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A Perspective Based on Oral History

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RESEARCH NOTE/NOTE DE RECHERCHE

The Rise and Decline of Trailcutting on the Miramichi, 1960 - 1990: A Perspective Based on Oral History

ALTHOUGH THE IMPORTANCE OF FORESTRY to the economic history of Canada, and particularly New Brunswick, is well recognized, there has been surprisingly little attention paid to the study of woodswork itself.[1] While Graeme Wynn's landmark *Timber Colony*[2] depicts the traditional technology and techniques of woodswork which prevailed into the middle of the 20th century, most studies of the contemporary period, written mainly by forestry engineers,[3] focus on technical information and the development of new machinery. Even Ian Radforth's book, *Bushworkers and Bosses,*[4] focuses more on worker reaction to the introduction of new machinery than on developing a systematic understanding of the changing organization of the labour process.

To begin to address this gap in the literature, our Research Note reports on the changes in the social organization of woodswork since 1960. Our basic source of information is a collection of 45 in-depth, unstructured interviews conducted during

1 The authors would like to acknowledge the contribution of Aloysius Hayes, a collaborator on this project. Though not a co-author of this present paper (having graduated from St. Thomas and hence having left the research group), his contribution went beyond that of simply being the researcher who conducted the interviews. He was very much involved in the discussion which allowed us to interpret the information we had gathered, giving it form and organization. He also co-authored the first two of our conference papers. We wish to thank the anonymous *Acadiensis* reviewers for their very useful commentaries. Finally, we wish to acknowledge the financial support provided by the St. Thomas University Research Grants Committee.

2 Graeme Wynn, *Timber Colony: a Historical Geography of Early Nineteenth Century New Brunswick* (Toronto, 1981).

3 See the excellent series of studies completed for the Forestry Engineering Research Institute of Canada [FERIC], in Montreal. Primarily performance evaluations, they commenced with the introduction of the first machines — skidders — to woodlands operations. See P.L. Cottell and H.I. Winer, "Alternative Methods for Evaluating the Productivity of Logging Operations: Implications of a Study of Wheeled Skidding", WR#14, 1960. These evaluations became much more important with the introduction of the Koehring Shortwood Harvester, by far the most technologically advanced and complicated machine of the day. See C.-J. Bredberg, "Evaluation of Logging Machine Prototypes: Koehring Shortwood Harvester", WR#28, 1970. A number of evaluations of this machine were done, culminating in J.H. Boyd, "Repair Statistics and Performance of New Logging Machines: Koehring Shortwood Harvester/Report 2", LRR#61, 1975. These evaluations have continued, including those of the most recent technological innovation, the Scandinavian type single grip harvester. See Robin Richardson, "Evaluation of Five Processors and Harvesters", TR#94, 1989. All of these documents are located in the FERIC Library.

4 Ian Radforth, *Bushworkers and Bosses: Logging in Northern Ontario 1900-1980* (Toronto, 1987).

Michael Clow and Peter MacDonald, "The Rise and Decline of Trailcutting on the Miramichi, 1960-1990: A Perspective Based on Oral History", *Acadiensis*, XXVI, 1 (Autumn 1996), pp. 76-91.

the summers of 1991-1993 with workers, contractors and company officials connected with tree harvesting for Repap Pulp and Paper and its predecessor companies on the Miramichi. These interviews were transcribed and analyzed with the aid of Ethnograph, a programme which permits the systematic analysis of qualitative data.[5]

Our primary concern in this Note is with the light these interviews can shed on the rise and fall of what is commonly called the trailcutter system, which emerged in the early 1960s and dominated wood production into the 1980s. We suggest that the trailcutter system, because of the inherent limitations of the labour process it embodied, has been displaced by more factory-like systems of tree harvesting. By the late 1980s the many hundreds of trailcutters on Crown Land[6] on the Miramichi, who had dominated wood production for 20 years, had dwindled in numbers, while the operators of a variety of new machines — tree harvesters, skidders, feller/bunchers, delimbers, feller/forwarders and slashers — had taken their place.

In the early 1950s, according to our interviewees, the delivery of wood to the mill was conducted largely by spring stream drives to the river and downstream to the mill site. Cutting was performed by hand saws, and horses both skidded delimbed trees and pulled sleds of bucked[7] trees to the banks of the stream. Even with the spread of one-man gasoline fueled power saws, the length of the cutting season remained limited, and the wood arrived at the mill yard only once per year. This made it necessary to stock a year's supply of wood, which meant large inventory costs to the mill. Confronted with these difficulties, companies constructed better woods roads which permitted the use of improved trucks. These measures were intended to increase the regularity of wood deliveries to the mill yard by partially bridging the gap between the production schedules of the woodlands operation and the raw material requirements of the mill.

Both the chain saw and road delivery to the mill yard diffused throughout the woods during the 1950s, and produced two different tree harvesting systems which are antecedent to the trailcutter system. Both systems were capitalist ones,

5 The breakdown of the interviews is as follows: 37.5% company officials, 20% contractors, 15% trailcutters, 12.5% professional foresters, 5% other wordsworkers, 5% government officials and 5% equipment dealers. The category "company officials" ranges from lower level supervisors to woodlands managers, drawn from the numbers of companies that have existed during this period. We do wish to point out that this interview schedule was designed for a much larger research project; this Note is only one component of that larger work.

Ethnograph is a computer programme that provides for the analysis of qualitative data (such as transcribed interviews). One can use it to code the individual lines of the transcript according to whatever codes the researcher develops. For instance, whenever a transcript contains a reference to labour shortage, the line(s) can be coded as such. Once all transcripts have been coded, Ethnograph assembles all lines in all the interviews by their particular coded designation. For example, all lines coded as labour shortage can be printed out as a single unit of data available for examination and analysis.

6 Our discussion in this research note concerns tree harvesting on Crown land on the Miramichi, not the harvesting of trees on private woodlots (or company owned land, of which there is little on the Miramichi).

7 Bucking, or slashing, refers to the process of cutting a delimbed tree trunk into the appropriate lengths of tree pieces.

characterized by the employment of wage workers by either mill owners or contractors.[8] One, the *"log cut system"*, was designed to produce saw logs for lumber. The other, the *"trail cut system"*, was designed to produce short wood (pulp, pit props, etc). Both involved the same five basic work activities: 1) *felling* the tree, 2) *delimbing* (removal of the branches), 3) *slashing* (cutting the tree into appropriate lengths), 4) *yarding* (moving the wood from the stump to the roadside), and 5) *transporting* the processed wood to the mill.[9]

On the Miramichi of the 1950s and early 1960s saw mills were still king.[10] Thus the predominant tree harvesting production system employed was the *"log cut system"*, which was designed to produce the largest diameter logs of the greatest possible length. Individual trees suitable for saw logs were located, then felled, delimbed and cut into "random"[11] saw log lengths by a chain saw operator at the stump. These lengths of tree stem were skidded, or dragged across the ground, to roadside by a teamster and horse for transport by truck to the saw mill.

Prior to the ascendance of the pulp and paper mills on the Miramichi (a process commencing with the construction of a very large mill in 1962[12]), comparatively minor quantities of pulpwood were produced, primarily for export. The tree harvesting production system used was the *"trail cut system"*, which was designed to produce four foot pulpwood. Because tree diameter was less important, the most productive way to accomplish this was clear cutting. Using a chain saw, a woodsworker felled, delimbed and slashed the tree into four foot lengths of pulpwood at the stump. He then piled the wood into roughly cord sized piles which were loaded and yarded to road side on a jumpsled by a teamster and horse.

By the mid-1960s, as a result of the arrival of the large Acadia mill in Nelson-Miramichi, pulpwood production surpassed saw log production in importance. The demand for pulpwood would continue to rise from the mid-1960s onward as pulp mill capacity on the Miramichi was increased again and again, eclipsing the

8 Preceding systems were also capitalist. Woodsworkers were wage workers as far back as the 19th century.

9 These basic activities can be organized into a variety of sequences and performed in different combinations, thereby giving rise to specific tree harvesting production systems.

10 William M. Parenteau, "Forest and Society in New Brunswick: The Political Economy of the Forest Industries, 1918-1939", Ph.D. thesis, U.N.B., 1994, argues that pulp and paper production was predominant in most parts of the province by the 1950s. According to our sources, the situation on the Miramichi was an exception to this trend. Although various small pulp mills had been started in the Miramichi region as far back as the early part of the century, the Fraser mill, built in Newcastle in 1948, was the first significant one. The Acadia mill at Nelson-Miramichi, built by Italians (Carter-del Tomavo) in 1962, greatly augmented capacity. And the original Fraser mill underwent a major expansion in the mid-1960s. Prior to the construction of the Italian pulp mill and the expansion of the Fraser mill, the primary demand on the forests was to supply saw mills. During this period there was a limited demand for shortwood — pulp for export, pit props for mines and pulp for the small mill constructed in 1948. Shortwood became far more significant with the construction of the new mill and the expansion of the old.

11 Trees were slashed into the longest possible lengths permitted by the diameter of the tree (the smaller the diameter, the more difficult to cut lumber from it) and the strength of the horse.

12 See note 10.

demand for saw logs. Additionally, the company, seeking to enhance efficiency through reduced handling, exerted strong pressures on woodsworkers to cut eight foot rather than four foot pulpwood. Eight foot studwood created more value than four foot pulpwood.[13] And, as well as owning their own studmill, Acadia also supplied another studmill and a veneer mill from their Crown Licence. The solution was to cut trees to eight foot lengths and sort studwood and veneer from pulp on the basis of diameter. The advent of eight foot pulpwood, in turn, generated new problems demanding mechanical solutions.

The attempts at mechanization[14] on the Miramichi in the early 1960s focused on the log cut system, involving the use of mechanized skidders to replace horses, permitting the slashing of the tree length at roadside. This was a significant change in that the production activity of skidding was mechanized and the activity of slashing was relocated to roadside to be performed by a specialist. In short, the division of labour was altered; the feller now only felled and delimbed, no longer slashing at the stump.

Acadia management, in the 1966-67 season, adapted a skidder to produce the "pack rack" forwarder. In this embryonic new trailcutter system, woodsworkers felled, delimbed and slashed the tree at the stump, but the yarding of slashed wood was done mechanically. The cable and winch on the skidder was used to pull a pile of eight foot logs into the air. The pile was then strapped tightly to sheet-metal fenders attached to the back wheels so that it would not move as it was carried (forwarded) out to the landing at the roadside. This system was used by Acadia for three more years.

By 1970 the pack rack experiments had been superseded by the introduction of purpose-built forwarders. Forwarders, often called porters, are heavy duty, low slung, rugged terrain articulated 'trucks', with a large bay suitable for eight foot (and longer) lengths of wood and a mechanical loader to load and unload the wood. With the employment of the forwarder after 1969, all the elements of the modern trailcutter system were brought together. The labour process in this trailcutter system bears some closer examination. This system involves a three position division of labour: the trailcutter, the forwarder operator and the trucker. Additionally, the system incorporated managerial and supervisory activities in the positions of contractor and trailboss.

The trailcutter was assigned a particular "trail", a 75 by 1000 foot ribbon-like section of an approximately 100 hectare block of forest to be harvested. Each trailcutter worked exclusively on the trail to which he was assigned. A number of trailcutters worked parallel trails which together constituted the block. Using a chain saw, the trailcutter cut the tree down, delimbed it and cut it into the desired

13 Maximum utilization of the tree to produce the greatest economic value possible is often referred to as "best end use". This meant, for example, that as much of the tree as possible should be slashed into saw logs, and only the remainder used for pulpwood. One of our interviewees emphasized the necessity of cutting only eight foot wood when supplying both pulpwood and saw logs.

14 By mechanization we mean the introduction of machinery to actually perform the basic activities. Unlike tools — e.g. the chainsaw — machines subject workers to their operational requirements. The chainsaw is a powered tool, not a machine.

lengths. If trees were to be used as saw logs,[15] they were cut into 12, 14 or 16 foot lengths and left where they were felled. Trees destined to be used as pulpwood were cut into eight foot lengths and piled by hand into approximately half-cord lots. Productivity of trailcutters varied according to skill, experience and effort. Also of considerable importance were weather conditions and the species composition of the block. Working a nine hour day, the average trailcutter would produce four cords of processed wood ready to be yarded.

The forwarder operator would drive his machine up into the cutting area and load the wood piled by the trailcutters into the porter's bay using its hydraulic arm. Once fully loaded, the wood was transported to roadside. Here the wood was either "piled down" awaiting loading onto the truck, or loaded directly on to the truck from the forwarder by means of the forwarder's hydraulic arm (this is known as "hot-logging"). Forwarders were most often owned by the contractor and operated by wage labourers hired by him;[16] less often contractors sub-contracted this function to an owner-operator. Carrying three cord loads, forwarders could yard in the range of 20 to 70 cords per day, depending on operator skills and terrain. The usual ratio of trailcutters to porters was from a low of 10 to one to a high of 20 to one. Forwarder operators worked the same day as the trailcutters whose wood they yarded.

To harvest the large and growing quantities of wood required during the post-1960 expansion of mill capacity on the Miramichi, the trailcutter system depended on a growing labour force of multi-skilled workers using simple power tools, craft-like skills, and much hard physical exertion under varying and often severe weather conditions. Mechanization in the trailcutter system was, after all, limited to only two of the five basic production activities of forest harvesting, namely the yarding and transport of the already cut, delimbed and sized logs. Contractors' capital investment was comparatively low and large scale cutting required many trailcutters; the largest operations had more than 100 trailcutters on site at one time, all working independently of one another.

The high number of trailcutters on site at large operations and the "independent" and solitary character of their work process made supervision both difficult and critical to the contractor. Trailbosses represented the authority of the contractor in the field. As one large contractor observed: "... basically they had the right to do anything from hire to fire. They were totally responsible for the preparation of the wood". Trailbosses "walked the trail" twice a day, examining the area cut by each

15 Slashing for best end use became more and more the rule rather than the exception.

16 Both company and contractor owned systems operated on Crown Land. Over the years, the company gradually moved to provisioning more of its wood from contractors to circumscribe the effects of unionization and to take advantage of the higher productivity of private contractors. For example, in 1970 company owned operations provided 74% of the total volume of wood consumed by the company. By 1985, this proportion had declined to 31%, with remaining volumes provided by contractor owned operations and sublicensees. The figures on which these calculations are based were taken from the same data base compiled by the Woodlands Division of Miramichi Pulp and Paper Inc. used for Tables One-Three. Further evidence was provided by the comments made in an interview with a retired company woodlands official.

trailcutter, and making their presence felt. They sought to keep up the pace of production, while at the same time attempting to ensure that company and government regulations were met in the cutting (of both saw logs and pulpwood) and delimbing of wood. For instance, by walking the trails, trailbosses could ensure that stumps were not cut too high, nor tops too big. Trailbosses were also responsible for ensuring the trailcutters' compliance with evolving worker safety and fire regulations.

The contractor organized production by assembling the men and machines of the trailcutting operation. Contractors using the trailcutter model were not innovating new harvesting techniques, but mechanizing the yarding activity and assembling the "craft workers" — the trailcutters — on the job site. Contractors handled the administration of the business; handled relations with the company and state; managed equipment, parts and supplies; made the financial decisions and took investment risks; and often "filled in" any temporary holes in the operation as is common among the owners of "small" businesses.[17]

The advantages of the trailcutter system in the Miramichi woods during the 1960-1990 period were its low capital costs, proven and simple technology and worker acceptance. This level of mechanization, with its low capital costs, did not threaten woodsworkers' jobs, nor drive the many traditional smaller contractors out of business. But in an ironic way these advantages soon turned to fetters as the demand for wood continued to climb, ultimately leading to the supersession of this production system. Expansion of demand revealed the shortcomings of this system in that production could not be increased by expanding the number or the productivity of trailcutters.

According to all our informants, some mills experienced serious shortages in the supply of wood delivered to their yards in the early 1970s, a problem which continued, in varying degrees, throughout much of the decade.[18] Both company officials and contractors agreed that the problem was caused by a labour shortage. The tendency to construct a shortage of inventory as a "labour shortage problem" was scarcely new: the two had long been integrally related. Throughout the 1940s[19] and early 1950s[20] foresters had certainly believed there was a problem with the

17 We have examined the nature of contracting and the relations of the company with its contractors in some detail with an eye on the post-Fordist literature. We looked at the trend toward vertical disintegration of ownership between the company and its woodlands suppliers while maintaining, at the same time, a stable and highly dependent non-market relationship between the two. See Michael Clow and Peter MacDonald, "Post-Fordism in the Woods?", paper presented to a joint session of the Canadian Sociology and Anthropology Association and the Society for Socialist Studies, June 1993, Carleton University, Ottawa, Ontario.

18 We should point out that the crisis was not the result of an absolute shortage of trees, though the supply was further from the mill. When company officials refer to wood scarcity and depleted supplies of wood in the quotations to follow, they are not talking of ecological exhaustion but of a failure of wood to appear in their yards.

19 J.D. Duffie, "Woods Labour Policy with Particular Regard to Conditions in New Brunswick", M.Sc. thesis, University of New Brunswick, 1952, pp. 12, 17-18.

20 Howard J. Irving, "Labour-Management Relations in the Logging Industry with Particular Reference to Conditions in Eastern Canada", M.Sc. thesis, University of New Brunswick, 1953, p. 22.

supply of labour, which they attributed primarily to the lack of security arising from the seasonal nature of the work. There is no doubt that rates of turnover were very high, as older workers abandoned the industry when they found more stable employment, and were replaced by younger, untrained workers.[21] Moreover, far from solving this problem, the shift from a relatively small lumber industry with comparatively few workers to a growing "pulp and paper industry with the need for a far larger number of men who are, in a very large measure, seasonal workers",[22] would compound it. However, in the 1970s, this explanation masked a more fundamental problem — that of the inherently low productivity of the trailcutter system.

To understand the significance of that problem it is first necessary to understand the nature and dimensions of this crisis. While some companies, such as Consolidated Bathurst and St. Anne-Nackawic Pulp and Paper Company Ltd., experienced no such shortages, the Miramichi region was struck particularly hard. A news report from the Saint John *Telegraph-Journal*, dated 8 February 1973, illustrates the depth of the crisis:

> ...shortage of woodsworkers in New Brunswick has left some pulp and paper mills and sawmills with a shrinking supply of wood.
> ...E.T. Owens, secretary-treasurer of the New Brunswick Forest Products Association, described the situation as critical, with some of the mills being on "hand-to-mouth existence". Mills in the Miramichi valley appear to be feeling the pinch more than others...a sawmill operated by Ashley Colter Ltd., at Boiestown, north of Fredericton, was forced to shut down earlier this winter because of the lack of wood. Sixty mill workers were laid off.
>
> At Nelson-Miramichi, near Newcastle, the Acadia Pulp and Paper Co. Ltd. said its sawmill, which usually operates until June, would have to close this month.

Donald Wilson, in charge of the woodlands operations for the Miramichi Timber Resources Ltd. pulp mill in Newcastle, reported that "depleted wood supplies in at least two large local mills" had resulted in "conditions ranging from 'abnormally low' to 'critical'". "Under normal conditions", he commented, "the mill has a steady labour force of some 400 power saw operators... At last word there are no more than 50 to 60 power saw operators working in the woods".[23] The same article reported the observations of Ken Keith, manager of woodlands operations for Acadia's groundwood mill in Nelson-Miramichi:

21 *Ibid*, pp. 14-15, 17.

22 Duffie, "Woods Labour Policy", p. 12. For the marked shift from the production of square timber and long lumber to pulpwood production, see Gerrit Hazenberg, "An Analysis of the New Brunswick Lumber Industry", M.Sc. thesis, University of New Brunswick, 1966, Table Three, p. 20.

23 Saint John *Telegraph Journal*, 9 February 1973.

> ...as a result of this wood scarcity, there is only enough pulpwood to last until June 1, where normally at this time of year there would be sufficient wood to last until July 1. "This is considered to be abnormally low" he said..."Our saw mill which normally runs through June, will close in February because of a shortage of wood."

While running out of wood[24] represented a dramatic and catastrophic event, it was but a symptom of a broader, ongoing problem that was to continue throughout the decade. For instance, Fraser Company found itself regularly outstripping the harvesting capacity of its woodlands operation to supply its mills with wood. One interviewee reported that

> in 1977-78 they [Fraser's] could not get enough wood cut....The woodlands people were frantic, they were going to the settlements, the mayors of the communities, trying to encourage the men to go back to the woods. They offered more money, and unfortunately, everything hit at once — that was a really bad winter. So, even with more money for the cutters, it was just ridiculous for them to wade around in three feet of snow and try to cut trees.

Fraser was compelled to engage in a variety of *ad hoc* measures: borrowing wood, for example, to be replaced at a later time, from the Irving woodlands operations in the area, and hiring, on a temporary basis, contractors who had fulfilled their contracts with other companies.

Company officials universally blamed the crisis on the shortage of workers. Yet the source of the problem was far more complicated than this explanation would seem to imply. The expansion of mills on the River during the 1960s and 1970s created an increased demand for wood and thus for woodsworkers. At the same time, wood available in the vicinity of the mills and forest-dependent communities on the Miramichi was declining in both quality and quantity, requiring workers to live in deep woods camps. This limited the appeal of woodswork to potential workers.

Companies and contractors initially adopted the obvious strategy. They attempted to cope by hiring more trailcutters and by building more woods camps farther back from the Miramichi communities from which the trailcutters came. These strategies only exacerbated the problem. Hiring more workers was a "solution" which only addressed the appearance of the problem. The underlying source of wood shortage at this time was a severe *productivity problem* arising from both the social relations of production and the division of labour patterning the trailcutter system. If not for these inherent limitations on the productive capacity of the trailcutter system, this "labour shortage" would not have existed.

For Marx the central problem of capitalism is the subordination of workers to

24 Again this refers to the volume of wood in the mill yards; there was not a shortage of trees to be harvested.

the capital-labour relation. Historically this has been a multi-faceted problem, commencing with primitive accumulation whereby direct producers are separated from access to the means of production (through enclosures, etc.). Once a labour market has so been created, subordination of workers can occur. This begins with what Marx called the *formal subordination* of labour realized by the attachment of labour — and the maintenance of that attachment — to the production process by some form of wage relation. Typically there is, at this stage, little change in the actual organization of the labour process. Yet once capital has successfully achieved this, the stage is set for the *real subordination* of labour. By this Marx meant the actual ability of the capitalist to control the labour process of workers with the aim of increasing productivity. In classical Marxist thinking, this is usually accomplished by increasing the division of labour (simplifying the work individual workers do) and introducing mechanization to compel the worker to work at the pace of a machine whose processes control her actions.[25]

In establishing the trailcutter system on the Miramichi, capital confronted difficulties in imposing both forms of subordination. The problems in achieving the formal subordination of labour were manifested as the "labour shortage". This was not a labour shortage in the conventional sense, but rather a problem of maintaining the connection between labour and production on a sustained, routine and predictable basis. And without the formal subordination of labour, real subordination, characterized by employer control of the division of labour and relations of production, could not evolve.

Part of the "labour shortage" arose from the low levels of attachment by many of the workers to arduous woodswork. Many saw it as difficult and strenuous, characterized by relatively low status. For them it became only one part of the round of "occupational pluralism" through which they sustained themselves. This resulted in a bifurcation of the labour force. On the one hand, there was a relatively small productive group of "full-time" workers characterized by regular work and a strong commitment to woodswork. On the other, there was a relatively large number of "some-time" workers, utilizing various income generating strategies. Not surprisingly, a relatively small proportion of the total workforce produced much of the wood cut under this system, while a much larger number of workers was needed to cut the rest. One contractor, producing about 30,000 cords of wood per year in a trailcutting operation, observed that "...you could have probably 20 men that would cut half your wood, and then it took another hundred to get the rest of it".

Despite their best efforts, it was difficult for contractors to induce this latter group of irregular workers into a steady, full-time, all-season commitment to wood harvesting. Contractors complained of what they saw as a frivolous commitment: "... as soon as the bad weather came in the fall, we couldn't keep anybody in the woods. You could always keep some, but there were some people who liked to hunt or fish or whatever". While the most productive group of workers typically worked a five day week during the entire cutting season, including the fall and as long during the winter as possible, a much larger group worked on a more irregular

25 See Karl Marx, *Capital, Volume I* (Moscow, nd), Part IV.

basis, often working three day weeks or only for brief parts of the year in woodswork as one component of a larger variety of work and income-related activities. One contractor provided this striking account of the impact of this irregularity of the workforce on the costs and returns involved in the operations of deep woods camps:

> I saw that crew there — 118 men, a clerk inside, two bookkeepers, a cook and a cookee, they'd come there and on Sunday night there'd be a couple of men ready to go to work. Monday morning they would come and there would be another 10 or 15 show up. So, at breakfast perhaps you would have 25 men out of 118. During Monday, there would be more men show up. By Monday evening, for supper, the 115-118 men would be there. Then they would work Tuesday, Wednesday, and Thursday, 75-90 per cent would leave Thursday night to go home. Come Friday there was the cookee, the clerks, and the office staff, all getting paid and only half of the men there to cook for. So actually what you had, you had a five day work week and you got approximately, at the best, three to three and a half days.

Attempts to expand production using the trailcutter system magnified this failure to achieve the formal subordination of a significant proportion of the work force. In the absence of alternatives, contractors were compelled to rely more and more on these "some-time" workers. As one contractor argued:

> ...at the time there was no alternative. The only thing they could do was to try their best to convince the men to work. At that time they paid them extra money, they tried pretty near every gimmick in the book — as far as I was concerned — to keep the men working....rather than doing a day's work they mostly only wanted to work three days a week. Even at that they made big wages at the time.

The difficulties in imposing formal subordination seriously decreased the overall productivity of the trailcutter system as a whole.

Even the regular presence of workers at their trails could not have ensured high levels of productivity. All our interviewees, whether workers, contractors or company officials, agreed that innovation in the woods has been propelled by the effort to create more productive, lower cost methods of tree harvesting. But in attempting to maximize the productive value of each trailcutter, contractors were confronted by the set of constraints inherent in the labour process of the trailcutter system itself. Here the issue of the real subordination of labour arises.

While many of the part-time workers considered trailcutting a difficult, strenuous, low status occupation, other, full-time workers were attracted by the considerable autonomy it offered. The design and articulation of jobs in the trailcutter system relied on a large number of multi-skilled workers who individually and independently performed three of the basic work activities (felling, delimbing and slashing). Jobs, then, were not fragmented; the expending of both

the quantity and quality of labour-power was subject to the discretion of the individual direct producer rather than to capital. Though capital, in the person of the contractor, assembled both labour (trailcutters) and machines (forwarders), it had difficulty in subordinating these workers to the production process itself.

Because trailcutting required a single individual to fell, delimb and slash, a relatively high degree of skill and a capacity to direct his own activities were required of individual workers. To minimize the inevitable problems of the tangle produced by felling and delimbing, careful planning was necessary. To best position the angle of the felled tree to permit easy bucking, planning was necessary. To minimize the amount of lifting and moving involved in piling for the porter, planning was necessary. When a large number of trees were located in a small space, planning was even more necessary.[26] A trailcutter describes this eloquently:

> For a pulpcutter, a young fellow starting out and cutting pulp, it's an awful knack to it....There's a knack to how you start out on your trail. See, a good man in the woods, a good pulpcutter, he knows where the next 10 trees are going to fall. He has the next tree — he has them all planned out. When he's limbing up a tree he knows where the next four or five or 10 trees are going to fall, because he's looking around for a place to fell them. He has it all planned ahead. A good pulpcutter knows where to pile his pulp. Where to fall his brush. Then you have to watch out for the widowmakers. Old hanging tops in a tree, a dead stub. You are always watching out for that stuff — there's so much danger in the woods.

Not only the accomplishment of the job but also its pace and speed were dependent upon the initiative and discretion of the individual trailcutter instead of management. Not surprisingly, trailcutters prized the autonomy afforded by the craft-like social characteristics of their work. One trailcutter expressed this as follows:

> Oh, the fresh air, just the nature, you know what I mean. You are your own boss. If you want to sit down and have a smoke, or if you want to stop your saw and just travel through the woods — there's no one over your back saying "you have to do this or that". When you have a trail of wood, 75 feet wide and a 1000 feet long, that was yours. And if you wanted to work hard at it you could make good money at it. You could come and go as you wanted to.

Thus, throughout the 1970s, precisely during the period of the "wood supply" crisis, there seems little doubt that these full time trailcutters found the job satisfying.

26 Contrast this with a later harvesting system in which the worker only felled trees. Clearly the required degree of skill would be less, as would the amount of self-direction and planning. Moreover, the management function would be much simpler.

Two men, both trailcutters in the early 1970s, interviewed together, recalled their experiences, each reinforcing the other, providing richer data as a result. Their oral histories are illustrative of very positive sentiments (even in the face of its strenuous and unpleasant nature) trailcutters had about their work situation:

> Interviewee 1: Everybody worked in the woods. It's one of the best trades going. You're your own boss. The more you put into it, the more money you make.
>
> Interviewee 2: It's like [name deleted] was saying, you were about one of the highest paid workers around. You went and you worked and you made a lot of money.
>
> Interviewee 1: That's right. That's right.
>
> Interviewee 2: Like I said, if you were tired and wanted to go home at 3 o'clock, you went home.
>
> Interviewee 1: Oh, yes, it was a good life.

This autonomy from capital provided by the multi-skilled nature of the trailcutting job was augmented by the manner in which this production system operated. Individual trailcutters were assigned their own trails, which "belonged" to them. Trailcutters could not work one another's trails. This meant that the pace of work could largely be determined by the individual trailcutter. Forwarders were assigned to 10-20 trailcutters. Each forwarder then simply moved from trail to trail until completely loaded. In other words, it was independent of the quantity produced by individual trailcutters. Whether it had to traverse seven or nine trails to become loaded was of little significance. The theoretically important way to make this point is to observe that forwarders failed to convert the pace of the individual trailcutter's work to that of the machine. It was almost as if forwarders were designed not to reveal production imbalances.[27]

Conversely, this autonomy or absence of real subordination of labour proved exasperating for contractors. One contractor, operating the system that supplanted the trailcutter system (which involved using a mechanical slasher at roadside rather

27 The technological history of the forwarder is most interesting in this regard. In its early iteration, the machine was designed to winch pallet-like loads assembled by trailcutters into its bay. Field trials quickly revealed that in low density stands trailcutters were unable to produce full pallets. Forwarding partially full pallets had grave effects on the productivity of the machine. Providing the forwarder with its own loading arm solved this problem. But it also made the machine independent of the productivity of individual trailcutters. Production balancing was "solved" by not addressing the question of trailcutter productivity. For its developmental history see C.R. Silversides, "Logging Mechanization in Eastern Canada", unpublished and undated manuscript contained in L/C SD 388 S561, FERIC Library. The key reference on forwarding is B.J. McColl, "The Forwarder Concept", Woodlands Research Department, Pulp and Paper Institute of Canada, WRI#108, 1958. This too is contained in the FERIC Library.

than a trailcutter who slashed the tree into lengths), conveyed this sense of frustration in his comparison of the two systems:

> ...one of the things that I have changed is that I have a slasher, which gives the cutter an opportunity to bring his wood out and just pile it at roadside. ...Then I can slash it and cut the logs and pulpwood as required. Before this [under the trailcutter system], it was left up to the man to cut the logs out of the trees and he decided himself. In many instances you had people who were cutting pulpwood rather than logs and some were cutting logs where pulpwood should have been cut. Now, rather than trying to explain it and look after an extra 30 or 40 men, you have only to look after two slasher operators, which will decide whether we want more logs. You can't cut a log where there's not one, but at the same time if you want it down to a six inch log, they can do it for you. If not you can reprimand them for it, make sure that they do it.

Contractors' dependence on a large number of comparatively independent trailcutters created not only supervision and management problems, but also made it very difficult to increase the productivity of individual workers. The organization of the labour process itself rendered contractors and company operators dependent on the skill and knowledge of largely autonomous workers. Moreover, the forwarder did not convert their pace of production to the pace of the machine. In the face of these constraints, it was impossible for contractors to speed up the work process to extract more surplus value from the trailcutter. The result was the crisis of wood supply.

In attempting to improve labour productivity then, capital was confronted with problems in imposing both the formal and the real subordination of labour within the labour process of the trailcutter system. Only reorganizing the work process to facilitate mechanization could both reduce the number of workers required and tie their pace of labour to the machines with which they worked. The resolution of this accumulation crisis required new production systems better able to subordinate labour. New harvesting systems were required to move beyond this impasse and create greater productivity per man employed in the woods. This need to further subordinate labour to the contractor or the company manager was the origin of the drive to further "mechanize" woods operations beyond the levels achieved in the trailcutter system.[28] Inevitably, such a strategy of mechanization served to

28 In this light it is most interesting to observe that the Woodlands Section of the Canadian Pulp and Paper Association (now FERIC) was almost obsessed with mechanization, especially since World War II. C.R. Silversides, "Mechanized Forestry, World War II to the Present", *Forestry Chronicle* (August 1984), argues that it was a "driving force" in the development and evolution of logging machinery (p. 234). Chief among their concerns was a predicted labour shortage and a concern with minimizing costs by maximizing productivity, itself exacerbated by the small trees characteristic of the Eastern Canadian forest. To that end, in 1927 they employed Alexander Koroleff, who was the very first to apply the Taylorist techniques of industrial engineering to woodlands operations. (See C.R. Silversides, "The Impact of Forests Operations and Techniques upon Forest Mechanization in Eastern Canada", *Medd. Nor. Inst. Skogforsk*, 41,16 (1988), pp. 233-50.) In *Pulpwood Skidding*

undermine the autonomy and skill of the trailcutter.

The transformation of the trailcutter production system was realized firstly through a process of breaking down the stages of felling, delimbing and slashing the tree, and secondly by mechanizing them.[29] As mechanized harvesting systems harvested more of the total volume of wood, the trailcutter system was gradually displaced. Although the first wave of mechanization occurred in the early 1970s, the trend became pronounced in the 1980s. The evolution of this trend is documented in Tables One through Three, utilizing data compiled by the Woodlands Division, Miramichi Pulp and Paper Inc. (This is the northern portion of the Crown Licence currently operated by Repap.) Table One presents a general picture, documenting the volumes of wood harvested and number of workers employed.

Table One:
Wood Harvested and Workers Employed

Year	Volume (Cords)	Workers
1970	149 965	757
1975	238 892	696
1980	165 756	376
1985	320 764	584

Table Two examines the volume of wood produced both by the trailcutter system and by mechanical systems (calculations are by the authors).

with Horses: Efficiency of Technique (Woodlands Section, Canadian Pulp and Paper Association, 1943) and *Pulpwood Cutting: Efficiency of Technique* (Woodlands Section, Canadian Pulp and Paper Association, 1947), Koroleff reported on time and motion analyses he had conducted using the different techniques, including non-working time. Perhaps his most important work was *Full-Tree Logging: A Challenge to Research* (Woodlands Research Department, Pulp and Paper Research Institute of Canada, 1954) for this was the class of tree harvesting system most susceptible to mechanization. The most significant organizational moment was the creation of the Mechanization Steering Committee by the Woodlands Section in 1947. In the context of this paper, its most important product was Project E, commencing in 1951, the rubric within which the concept of the forwarder was intellectually invented and technologically implemented with the development of the Bonnard Prehauler. See B.J. McColl, "A Systems Approach to Some Industry Problems" (Woodlands Section, Canadian Pulp and Paper Association, 1969), in which he reflects on those experiences in which he was so intimately involved. (All of the above references are located in the FERIC Library.)

29 See Michael Clow, Aloysius Hayes, and Peter MacDonald, "Contrasting Paths of Development in Tree Harvesting Systems on the Miramichi", paper presented to the Political Economy Section of the Canadian Political Science Association, 1992 Annual Meetings, University of Prince Edward Island, Charlottetown, P.E.I. The important property of the trailcutter system was its inherently low productivity due to manual processing (felling, delimbing, slashing) at the stump. See J.A. McNally, "Mechanization in the Woods: from the 1930s to the 1970s", paper presented at the 59th Annual Meeting of the Woodlands Section, Canadian Pulp and Paper Association, Montreal, 1978, p. 5.

Table Two
Percentage of Wood Volume Produced by Type of Tree Harvesting System

Year	Trail Cut	Mechanical	Total
1970	83%	17%	100%
1975	91.2%	8.8%	100%
1980	62.3%	37.7%	100%
1985	45.5%	54.5%	100%

With the exception of 1975, the pattern is uniform. Recall that the 1975 figures embody the first response to the "wood supply" crisis, the hiring of more trailcutters. Only later were more mechanized harvesting systems introduced as an attempt to cope. As Table Two indicates, these mechanized systems were producing the majority of the volume by 1985. Finally, Table Three portrays the changing trends in productivity (measured in cords per worker per year) in the two types of harvesting systems (calculations are by the authors).

Table Three
Productivity by Type of Harvesting System

Year	Trailcutter	Mechanical
1970	173.6	385.2
1975	295.6	354.8
1980	385.0	579.4
1985	251.6	1015.9

The superiority of mechanical systems becomes clearly evident in the 1980s as the harvesting systems became both more mechanized and more sophisticated. The likely reason for the decline in productivity in the trailcutter system by 1985 is the assignment of trailcutters to areas too difficult for mechanical harvesters.

This transition from trailcutting to mechanized systems was certainly evident to the workers themselves. Our interview with the two trailcutters mentioned earlier made this emphatically clear:

> Interviewee 2: Mechanical operations didn't start to dominate until 1983.
>
> Interviewee 1: Yes, she started to swing in the '80s. The man with the power saw — the pulp cutter — he was gone. They were starting to whittle him out.

Trailcutters experienced this transformation as a gradual degradation of their work.

Over time, trailcutters found themselves on trails characterized by lower volume as they were assigned the more difficult terrain where machines could not work productively:

> Interviewee 1: I had to work 14 weeks, I think it was, to get 10 big stamps. You couldn't make a big stamp a week. Too much walking. Where we cut had been where the harvesters had shut off...It was a big hardwood ridge and they couldn't cut it with the harvesters...so they would get the pulp cutter to cut that. We got what was left over. What nobody wanted, we got to cut.

The price per cord received by the remaining trailcutters failed to keep up with increasing costs of gasoline, safety equipment and other costs they had to carry, as well as the general inflation in the cost of living.[30] Increasing safety and environmental regulations also made trailcutting more difficult and less autonomous:

> Interviewee 1: There were too many bosses at the last. There were safety men and a foreman and they were all trying to tell you how to cut pulp. You weren't cutting your stumps low enough or you weren't putting the right notch in the tree to fall it...leaving too many big tops. All this stuff.

And finally, as more mechanized systems spread throughout the woods, trailcutters found it increasingly difficult to find enough work to become eligible for unemployment insurance. Trailcutting had ceased to be a remunerative and desirable job. As Interviewee 1 put it: "I was forced to quit. I couldn't make any money".

By analyzing the trailcutter production system in terms of its labour process, a process constituted by a particular division of labour and associated social relations, we have attempted to provide a way of determining the underlying dynamics governing both the rise and especially the decline of this production system. The answers provided by this type of interrogation equally offer a foundation for comprehending what followed this decline, a process which can appropriately be described as the industrialization of tree harvesting production systems on the Miramichi.

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30 Our two interviewees complained that the price per cord has risen only from $16 to $25 per cord during 20 years of inflation in the Consumer Price Index.