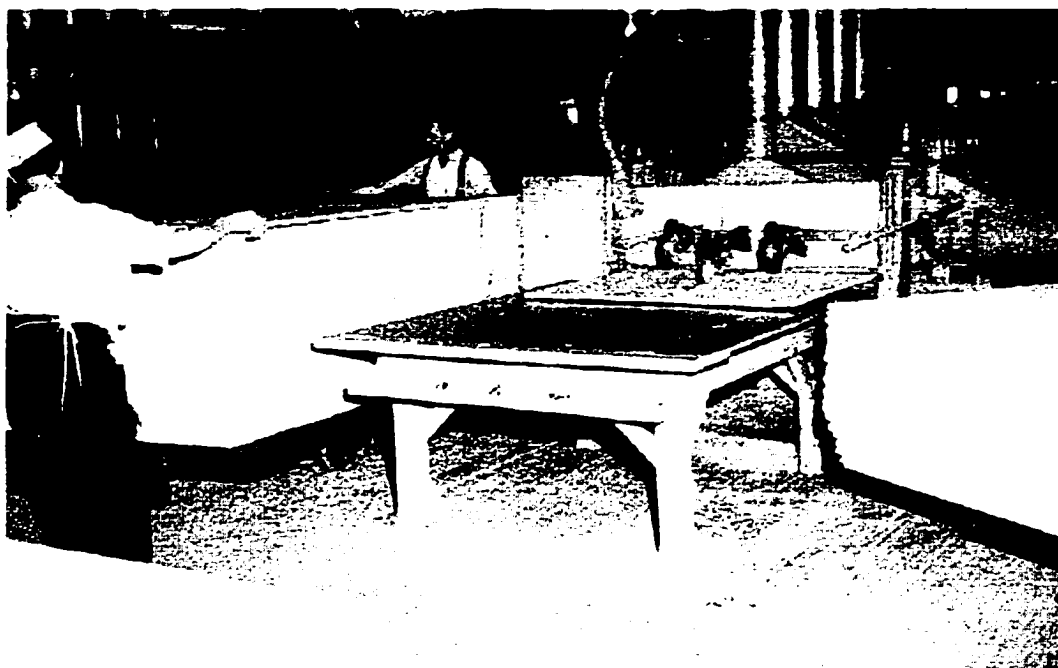
The panels were hand fed between each platen in the hot press and the press then closed squeezing and heating each panel. Improvements in presses focused on reducing cycle times and increasing the number of platens in an individual press. Automatic loaders and unloaders were developed in order to reduce the interval between press cycles. A variety of manufacturers made presses, but in British Columbia the Williams White press was preferred. Burrard Dry Dock's North Vancouver Industrial Division built several presses, as well. Automatic lay-up lines were developed by the mid-1960s and several were installed in British Columbia. Veneer sheets fed in one end and as they moved along the line they were sprayed with glue and assembled into a panel.

The Finishing End

Once the panel left the presses it proceeded to the finishing department where it underwent further processing to improve its quality. If the panel was sheathing or a low-grade panel; it was trimmed and sent to storage ready for shipment. However, when possible, panels were converted into a higher grade. Panel patching significantly increased the value of a panel by removing defects. Until the 1970s a router was used and a wood patch inserted, but during the 1970s synthetic-patching machines became popular. A router removed the defect, but instead of laboriously inserting and gluing an

³⁰ Knight, *Veneers and Plywood*, 293.

appropriately shaped piece of wood, a synthetic resin compound was sprayed into the hole. Weldwood installed its first synthetic patch machine at its Kent Avenue plant in 1974, and they were able to discontinue the night patching crew and eliminate thirty-one positions. In 1979 the company added a second synthetic patch line and eliminated more patching machines.³¹ The transfer to the new technology, however, was erratic, despite being cost saving. Delta Plywood, did not convert to synthetic patching until 1984 when it acquired the surplus machine from the closed Vancouver Plywood plant of MacMillan Bloedel.³²



Sander at Alberni Plywood. BC Archives I-26125.

The final process in coastal mills, unless the panel was to be coated with paper or a similar product, was sanding. Sanded Douglas fir plywood was the highest grade of

³¹ File Synthetic Patch Changeover, Box Kent 1, WC, RBCM.

³² Appropriation request Synthetic Patch System, File Synthetic Patch System, Box 17, DC, RBCM.

unfinished plywood. Sanders were expensive precision machines built by a limited number of manufacturers, and were made in several types of belt and drum configurations. During the 1950s Yates sanders were the industry standard, but the faster and more accurate Tidland and Kimwood sanders replaced them.

Once the plywood was finished it went to storage for shipment based on the orders received. Sometimes it was wrapped and sometimes it was banded, depending on quality and customer order. Domestic sales were usually transported by rail to a central distribution point and then trucked to the retailer.

Appendix III: **Changing Technology at Fraser Mills**

The Canadian Western Lumber Company's plywood plant in 1913 at Fraser Mills was the first plywood manufacturer in British Columbia. The company used its early panel production for door manufacturing. Canadian Western also operated the largest sawmill in British Columbia and, for a time, the largest sawmill in the British Empire. The sawmill was over twenty-five years old when plywood production commenced. The plywood plant was the only Douglas fir producer in British Columbia until 1935 when MacMillan Bloedel opened its Vancouver Division. Canadian Western was also the first Douglas fir plywood plant in British Columbia to install a hot press to manufacture waterproof plywood in 1936. MacMillan Bloedel and Canadian Forest Products, however, rapidly surpassed Canadian Western's production lead after World War II.

The original plant was small: a lathe, a dryer, and a cold press, which produced about four million square feet of plywood per year.¹ In 1923 the plant capacity was doubled.² The operation, however, remained simple and labour intensive. The dryer required thirty-five to forty minutes for each load and the panels sat in the presses for twenty-four hours.³ In 1935 the company enlarged the plant again, and by June 1936 production was doubled to fifty thousand square feet per day. The equipment in 1935 included one 102-inch veneer lathe, two clippers, two dryers, a taper, patchers, and a cold press. In late 1936 they decided to again improve the plant and installed a hot press. Over the next decades a steady rate of technical change occurred. In 1940-41, for example, a new 135-inch Coe lathe, a new Williams White hot press, two Fluckinger glue spreaders, a new

¹ *Paper People* (September 1953), 14.

² *West Coast Lumberman* 38 (May 1, 1923), 40.

Globe defect cutter and additional patchers were installed. The plant's production capacity increased by a further twenty-five percent.⁴ The final 1941 upgrade, an automatic press loader, eliminated the "slow and clumsy hand loading" of the large hot presses.⁵

Remodelled again in 1946, daily capacity grew to triple that of 1936, to 150,000 square feet of plywood per day. The expansion included the installation of a third Coe dryer.⁶

Modernisation of equipment was essential to keep a plywood plant competitive. During the post-World War II era Fraser Mills underwent continual small-scale technical change; large-scale renovations were also undertaken regularly. In 1963 one proposal noted that the "plywood manufacturing machines have been constantly revised and revamped to keep pace with rising costs."⁷ The pace of major revisions varied with the economic climate and demand. Declining demand and the rising cost of logs during the 1980s reduced the pace of technical change, which exacerbated the plant's lack of profitability until Fraser Mills finally closed in 1989. An examination of technological change at Fraser Mills will illustrate the rate and shape of change in the plywood industry and demonstrate how one company coped with the growth and then decline of plywood sales.

The 1950s brought with it demand for more and more production. Most coastal companies, including Fraser Mills, dealt with the increased demand by increasing production, not by building new plants. The first major revisions of the 1950s at Fraser Mills occurred in 1952, when a second Williams White hot press and two more Fluckinger glue spreaders were installed. In addition, another Coe dryer was installed and three new

³ *British Columbia Lumberman* 7 (June 1923), 37.

⁴ *British Columbia Lumberman* 24 (January 1940), 62. *British Columbia Lumberman* 25/7 (July 1941). *West Coast Lumberman* 68 (August 1941) 68.

⁵ *British Columbia Lumberman* 26 (January 1942) 49.

⁶ *The Timberman* 48/1 (January 1947), 164.

⁷ Crown Zellerbach Canada, "Proposal for the Expansion of Plywood Production Facilities at Fraser Mills," May 1963. FM. RBCM, 7.

Raimann patching machines added. Two important improvements were the installation of two Victoria electronic clippers and the Laucks Sentry (moisture detector) at the dry sorting table.⁸ Just over a year later a further major renovations were required, including the installation of a new Coe 113-inch lathe, moving the lathes closer to the log marshalling area, adding a Raimann patcher, and increasing hot press capacity.⁹

One of the major problems of upgrading machine by machine was to balance production throughout the plant. Increasing production at the green end with an additional lathe solved the problem of a veneer shortage, but now the lathes produced more veneer than the dryers could effectively process. Over the next several years first one new dryer was installed and then finally another dryer in 1963 increasing the number of dryers to six. Additional production from the dryers turned patching into a bottleneck and additional Raimanns patchers and a hot patch machine were installed in 1962.¹⁰ The hot patch machine was actually more costly to operate and required a larger crew, but the improved quality was believed to offset the increased cost.

Technological change, especially in the 1950s and 1960s, occurred for a variety of reasons. Two of the Fluckinger glue spreaders were replaced by Globe glue spreaders in 1959 and the two remaining Fluckinger glue spreaders had automatic glue levellers added. The saving in glue paid the cost.¹¹ Reduction of crew levels was a consideration even in the 1960s although increased production was the deciding factor for most improvements. A new panel saw, for example, was intended to improve quality and rate of production,

⁸ *The Timberman LIV/2* (February 1953), 111.

⁹ Mss. History of Fraser Mills, Files Canadian Western, History Section, RBCM, 3.

¹⁰ Authorization for expenditure no BM-700, August 6, 1962, Patching, FM, RBCM.

¹¹ Authorization for expenditure no CW-247, February 16, 1959, Glue Spreaders, FM, RBCM. Authorization for expenditure no CW-400, March 27, 1961, Glue Spreaders, FM, RBCM.

although a crew reduction as a result of the automatic feed was seen as an added benefit.¹² Modifications to plywood stacking at the skinner saws in 1962 also lead to a reduction of two crew members, one from each shift.¹³ Much of the work force replaced by machines was relatively unskilled, although some changes were intended to eliminate expertise. The instrument controls added to the dryers in 1967, for example, replaced guesswork (skill) with precise measurement. The speed and temperatures of the dryers was normally set on a predetermined schedule based on an estimate of thickness and moisture content. Each load, however, varied dramatically and the problem could be undetected until after the veneer traversed the dryer. Dryer controls detected re-drys within a load and automatically slowed the dryer down if the re-dry count was over a certain number. Experiments using the controls demonstrated at least a three percent increase in dryer speed and as the dryers were operating at full capacity, management considered any increase critical.¹⁴

Small improvements were continuous and they were interspersed with a series of major modifications to the plant as a whole. In 1954 improvements increased production by thirteen percent and in the late 1950s further changes were proposed.¹⁵ Projects followed in 1959, 1963, 1965, 1966, 1968, and 1969. The 1959 improvements were partly planning, partly building construction, and partly mechanical. The mechanical component focused on additions to dryers number four and five, to core laying and to edge gluing. In December 1961 plant capacity was increased by eighteen thousand square feet bringing total capacity to 126,000,000 square feet per year, an increase of twenty percent.¹⁶ The 1963 program started upon completion of the 1959 revisions and increased capacity by another twenty

¹² Authorization for expenditure no BM-428, September 21, 1964, Panel Saw, FM, RBCM.

¹³ Authorization for expenditure no BM-708, February 15, 1962, Panel Saw, FM, RBCM.

¹⁴ Proposal, for the purchase of an A. D. C. Dryer Control, 1967, Dryers, FM, RBCM.

¹⁵ *British Columbia Lumberman* 41 (April 1957), 74. *Crown Zellerbach News* (March 1960) 3.

percent to one hundred and twenty-six million square feet. Each new revision required a plant management to prepare a justification for the company's head office. In the 1963 proposal, plant personnel argued that barking and peeling were working at partial capacity while drying, pressing, and finishing were at full capacity with outdated equipment. They buttressed the proposal with projections anticipating increased demand and noted that they could not presently meet current demand.¹⁷ The 1963 upgrade primarily revised existing equipment to obtain more production per machine, and new equipment purchases focused on patching and panel trimming. The major production improvements resulted from upgrades to three dryers and one press.¹⁸

Crown Zellerbach Canada's head office began to have second thoughts about the expansion program during the late 1960s. Millions of dollars had been spent and questions were raised, was the project too expensive for an adequate return? All improvement did not stop but the major revisions, including the proposal for two new veneer dryers, became bogged down in planning over the next three years.¹⁹ Less than two weeks after the new planning process started, another estimate was presented which eliminated the new dryer and reduced the total cost from over two million dollars to just below one million.²⁰ Neither the original nor the revised proposals were approved by 1968, and the equipment was still not installed. The decision was made to submit a changed proposal in the "1969 Expansion Plan." Eventually dryers one and two were replaced with two new dryers and the additional hot press was installed.

¹⁶ Proposal for the Expansion of Plywood Production Facilities at Fraser Mills, May, 1963, FM, RBCM, 7.

¹⁷ Proposal for the Expansion of Plywood Production Facilities at Fraser Mills, May, 1963, FM, RBCM.

¹⁸ Proposal for the Expansion of Plywood Production Facilities at Fraser Mills, May, 1963, FM, RBCM, 32-33.

¹⁹ Plywood Expansion 1964, September 15, 1964, FM, RBCM. Plywood Expansion 1966, November 15, 1966, FM, RBCM.

²⁰ Plywood Expansion 1964, November 27, 1966, FM, RBCM

A number of the changes were implemented between 1964 and 1968, even though the overall plan was delayed. Individual approvals were given regarding selected equipment purchases and installation. The ten patching machines proved inadequate to meet production goals without weekend overtime. The primary cause of the overload was demand from the companies other plywood plants for an improvement in veneer quality, and an additional Raimann patcher was installed in 1966.²¹

The earlier improvements to hot press number two increased its capacity but the two glue spreaders feeding the press could not supply enough panels. The solution was the installation of a third glue spreader at the press. The press problem was also related to the demands from one of the company's other plywood plants, but approval was only given following the compilation of extensive documentation proving the case..²² The installation was of special concern because it required the temporary closure of part of the edge gluing operation.²³ The installation of a new wide belt sander replaced an old outmoded machine in 1967 and was the final upgrade prior to the new 1969 plan coming into effect. The old Columbia sander, left in operation after previous plant modifications, and now sixty years old, was "incapable of consistently producing a finish acceptable to the customer" and was, therefore, replaced.²⁴

In 1968 the company undertook a new and complete review of the plywood plant to determine what further work should be done to optimise production. In July the planning group met to establish guidelines and begin preparation of the new detailed proposal. Three plans were to be prepared. The first, the planning of a completely new plant, acted as a

²¹ Authorization for Expenditure, number BM 437, December 6, 1965, FM, RBCM.

²² Authorization for Expenditure, number B-FM-721, February 7, 1966; Proposal for the purchase and installation of a Third Glue Spreader, February 4, 1966, FM, RBCM.

²³ Report, Glue Spreaders - 30 opening hot press, January 1966, FM, RBCM.

control over the project. The second plan, for a plant capable of producing 200 million square feet per year, was look at expansion possibilities. It was the third plan, however, for which the committee expected approval, a plan that would result in a slight increase in productive capacity over that achieved in 1964.

Planning started with the compilation of basic information on existing facilities, currently available technology, and forecasts of logs and markets. Present facilities were assessed through a compilation of data on existing equipment and notes on problems with the equipment. It was noted in the case of the Number One lathe, a Coe installed in 1954, for example, that it had excess capacity and that future problems would probably arise from co-ordinating lathe production with the rest of the plant.²⁵

A variety of plywood plants and machinery suppliers were visited by the planning committee, mainly in the United States. Co-operation was excellent. The company's travelling committee focused on automation, but paid some attention to product quality.²⁶ An assessment of the log supply suggested that until the late seventies it would remain basically unchanged and at that time there would be some decrease in the amount of peeler fir available.²⁷ Projections were based on a relatively small plant; the report categorically stated that there was not sufficient wood to justify expanding beyond the immediate projection of 130,000,000 square feet per year.

Market research was conducted by John Beaty, a long time plywood man, former employee of MacMillan Bloedel and operator of his own plant, which was now a subsidiary of Crown Zellerbach. Beaty assessed what would be the most profitable grades on which to

²⁴ Authorization for Expenditure, number b-FM-222, October 31, 1967. Proposal for the Purchase of a 5 Ft. Wide Belt Sander and Panel Stacker, September 1967; FM, RBCM

²⁵ Equipment Compilation, Fraser Mills Plywood Master Plan, July 1968, FM, RBCM.

²⁶ Report, Fraser Mills Plywood Master Plan, Group 4 - What others are Doing, August 1, 1968, FM, RBCM.

concentrate production. He pointed out that logs currently going to the sawmill could be more profitably peeled.²⁸ Beaty also sought to relate production directly to sales. He concluded, however, that it was not possible to concentrate on any given product even though "larger production runs on any item are generally more profitable."²⁹ However, Beaty and his committee's speculations about future plywood demand proved too vague for concrete planning. The company decided to eliminate speciality production and to base production on sales averages; production would only be increased if the demand increased.³⁰

The planning committee also decided to compartmentalise the plant, and the team compiled a list of what they considered essential in a new facility, department by department.³¹ In September 1968 a subcommittee was established to develop a "final plan for producing plywood" based on the objectives of the previous committee. This was a committee of doers and engineers rather than the strategy managers.³² The planning emphasis now shifted as the committee sought ways to reduce costs without increased production.³³ Manufacturers were again queried regarding potential equipment and a detailed evaluation was made of each employee's activities within the mill, including decision-making (the number of choices an employee was required make during each operation). The Committee produced ten alternatives for rebuilding the plant but emphasised revisions to the veneer system, but suggested little change to the panel finishing area.³⁴

²⁷ Notes, Plywood Log Supply, Plywood Master Plan, July 19, 1968, FM, RBCM.

²⁸ J. D. Beaty to R. L. Carlson et al, August 14, 1968, FM, RBCM.

²⁹ J. D. Beaty to R. L. Carlson, July 23, 1968; J. D. Beaty to J. Scott, July 16, 1968, FM, RBCM.

³⁰ J. D. Beaty to R. L. Carlson et al, August 14, 1968, FM, RBCM.

³¹ JS to Plywood Planning Group, August 28, 1968, FM, RBCM.

³² D. Malcolm to Sub-Committee, September 25, 1968, FM, RBCM.

³³ D. Malcolm, "Objectives to be Met", September 25, 1968, FM, RBCM.

³⁴ Alternatives 1 through 9, September 1968, FM, RBCM.

In January 1969 the planning process was again expanded and consideration was once more given to the requirements of a plant capable of producing two hundred million square feet.³⁵ The whole exercise, however, made little difference, and by the end of April most of the planning was discarded. A decision was made to go ahead with renovations to two areas, drying and chipping. The chipping revision was a minor adjustment to the handling system, while the dryer addition was a major expense. It included the removal of one older dryer, changing another older dryer to re-drying, and the addition of one new modern dryer. Extensive work was also undertaken to improve the remaining three dryers. It was proposed that the new dryer, Number Five, be self-reeling. This was a new technology developed by the Moore Dry Kiln Company to make the dryers self-feeding and eliminate the handling of the veneer prior to drying. Hand feeding the dryers was considered a bottleneck and plant management argued that it created excessive labour costs. The Company was particularly concerned because the lowest ratio of labour to production (hand feeding dryers) in a west coast plywood plant was twenty-three percent while the Fraser Mills ratio was forty-one percent.³⁶ In the end, reeling was discarded as too experimental.³⁷ A year later the installations had still not been approved. They were again presented with a new report and finally an "Authorization for Expenditure" was approved in 1970.³⁸

The company's planning group in 1967 and 1968 was very optimistic about plywood's future, feeling that "the long term market potential of plywood ... supports the

³⁵ Objectives, no date, FM, RBCM.

³⁶ "Proposal for Veneer Peeling and Dryer Installation, Draft." April 22, 1969. FM, RBCM.

³⁷ E. C. Cooley to R. L. Carlson, April 9, 1969; E. C. Cooley to R. L. Carlson, April 24, 1969; E. C. Cooley to J. Scott, June 12, 1969; E. C. Cooley to R. L. Carlson, April 24, 1969; E. C. Cooley to J. Scott, August 22, 1969; E. C. Cooley to G. W. Hornsby, September 16, 1969, FM, RBCM.

³⁸ Proposal for New Veneer Dryer," November 1970; Authorization for expenditure, number B-FM 917, November 4, 1970; FM, RBCM.

justification for long term substantial investments."³⁹ Head office's concern was evident in its delays regarding implementation. Regardless, certain improvements had to be made to keep the plant to competitive. Mann-Russell moisture detectors were installed and improvements were made to the exit end of three of the dryers in 1969, at the significant expense of \$152,100.40. Changes were also made to the veneer patch system which targeted labour costs. The labour "PROBLEM" was explicitly noted, the present system, management argued, required "an excess of labour."⁴¹ Management's desire to reduce costs, rather than increase productivity was evident as early as the late-1960s.⁴² Projects in the early-1970s, for instance, were concerned with cost reduction, and not with improved quality or quantity. A glue spreader was replaced because the current machine was too old and very expensive to repair, while the installation of a semi-automatic lay-up line reduced the crew by 17.43 persons. Some changes were required for non-cost reasons, but they were implemented reluctantly. The purchase of two new Raimann patchers in 1975, for example, was necessary because of revisions to grade standards for veneer patches. The patches from the older machines no longer met the new standards and the machines had to be replaced.⁴³

³⁹ "Proposal for Veneer Peeling and Dryer Installation, Draft," April 22, 1969, FM, RBCM.

⁴⁰ Authorization for Expenditure, Number B-FM 916, May 1, 1969, FM, RBCM.

⁴¹ "Proposal to Purchase and Install a Semi-Automatic Patch Cutting Saw in the Fraser Mills Plywood Plant," April 1969, FM, RBCM.

⁴² "Proposal for the Purchase and Installation of Equipment to 'Dead End' #3, 4 and 5 Dryers at Fraser Mills Plywood Division," May 1969, FM, RBCM.

⁴³ Proposal for the Purchase and Installation of 2 Raimann Veneer Patchers and Auxiliary equipment at Fraser Mills, January 1974: FM, RBCM.

**Table, Appendix III-1: Major Machinery
Additions between 1955 and 1968.⁴⁴**

1958 (1963) (1965)	Dryer # 4 – renovations	Coe
1958	Moisture Detector Dryer # 4	Laucks
1958	Edge Gluer # 1	Prentice
1958	2 reclip saws	American
1958 (1963)	Hot Press # 2	William & White
1958	Glue Spreader	Fluckinger
1958	Glue Spreader	Fluckinger
1958	Glue Spreader	Globe
1958-1967	Glue system	Cargate/Fluckinger
1958 (1963)	Panel Sort Line	Prentice
1958	4 Panel Patch lines	Prentice
1960	Moisture Detectors Dryers # 1,2,3	Laucks
1961	Jointer # 1	Prentice
1963	Dryer # 5	Coe
1963	Moisture Detector Dryer # 5	Lauck's
1963	Panel defect cutter	Durand
1963	Panel patch setters	Globe Mann Russell
1963	Jointer # 2	Globe
1963	Edge Gluer # 2	Prentice
1963	Jenkins Panel Saw	Joa-Kohler
1963	Panel Stacker	Durand
1963	Wide Belt Sander	Tideland
1963	Panel Grading Line	Kimwood/ Cargate
1963	Cut-Back saw	Ekstrom-Carlson
1963	Hog	Peninsula Iron Works
1963	Veneer Hog	Peninsula
1964	Edge gluer # 2 vacuum stacker	Murray-Latta
1965	Super Patcher	Raimann
1966	Chip-N-saw	Canadian Car & Foundry
1968	Wide belt sander	Tideland

The mid-1970s brought a change in production strategy for the Fraser Mills plywood plant. The company realised that it had to adapt to current raw material trends and use smaller logs. Douglas fir arrived at below nineteen inches in diameter and the company's lathes did not efficiently peel to a core of less than fourteen inches in

diameter.⁴⁵ The lathes were old and slow, designed for big diameter fir and had been installed in 1942 and 1954. New lathe configurations were high speed with fast block recycling mechanisms. The old lathes at Fraser Mills, no matter what improvements were made, simply could not efficiently process the current log supply.⁴⁶ The new modernisation proposal noted that “the Fraser Mills green veneer production equipment cannot operate competitively on the present or future log mix.”⁴⁷ The solution proposed and approved was the construction of a completely new, sixteen million dollar, green end.

The company intended to use the new equipment to produce more veneer than its lay-up plant could consume. This allowed Crown Zellerbach to recover some of the installation cost by the sale of profitable veneer and it provided an allowance for increased production. The majority of the plywood plants in the greater Vancouver area needed to purchase veneer to supplement their own production.⁴⁸ Construction started in 1977 and the two old Coe lathes were replaced by three high speed Premier lathes supplied by Durand of New Westminster, along with Durand’s lathe charging system. The new lathes operated at 900 feet per minute; the previous lathes had operated at 340 feet per minute. New Elliott Bay clippers were also installed. The remainder of the plywood plant was left basically unchanged.⁴⁹ The 1976 green end modernisation did not solve all the problems but future improvements were kept to a minimum. Necessary work was undertaken on the dryers, and a new hot press loader, improving the flow of speciality

⁴⁴ Table prepared for 1968 study, Box 3. FM, RBCM.

⁴⁵ “Coast Modernization Project,” Crown Zellerbach, October 1976, Box 3, FM RBCM, 4.

⁴⁶ “Coast Modernization,” 10.

⁴⁷ “Coast Modernization Project, Fraser Mills Plywood, Crown Zellerbach,” October 1976, FM, RBCM, 6.

⁴⁸ “Coast Modernization,” 14.

⁴⁹ “New Plywood Plant Ready Soon,” *Hiballer* 29/7 (July 1978), 19.

plywood through the presses, was added in 1984. A blister detector was also added in 1987.⁵⁰

Even with plant closure in sight the planners did not give up. In 1988 new revisions were proposed to make the plant profitable in the 1990s. The merger of Crown Forest Industries (Fletcher Challenge) and British Columbia Forest Products, however, spelled the end of the Fraser Mills plant. Fletcher Challenge acquired from British Columbia Forest Products a small and efficient plywood plant, Delta Plywood. Faced with rising costs and believing that plywood sales were declining, the company shut the Fraser Mills plant in 1989.

Table Appendix III-2: Machinery
Revisions and Proposals, 1972-1988⁵¹

Error! Bookmark not defined. Major Equipment 1972	Major Equipment 1981	Location Changes	Proposed 1988 Revision
2 lathes	3 lathes	Replaced	3 lathes
4 dryers	4 dryers	Unchanged	2 dryers
2 hot presses	2 hot presses	Unchanged	3 hot presses
Edge gluers	1 edge gluer	Unchanged	Removed
Patch saws	Strip saws	Unchanged	Unchanged
Reclip and sorting	Reclip line	Unchanged	Removed
11 patchers	10 patchers	2 moved	5 patchers
R. F. patch lines	Synthetic patch line	Moved	Moved
4 hand patch lines	4 hand patch lines	Unchanged	Removed
Sanders	Sanders	Unchanged	Smaller
Panel trimming	Sizing saws	Unchanged	Removed
Cut back saw	Eliminated		
Wrapper	Eliminated	Synthetic patch line in this location	Moved
1 core saw	2 core saws	1 unchanged 1 in a new location	1 core saw
Overlay hot press	Overlay press	Unchanged	Unchanged
Overlay trim saw	Sizing saw	Unchanged	Unchanged

⁵⁰ Authorization for Expenditure, 84 CWP 929, April 12, 1984: W. Connelly o K. Grant, February 20, 1987, FM, RBCM.

⁵¹ Modernization Proposal, 1988, Box 4, FM, RBCM.

In 1950 John Bene, president of Western Plywood, one of four major plywood producers at this time, noted that "old-growth fir will be cut out within 25 years and the top grade of timber is being cut twice as fast as the average for the species."⁵² Bene was perhaps too pessimistic regarding the disappearance of old-growth timber but his warning foretold the industry's future choices.

⁵²John Bene, "Douglas Fir Substitutes for the British Columbia Plywood Industry," *British Columbia Lumberman* 34:8 (August 1950), 49.

Appendix IV
Known Production of Softwood Plywood Plants Western Canada

Year	Plant Savona	Evans Vancouver	CanPly Delta	Douglas Vancouver	Golden	Canoe	Fraser Mills	Armstrong
1953							52167	
1954							55667	
1955		18500					73833	
1956		35500					83500	
1957		34667					77833	
1958		43167					80500	
1959		38667					73167	
1960		43667					76667	
1961		48500					86833	
1962		59950		32757			123436	
1963		58927		37210			109873	
1964		71326						
1965	2913	63779		71089		11736		
1966		62871		78711		37525	117315	
1967		74322	6969	81038		30111	129021	
1968		91621	68149	86617		27260	129847	
1969		79954	50801	78294		39097	124365	
1970	21296	69307	19506	73675		43146	120760	
1971	22818	87151		45119		43361	125068	30909
1972	21699	74944	14500			43905	115757	78467
1973	23423	66727	70459			54027	121646	85767
1974	22108		61188			52945	98026	82173
1975	23987		58262			59427	87763	105382
1976	24772		88169			63042	110288	125121
1977	29909		89625			64113	108365	129457
1978	35791		89528			64146	118729	138635
1979	32268		80230		88511	63054	94198	149050
1980	32120		90336		120539	63996	78748	144846
1981	39648		71615		111872	59080	72496	126894
1982	34755		70764		126131	65757	54024	131178
1983	34701		73401		127462	65642	51169	143726
1984	32291		72631		122251	66332	29797	143871
1985	45193		69548		131516	65986	42915	168767
1986	22782		54056		132786	80581	13778	107749
1987			89877		154506	93307		173323
1988			95813		152737	95971		172117
1989			89788		150832	101210		171452
1990	70937		78277		151998	99364		152115
1991	59887		3152		135810	96561		153087
1992	51422				140717	96419		158944
1993	74189				156174	99826		188514

Plywood in MMSF, 3/8th inch thick

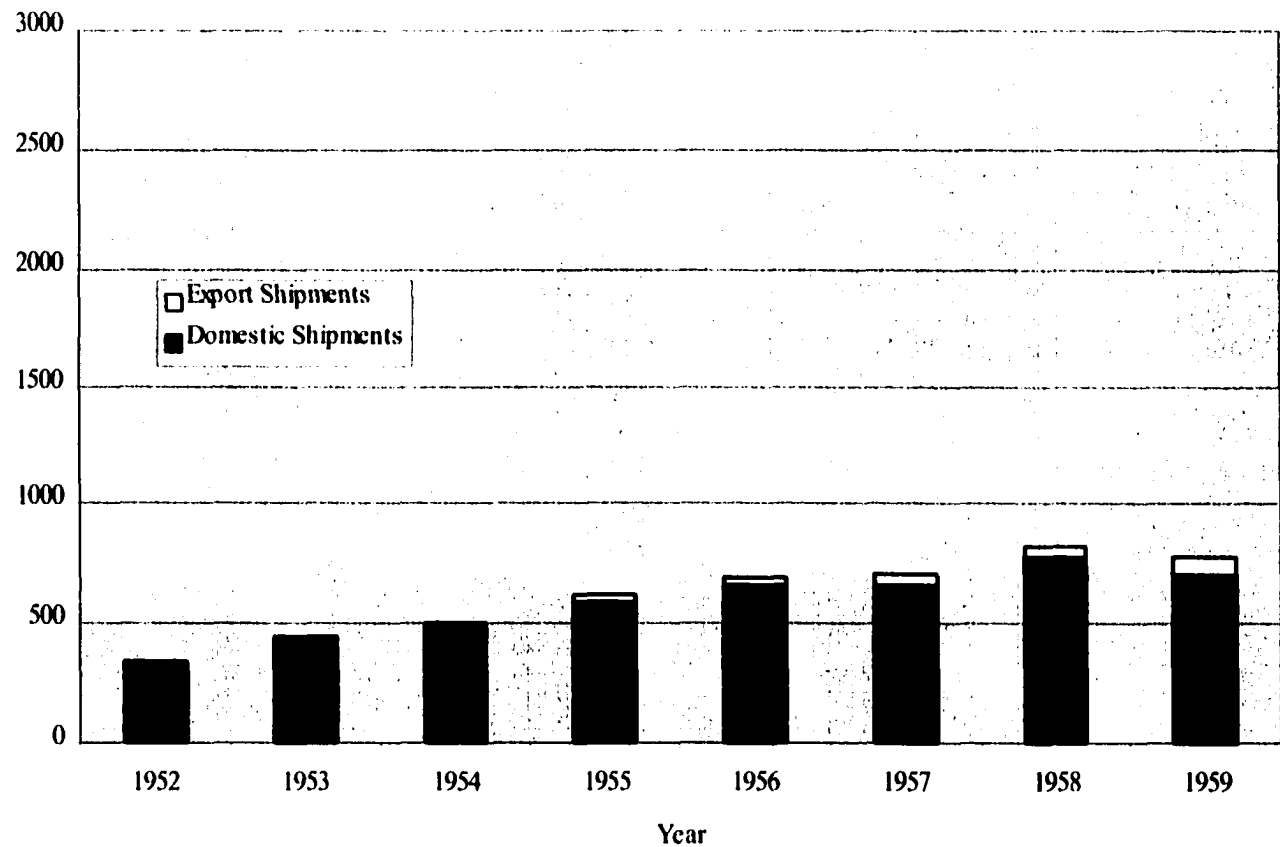
	BCFP Victoria	Kelowna	KFP Nelson	Canfor	MB Alberni	MB Vancouver	Prince George	Richmond
	51167			104500	63667	119167		
	60833			119500	89833	110500		
Year	78333			134167	110167	134500		
1953	86833			159167	129167	161000		
1954	81833			149500	103500	150333		
1955	91667			160500	122167	162333		6167
1956	81500			147000	102667	169767		48333
1957	90500	38667		164333	114667	177000		43333
1958	98833	46333		177333	126127	221333		49000
1959	123766	58430		234732	154436	274050		69847
1960	108888	50598		201113	127989	244063		69784
1961				198219				
1962	109149							81971
1963	111129	65419		196214	166472	239683		88961
1964	110507	53428		205959	171667	243865		87943
1965	111319	45450	20755	200215	175477	258396		91822
1966	114021	70909	61016	200762	174813	258589		88723
1967	109861	73839	55222	195473	170771	182163		99184
1968	108650	75080	56000	167725	175409	237103		139234
1969	110132	73271		175015	162629	239226		150700
1970	123417	76025		187055	171146	233964		157394
1971	103089	57412		157159	124586	197751		135275
1972	75292	55239		138742	115676	157063		144064
1973	102005	73375		177743	149554	183480		165006
1974	110948	76958		182705	158945	191050	109687	157289
1975	123080	81254		183296	170500	180976	109250	158252
1976	117598	82475		175331	142853	141984	113351	157833
1977	115241	88333	7065	153714	149900	93835	114541	144562
1978	90168	66332	52695	131491	114820	74566		143893
1979	32948	67840	64733	98555	53180	53180	151406	101590
1980		80569		126869	53116	53116	154664	160569
1981		78108		128756	110683		147083	163164
1982		85987		99831	130268		162545	180564
1983		54408			96957		156551	183137
1984		87541			159042		167432	201338
1985		103130			117122		161245	189617
1986		99831			106087		158852	184802
1987		87401			92897		155029	174090
1988		80850			20880		146847	192757
1989		90531					142172	186071
1990		103776					175830	180855
1991								
1992								
1993								

(production information from Canadian Plywood Association)

Year	Hefley Creek	Williams Lake	Weldwood Quesnel	Kent Ave Vancouver	Ash St Vancouver	Timberland Surrey	100 Mile House	Cantree Richmond
1953			31467	25000	16833			
1954			36167	31667	14333			
1955			39000	55167	14500			
1956			40000	62167	12500	833		
1957			35833	56667	13167	33667		
1958			32500	67000	20000	47500		
1959			46000	60833	21000	44833		
1960			42500	73833	22833	51000		
1961			58000	73000	42167	57500		
1962			68130	82151	89676	77031		
1963			58148	98292	50436	70770		
1964								
1965							6873	
1966			93575	152232	10736	98943	36641	
1967			114231	149632	7132	107641	43432	
1968			127643	163268	241	114352	42624	
1969			136028	151731	722	120072	38568	
1970			138901	105270	5794	120526	40154	
1971			141397	170521	844	126028	54679	
1972			139220	161299	561	114251	61687	
1973			138306	167814	603	126853	63730	
1974	49785		113865	120593	2450	90652	56118	
1975	48677		125427	129607	2684	94214	64131	
1976	62249		139117	163078	4605	106224	84385	
1977	60637		139534	163146	5146	110567	111592	
1978	88261	55633	143859	179673	3366	94245	109956	
1979	82374	120129	139770	133888		46314	103723	
1980	78840	123747	134597	123497		387	93307	
1981	73868	114174	122302	103529		3317	83738	
1982	65401	141033	145624	72389		6904	63906	27715
1983	102104	154951	147995	144767		5284	91313	111647
1984	99808	130179	133500	145803		4550	31819	117540
1985	113572	158367	159456	131169		114		88705
1986	94697	158220	152659	99800		0		101321
1987	117926	177589	158062	159291		10272		119126
1988	120273	180302	172417	103461				103178
1989	115322	189073	194363	97571				105773
1990	82976	178405	176752	91366				85390
1991	26335	170322	158292	118352				72916
1992	77919	169544	180452	102530				114906
1993	106949	170884	171603	44803				97582

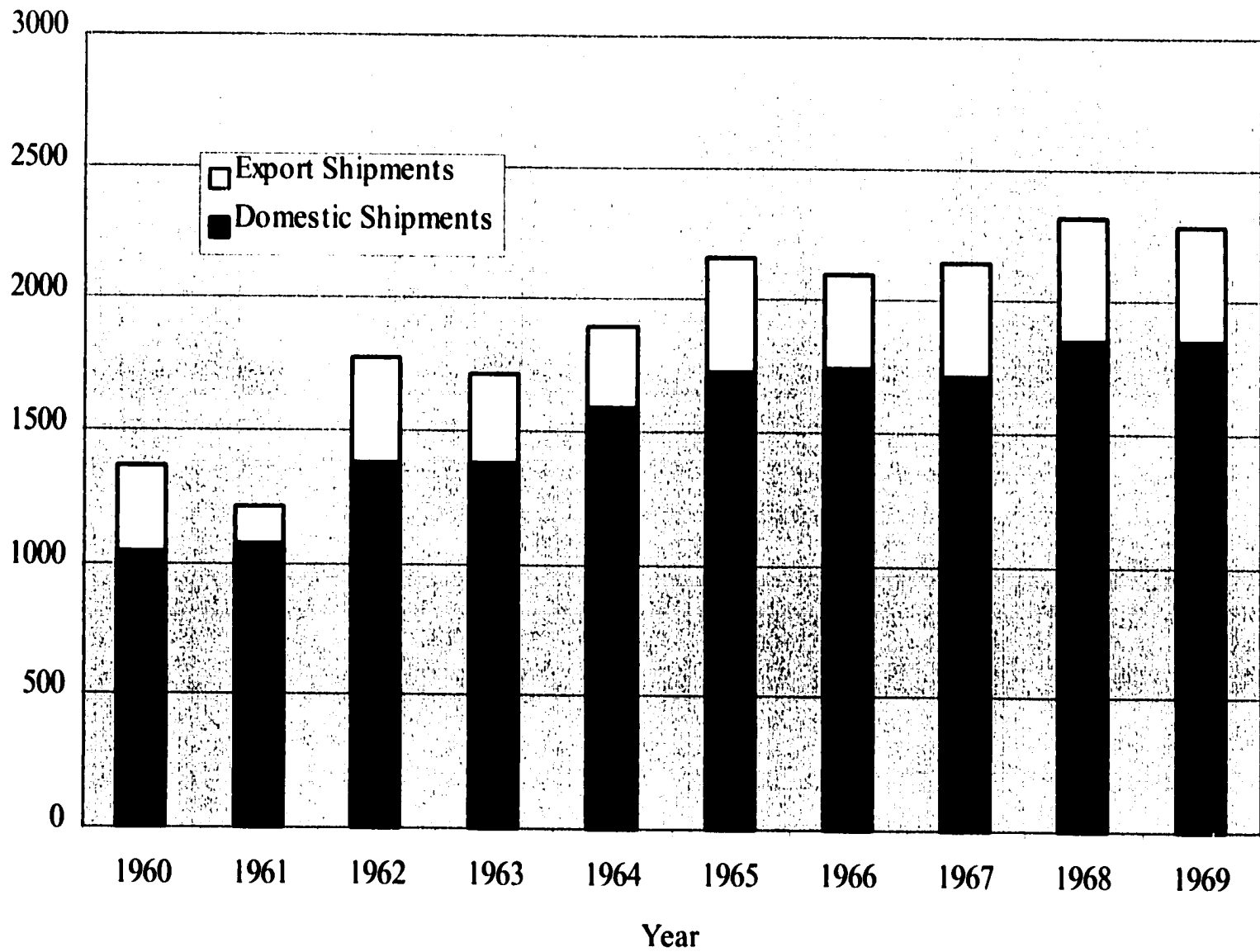
Appendix V: Shipments of Plywood 1952 – 1996¹

BC Plywood Shipments 1952-1959

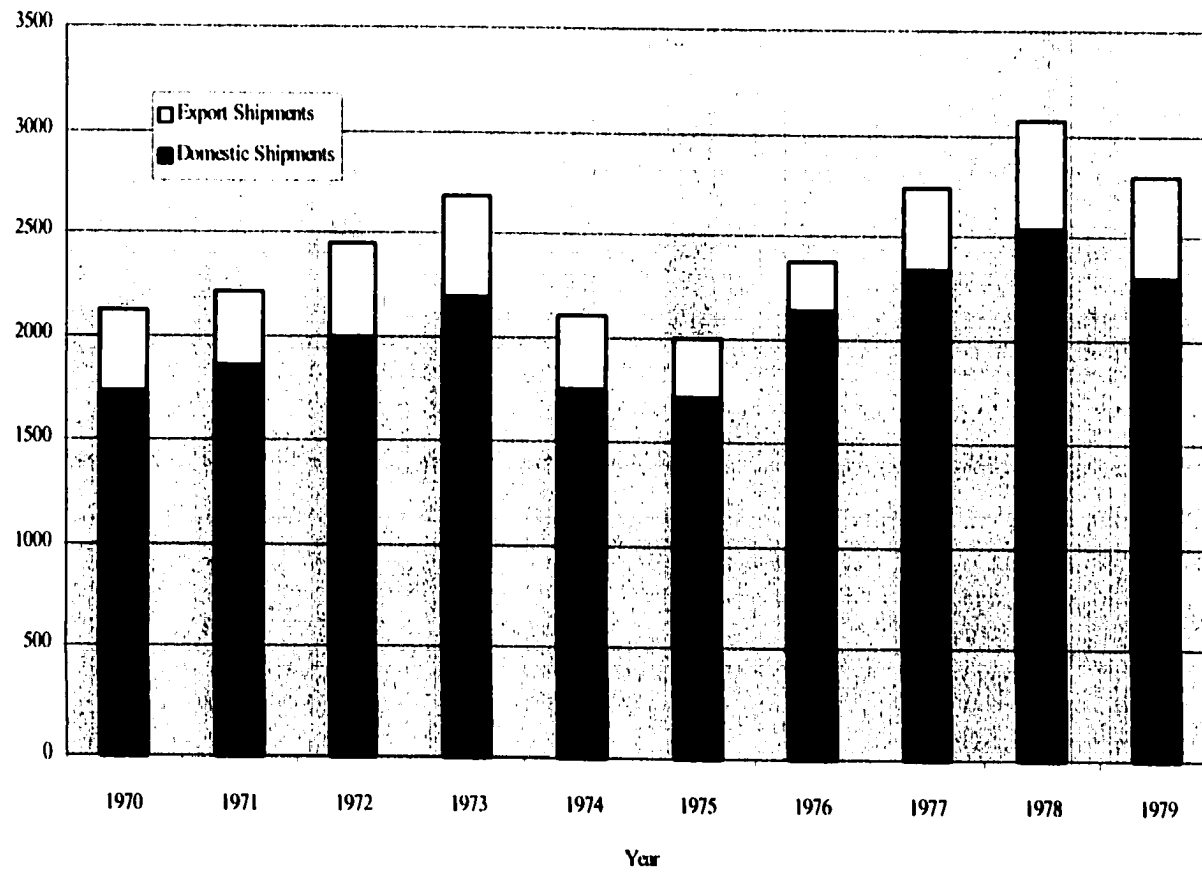


¹ Figures from Canadian Plywood Association.

BC Plywood Shipments 1960-1969

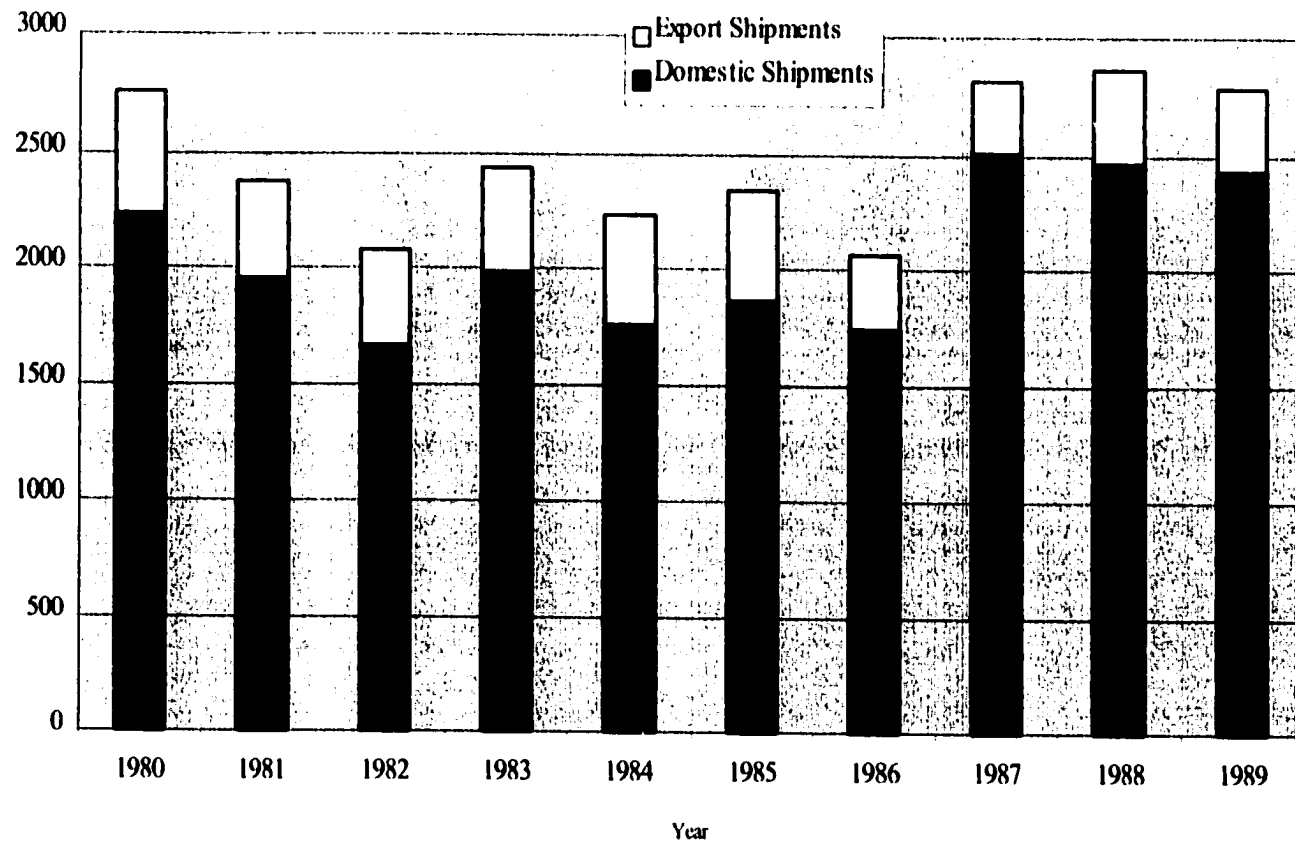


BC Shipments 1970-1979

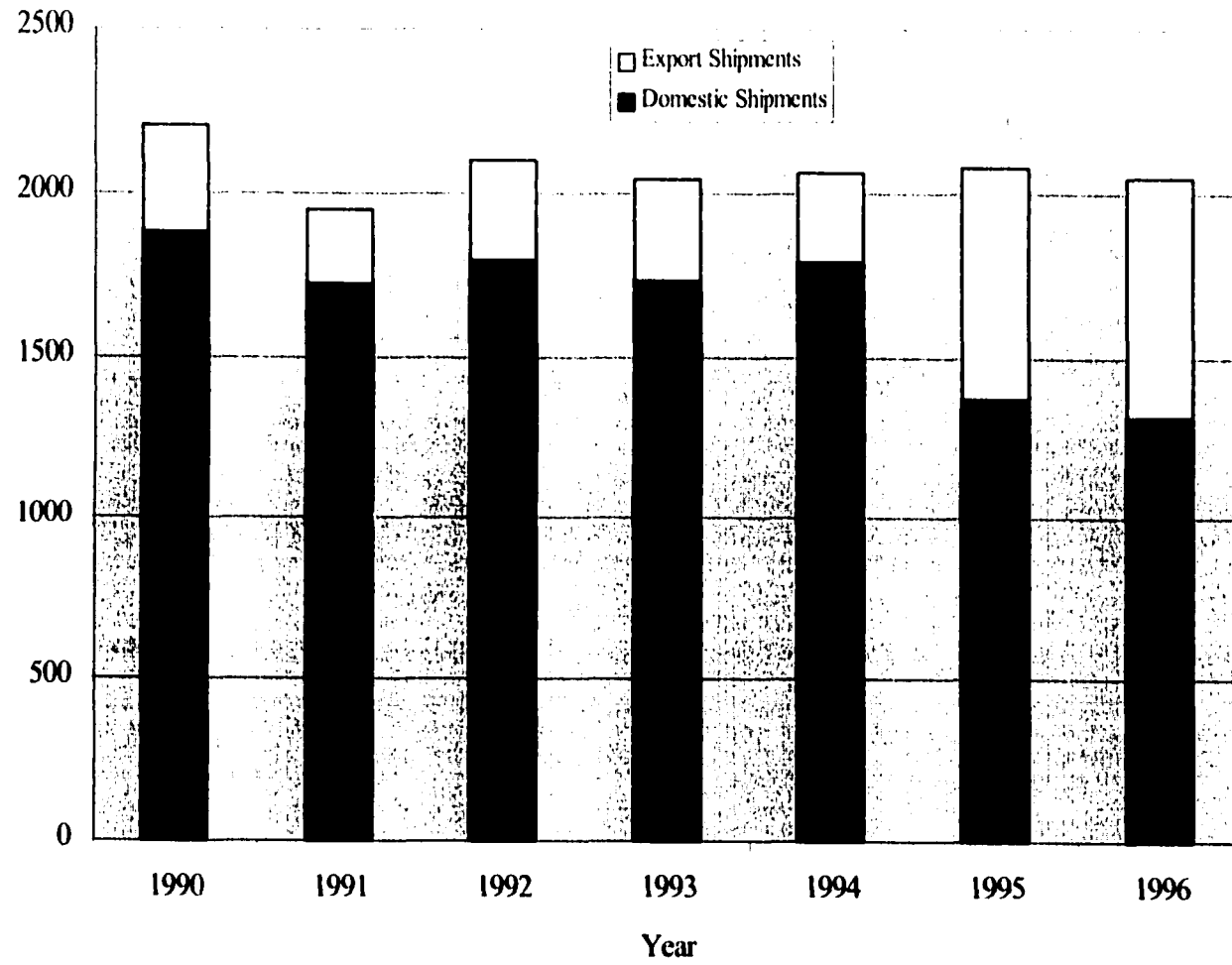


Plywood in M Sq. Ft. 3/8 in

BC Shipments 1980-1989



BC Shipments 1990-1996



Plywood in M Sq. Ft. 3/8 in.