

ACTION RESEARCH AT MACKENZIE

EXPERIENCES OF EMPLOYEE PARTICIPATION IN DECISION-MAKING

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FOREWORD

If only everyone looked at his job as a career, as a major and exciting part of his life, instead of as a kind of jail sentence to be endured for eight hours a day in order to survive. If the workforce knew all the aspects of the business, like the importance of good productivity, of reducing costs, of high quality workmanship, and of the importance of being able to compete in a worldwide marketplace, we wouldn't have so many of our problems in Canada today.

Other managers may feel these things, and may also be frustrated by their inability to achieve sufficient improvements using the conventional system of plant management. I believe that through our experiments in 'C'-Mill, at Mackenzie, B.C., we have shown that the manager can share his time and experience with the workforce, and by using a very specific method, significantly change the attitude in the workplace and markedly improve the results in his operation.

John Hards,
'C'-Mill Manager (1975-77)

The main change which the research has brought is a better communication between all workers and management. I feel that more could be achieved with further work, though it has often seemed a battle to keep the process going without the help of an outside researcher.

I believe what we have done is to lay the groundwork for the future.

Harvey Traux,
President, Local 18,
Pulp, Paper and Woodworkers of Canada.

EXPERIENCES OF EMPLOYEE PARTICIPATION IN DECISION-MAKING

This report has been prepared in collaboration with the union-management Steering Committee of 'C'-Mill, Mackenzie Sawmill Division (British Columbia Forest Products Ltd.). It is a review and evaluation of a year-long development of a participative process that involved workers and managers in joint decision-making at the plant level. The report gives special emphasis to the personal experience of that participative process, from the points of view of both managers and workers, relying extensively upon excerpts from tape-recorded interviews with 'C'-Mill personnel. Sponsorship of the report has been shared by British Columbia Forest Products Ltd. and the federal Department of Labour in the hope that this experience will illuminate for others in the company, for other locals of the trade union (Pulp, Paper and Woodworkers of Canada), and for other parts of industry in general, the process of personal and organizational change that is implied in any such initiative to improve the quality of working life. The report has also provided the researchers with an opportunity to reflect upon their own role and effectiveness in helping to develop action research capabilities within work organizations.

A Diagnostic Study of Labour Turnover

Action research began in Mackenzie with the joint resolve of a company, a union and a research organization to find and implement solutions to a problem of labour and community turnover experienced throughout the BCFP Mackenzie Division. Mackenzie, in north-central British Columbia, is the site of one of the most northerly sawmill-pulp mill operations in Canada. It is also one of the most modern and now includes three sawmills, one large pulp mill and an extensive logging operation. Adjacent to the sawmill-pulp mill complex is an "instant town" developed in an attempt to overcome the problems of a transient labour force so typical of old-style frontier operations and of many parts of the wood products industry in particular. In spite of all this, labour turnover in the Mackenzie sawmills was running at an annual rate of 200% in the period 1973-74.

In early 1974, the Company and unions involved in Mackenzie (including the Canadian Paperworkers Union and the Pulp, Paper and Woodworkers of Canada) collaborated with a research team from the Tavistock Institute of Human Relations and B.C. Research* in a diagnostic study of the labour turnover within the Mackenzie mills. In brief, this study found that job-related factors had a most pronounced effect on labour turnover. The work itself, the tasks that people did, and the ways in which they were managed were all major determinants of labour turnover.(1)

A Tavistock-B.C. Research proposal suggested a program of action research, consisting of job design projects and supervisory skills development, to be conducted over a twelve-month period, but with the option of terminating the work after a review point at three months. BCFP agreed to support this proposal at least to the review point. However, as a result of a series of setbacks, including a major re-organization and a strike, the action research program was postponed several times throughout 1975.

A Demonstration Phase

In January 1976, a year later than originally planned, a "demonstration" phase of action research was finally launched in the Mackenzie Sawmill Division. The program was coordinated by a steering committee representative of the company, the union, the research organizations,** and the federal government manpower department which had provided financial assistance. The Committee advised on many aspects of the program, as well as providing a constant safeguard to the respective interests of management and union which could, by the withdrawal of their support, exercise a veto and terminate the program.

* B.C. Research is the research arm of the British Columbia Research Council, a non-profit, industrial research institute located in Vancouver, Canada. The Tavistock Institute of Human Relations is a social science research institute centered in London, England.

** The field researchers "on site" were Don Bryant of Tavistock and the author, Bert Painter, from B.C. Research.

During pilot and review phases of three months field work, the two-man B.C. Research-Tavistock team worked with employee-management groups to analyze problems of the workplace, to implement proposed changes, and to monitor results. As a demonstration of the action research process, work was concentrated in one mill, 'B'-Mill, and with one "experimental" shift which consequently showed significant improvement in morale and productivity.(2)

Review of the "pilot" program continued for several months within the Mackenzie wood products division. It was an opportunity for union and management representatives to make an informed judgment as to whether action research was indeed an approach they wanted to use in their operations. In discussions at the steering committee level, local union representatives now expressed positive support for the continuation of the program, after an initial "wait-and-see" attitude. Of the three sawmill managers, one withheld his commitment to the program on account of his sudden promotion to another division of the company; a second manager made a decision not to implement action research within his organization because of plans for major personnel changes which he did not wish to disrupt. The third manager, from the newest of the Mackenzie sawmills, 'C'-Mill, approached the research team with a proposal that the action research process be employed in a different and more extensive way in 'C'-Mill as a form of employee-management consultation and decision-making at the plant level. The workforce, supervision and mill management would participate jointly in the analysis and solution of day-to-day problems in the work of the mill.

It would be more than a matter of "getting people together". The action research process would involve mill supervisors, superintendents, the mill manager and the crew working as a group with the shared task of finding and implementing solutions to get the mill running as smoothly as possible. It is important to realize that specific objectives were developed, experimental changes were agreed upon for trial implementation, and methods of evaluating results were developed. This was not done by the crew alone, nor by the manager himself. It was done jointly, and there was seldom any doubt in anyone's mind about what changes were being made in the mill or why.

The Participation Project in 'C'-Mill

Before anything could be done however, the mill manager and the action researcher had to talk about their own expectations for this implementation phase. In the words of the mill manager:

"I had become frustrated with the hierarchy.....I would ask people to do something; sometimes they did it, sometimes they didn't. Not a lot seemed wrong with the mill itself, and the people seemed okay, but I knew we could be doing better."

"Through the action research, I began to understand more of the motivation of people and their feelings about the job as undesirable work. People weren't looking at their job in context: when you look at the sawmill as a 'total' thing, it is an interesting place. And yet, the 'system' doesn't let people in the mill see it that way."

"The purpose of the action research program was to get the crew and ourselves to work as a group towards an objective that we could all agree was a good one."

From the perspective of the manager, action research appeared to be a way of solving problems that had been insurmountable in the past. The expectation of the mill manager was that participation by employees could generate an improvement in all aspects of performance including safety, quality, cost control and production. The feeling at the outset of the project was that 'C'-Mill was not performing as it could.

As well as his basic concern for the level of production, the mill manager expressed his conviction that:

".....working in the sawmill should not be like a jail sentence that we endure in order to live.....(it) should be something that we enjoy doing and get some satisfaction or feeling of accomplishment from."

This value in the quality of life on the job was closer to the researcher's own expectations that participation would provide workers with greater control over their tasks, and the opportunity to relate those tasks to the work of their fellow employees.

At the same time, improved performance was not irrelevant to the researcher's expectations. Insofar as performance could improve from participation, previous research has shown that such achievement is a source of significant job satisfaction. One of the main research findings from the 'pilot' program in Mackenzie had indeed been the high correlation between workers' own feelings of job satisfaction from a given day's work in the mill and the simple measure of output (in board feet of lumber) for that given day of production.(3) In discussion of this data, the 'experimental' shift of 'B'-Mill concluded that both their performance and satisfaction on the job were being critically affected by down-time in one of the key work areas. The reduction of this down-time by a specific and appreciable amount became a target set by the operators themselves in cooperation with their supervisor.

The Research Partnership

From this example of the earlier 'pilot' program in 'B'-Mill, the researcher and manager of 'C'-Mill now identified down-time in the operation of the mill as the general problem on which they could effectively collaborate. Down-time was a factor which had very significant consequences for production at the same time that it affected the satisfaction of workers on the job through the disruption of the even and controlled flow of work. This was an objective which appeared to have an evident pay-off for both the workforce and management. Through this process of problem identification, the partnership became established between the quite different perspectives of the researcher and mill manager. They were able to form a collaborative relationship based upon a respect for each other's distinctive competence and acceptance of (but not necessarily agreement with) each others values.

The initial anxiety felt by a manager in approaching the workforce on a collaborative basis often arises from the question whether people in the organization are really "with us". However if there is a sufficient degree of openness and trust between researcher and manager, action research can be regarded as a means for a manager to inquire into and respond to this question of commitment. The support which a manager

and researcher must offer one another in the course of the research also serves as a continuous experience from which both parties can learn more about the management function in a collaborative process.

Already, the 'C'-Mill manager had begun to redefine his role so that he became more of a researcher and resource person himself, using the knowledge and power of his position to support and involve others in the solution of problems. This was the first step in the process of establishing action research as an integral, on-going part of life within the organization, instead of as a temporary "outside" intervention.

The mill manager and the outside researcher (on-site ten days out of a month) now functioned as a new research team.* During the following months, manager and researcher worked closely together, planning and reviewing the research, and jointly leading meetings with staff or the action research groups. At this early stage, however, the essential requirement for the research team was to obtain sanction to conduct the action research from key parties within the organization. The research team therefore met with 'C'-Mill union representatives and members of the superintendent and supervisory staff to develop a steering committee which would oversee and help coordinate the action research. (The eventual membership of the 'C'-Mill Steering Committee included two union representatives, two superintendents and the mill manager and the researcher.)

The mill manager explained to the Steering Committee his objectives for the improved performance of the mill and his desire to involve the workforce and supervisory staff in the solution of problems in the day-to-day operation and maintenance of the mill. He proposed that the process of action research demonstrated earlier in Mackenzie be adapted in 'C'-Mill to provide the instrument for this shared decision-making and planned change. He asked for the Committee's support and guidance on how to proceed with the implementation.

* From the original research team, Bert Painter of B.C. Research remained "on site" researcher, while Don Brynat of Tavistock continued to provide consultation "off site".

Union representation in the Committee included the President of the Union local for the total Mackenzie Sawmill Division, which had already given its support to the action research program. Amongst the company's supervisory group, sufficient understanding of the action research process had been gained from the 'pilot' program that they could also offer initial support to the implementation of action research in 'C'-Mill. As a committee, the steering group recommended that a general meeting be held with the total workforce and salaried staff to launch the project. Agreement was also reached on some essential house-keeping items. Workers were to be paid for their participation in any meetings outside of normal shift work hours, while foremen were to be granted compensatory leave in lieu of payment. However, participation for everyone was to be clearly voluntary. (To the present day, these terms and conditions of participation apply in 'C'-Mill.)

All of this preparation took time, but it was necessary to consult with the various organizational levels and interests, in order to develop a consensus that would enable the research team to construct a new kind of institution within the organization. The institution was the action research group that brought individuals together on non-hierarchical basis to complete a joint action research task. The final part of the organization which had now to be contacted was the mill workforce, where one of the very reasons for this new approach was the general difficulty of communication amongst a crew, and between supervisors and the crew, who were spread out across a large, noisy shop floor.

Developing the Action Research Teams

At four o'clock on a hot afternoon in July 1976, the heavy machinery in the sawmill of the 'C'-Mill Mackenzie was shut down between shifts for an extraordinary general meeting. Approximately one hundred machine operators and maintenance workers were gathered with their chargehands, shift foremen and superintendents into a crowded lunchroom above the shop floor. It happened to be the first time that the people

of the sawmill had met in the work context as the one large group which is charged with the responsibility of running a mill. The crew is usually divided into two shifts of production workers and three shifts of maintenance. On the job, individual production workers are scattered along several hundred feet of heavily-mechanized production line. Finally, this total group of sawmill workers is separated from the rest of the 'C'-Mill population (another 100 persons) by a physical division of the overall production process into the sawmill operation, dry-kilns (where the rough, green lumber is dried), and a planermill (where boards are made into finished lumber).

The meeting of July 6th had been called by the 'C'-Mill manager to announce an agreement between the union, the mill management and B.C. Research-Tavistock. The agreement was to develop a process by which the workforce could participate with management in the diagnosis and solution of work problems in the mill. The process was referred to as action research. The objective, as stated by the manager, was to get the mill running as smoothly as possible.

The mill manager had defined a new task for the organization and a new way for the organization to go about its work. He proposed to give the workforce an opportunity to participate in the management of the mill. It would provide a chance to learn about all aspects of the mill. The mill manager would still be the accountable leader of the organization, but there would be a spreading of responsibility. The question was whether members of the workforce would choose to assume that responsibility. In other words, would workers see this new way of relating as something in their own interests?

Clearly, there were differing views and expectations. Most workers were bewildered by the opportunity:

"Before this, the company never turned to the people.....if our machines weren't running like they should, unless they completely broke down, that was our tough luck.....So, no one cared, and so, the company never really found out what was going on."

"It was a surprise to me that they wanted us to get involved."

"As a chargehand, I didn't know what to expect.....I went along as an observer."

"It was a chance to work on problems that we were having day-after-day, but which got taken for granted."

"The people who got involved were those who wanted a challenge."

Some workers were frankly suspicious:

"I had trouble with the idea that the company was all of a sudden going to do things in a cooperative way."

"Production is the company's business.....problems are for the higher-paid help to solve."

"A lot of people took part just for the overtime pay."

During the next few weeks, representatives of the Steering Committee met with the various departments of the mill organization, i.e. sawmill and planermill, maintenance and production), and various shifts of workers and foremen within departments. From these meetings, the Committee was able to reach a consensus that the action research ought to start in the log infeed area at the front-end of the sawmill.

This was an area where it was felt that the most critical disruptions occurred in the work flow. The specific limits of this work area were defined by a set of operations which seemed to form a 'whole' task of transforming the raw material, tree logs, into rough lumber (that is trimmed and edged by another part of the mill to make a board of quality length and width). Several months later, the Committee did extend the action research into another apparently self-contained work area, the planermill.

Within the log infeed areas of the sawmill, the Committee now identified two groups to work on action research at the plant level. Each group was drawn from one of the production shifts and involved the workforce (eight machine operators from the log infeed area), one

production supervisor and a chargehand, the two mill superintendents representing production and maintenance departments, and the mill manager and the outside researcher as leaders of the research team. Invited to join this group were individual members of the sawmill maintenance crew, who worked on a shift schedule different from the production workers. The rate of actual participation was such that each action research team usually met as a group of 12 to 14 persons. Meetings were held for approximately one hour, immediately prior to or just after the work shift.

The teams were designed to be effective problem-solving groups, with the 'vertical' involvement of management providing a full scope of authority and knowledge of the organizational requirements of any change, while the combination of production and maintenance departments allowed for an examination of social and technical aspects of problems. When it was later discovered that a particular lower-paid production job was also critical to problems faced by operators in the front-end of the sawmill, the worker on this job was invited to join the research teams.

The first task of the action research teams was to develop a clearer definition of the problem. "Lost-time" records had traditionally been filled out by operators on each shift, although workers made no use of the records themselves and wondered if anyone else did. Many workers did not understand the old forms or found them difficult to use on the job. At this stage there was a good deal of impatience on the part of both workers and supervisors to disregard their old records (which they considered inaccurate and invalid) and move on to specific problems which they believed were causing disruptions and annoying stops-and-starts in the work. The responsibility of the mill manager and researcher as resource people was to indicate to the group that without reliable data on down-time it would be as difficult as it had been in the past to achieve a real understanding of the importance and cause of specific problems.

Over a period of a month, meeting once every two weeks, the research groups developed a procedure for recording problems and commenting on their possible causes. It was a procedure which the operators could understand and use in working towards a solution of their own problems. The time spent in this original design of the research allowed people in the mill to develop 'ownership' and therefore, commitment to the task. (Significantly, in the planer mill where pressure to start the research prevented the same time and care in developing a record-keeping procedure that "belonged" to the crew, commitment to the research task took longer to become established.)

The work of the action research teams in the sawmill now came to involve much more than participation at the group meetings. In the role as a resource person to the research teams, the outside researcher spent time in the mill and outside work hours, helping people identify from their own experience what might be the possible causes for many of their problems. These informal discussions were supplemented by the operators' own daily record of problems that helped workers identify more clearly what was happening on their job.

"The records made you look for things."

"We were more conscious of what was happening.....without the records, problems used to get lost."

The opportunity to express freely their ideas and complaints about some long-standing problems may have appeared to some workers like a new kind of "game" at work. However, workers began to understand that they were becoming involved in a new kind of work, that required careful thought and the development of cooperation with fellow workers and management personnel.

"We began to realize that what was going to make this thing tick was ourselves."

"At first, some people held back because of misunderstandings among fellow workers, but soon we were learning from one another, about one another's jobs."

Suddenly, the priorities of the mill began to change. More attention was given to the apparently "little problems" of operators:

"We started to let loose with our ideas....things we knew had been wrong for a long time but nobody had listened to."

"Maybe they were little things that no one saw because they didn't seem to hurt production....they just hurt the guy who had to fight the machine everyday."

"The important thing is that these were the crew's ideas....we had a chance to express ourselves."

While the machine operators were becoming increasingly involved and able to use the research to their benefit only a few of the sawmill maintenance workers continued to participate actively. The study and solution of problems in one specific area of the mill did not directly coincide with the interest of maintenance workers who were responsible for the care of machinery in the mill as a whole. More importantly, sawmill maintenance crews did not rotate on the same shifts as production workers and did not, therefore, share the problems of a specific operating crew.

What may often be overlooked is the fact that participation is a process that takes place within a group in whose objectives members must be able to share an interest. Maintenance workers did not however see themselves as participants in the groups defined by the original action research teams, since the objectives and concerns of these groups were not theirs, but rather the problems of production workers. Yet, once action research began within the maintenance department itself, maintenance workers started to participate actively regarding problems which they 'owned' and had a clear interest in resolving.

The Participation of Management Personnel

Though in its origins, the 'C'-Mill project may have concentrated upon the development of employee participation, the wants and needs of management personnel were also critical. The new initiative of the workforce did indeed present a new experience for the management group, some of whom, in this early period of the research, began to question their own commitment to the process.

"I didn't realize how much time would be involved.....I was also unprepared for the initial meetings which seemed like 'bitch' sessions."

"The crew seemed to expect that we could act on all these problems at once."

"No matter how strong a leader you are, it is difficult to face the fact that people don't necessarily think you're doing a good job."

Many of these feelings were shared by the mill manager himself, though having initiated the process, he was perhaps more prepared for the experience than some of his supervisors and superintendents who felt the pressure of a shift in the 'balance of power' within the organization. In the words of one supervisor, "management had to put up or shut up."

Many of the supervisory-superintendent group remained puzzled and genuinely disappointed by the fact that the problems of workers had not come out before the use of action research:

"They should have gone through the proper channels.....there is no reason why they should have to come out in a meeting.....people are just not willing to take the responsibility to go themselves and get action on their problems."

The stress or confusion felt by members of the management group was primarily due to the change in leadership style implied by the participative process. One of the major concerns for management personnel was the amount of time involved in reaching decisions through a consultative approach.

"It took a while to get used to the time it takes to listen to people, but coming through the action research, I learned the priority of listening.....without listening, you don't get the real cooperation; you don't know what's going on."

"The old traditional way is that the supervisors-superintendents-managers are the bosses. The operating people run the mill the way that management wants it run.....Rarely, and in some plants never, are the crew, foreman, superintendents, and managers present to discuss general problems to do with the running of the mill. If such a meeting is held, the manager usually makes a speech and there is little if any two way communication.....I think we've changed that in 'C'-Mill. I think the mill is being run with the cooperation of people because they have a lot to contribute".

What was often learned in the course of the action research was that joint decision-making can develop the kind of commitment which is more likely to make decisions lasting and effective in their implementation.

"I had to program myself to go with the action research rather than against it. I used to think that I didn't have time for all the meetings and discussions, and then, I began to think that maybe my job had more to do with action research than some of the other things that took up my time."

"I didn't think I was losing control as a supervisor, but I was finding out a lot more about the problems that people had and that were never out in the open."

Even in the early stages of the program, it became clear that the quality of participation of the workforce depended greatly on the participation of management through their style of leadership. Participation is indeed a joint undertaking of management and employees.

"At first, we didn't know if the managers really cared about the action research, but later, they started to ask the right questionswe got more involved because we knew they were more involved."

"The managers started to open up.....they admitted their problems too, and because of that, I gained a lot of respect for some of the managers."

However, as one worker cautioned:

"The change in behaviour is only starting. The managers are becoming involved with the crew, and the crew is only becoming more relaxed and confident in their jobs because they can feel a more definite communication with management.....but really, you don't see fantastic changes at once. This kind of thing has to go long enough for people to program themselves differently."

The rewards to be gained from this change perhaps came more slowly for most supervisory staff than for the workforce. As one first-line supervisor commented:

"I wasn't impressed at first, but eventually the research created a more workable atmosphere.....both supervisors and production people came to understand each other better, not individually perhaps, but as a group."

"As a supervisor, I'd say it brought top management down to earth."

Consensus and Power-Sharing

Summaries of the records kept by operators were compiled by the researcher once every three weeks. The mill manager then decided upon the time to convene a meeting of the action research teams in order to conduct a shared analysis of the documented problems and to search for a consensus on the possible solutions. If consensus was not possible, no action was taken. If, as in one instance, a trial change did not prove beneficial, conditions were returned to their original state.

Existence of actual data on the frequency of problems and the lost time provided a common basis for discussion and decisions on priorities. The requirement that ideas be tested by trial implementation afforded another degree of objectivity and sense of fairness that freed-up further expression of ideas. Ideas were no longer judged essentially by the authority or personality of their proponent, but rather by their proven value.

When asked who made the decisions within the group, most persons felt that decisions had "emerged" or "evolved" from the discussion. Some workers did feel however that they had determined what actions were taken:

"The problems we solved were our problems, that had been frustrating operators for a long time."

"The managers could say 'no' to a change, but then, they also had to give their reasons."

Equally, some management personnel felt that they had steered the discussion:

"It allowed me as a manager to do a lot more."

In fact, the requirement of consensus within an action research team that combined all levels of management and all areas of knowledge and skill appears to have made this into a new situation of power-sharing where different interests could be jointly satisfied.

Exercising power in this new way was a significant experience for workers and managers alike. For workers, there was the revelation that, given the opportunity, they could influence decision-making in a way that benefited themselves as well as the company. For managers, there was new evidence that, by providing such an opportunity (i.e. by sharing power), they could actually generate improved performance from the workforce. This new experience of power conflicted so dramatically with the years of learning spent in the conventional roles of management and worker, that there was often a tendency to deny the fact of power-sharing. Nevertheless, this was the real source of both the apprehension and the excitement for those who became involved in the action research. It is power which makes things happen, and it was the new use of power which made new initiatives and solutions possible in 'C'-Mill.

The role of the action researcher was to support workers and managers in their exploration of this new experience, to facilitate the expression of their thoughts and feelings without the threat of retribution or loss of authority. The researcher helped individuals and the group develop their ideas as research hypotheses that could be tested by trial implementation. This commitment to the research task was the focus which could allow different interests to interact creatively and positively. It required a trust in the researchers on the part of both workers and managers, and even then, the sharing of power was something which individuals had to do often enough that they could come to realize its benefits.

The Critical Issue of Effectiveness

From the points of view of both management and the workforce, the most significant force in developing participation was the achievement of positive results. Changes were made in most aspects of the organization, the technology, work procedures, and organizational roles and structure.

"Action research was a good thing, provided something got done..... otherwise, it wouldn't be good for anything."

"What appealed to the crew was that there was some action and not just idle talk."

"When positive results came out of it, that's when my attitude changed."

The kinds of technical change ranged from the simple reduction in speed of some machinery to the complex and costly installation of closed-circuit television monitors (to provide sawmill log-deck operators with greater control of their machine out-feed and to establish effective communication with the interior of the mill). Most design changes have been small in scale but quite large in effect, as with the re-building of a hydraulic hoist to enable operators to run a machine at variable speeds and prevent frequent bothersome jam-ups in the unstacking of lumber.

Some of the more far-reaching changes were not technically complex. They were simple procedures devised by operators to smooth the work flow and improve the transfer of logs within the mill. The change which may yet have the greatest effect was the work of a group of sawmill maintenance and production workers in the joint development of training manuals and procedures to provide operators with instruction in the basic mechanics and electrics of their machinery. Implied in these procedures are new roles for maintenance employees in the training of production workers who, themselves, assume a new responsibility for the inspection and preventive maintenance of machinery.

The cumulative effect of these social and technical changes has been a significant reduction in stoppages and interruptions in the work flow. The solution of problems has been reflected in sustained improvement in production. Sawmill production has steadily increased from 350,000 FBM of lumber per day to over 410,000 FBM. During this same period of productivity improvement, the 'C'-Mill safety records show that no accidents were recorded in the whole of the sawmill operation. As an indication of how people now feel about their work, the rate of absence in 'C'-Mill has fallen by over 50%, and turnover has been reduced to an annual rate of less than 30%.

One of the unintended consequences of improvement in the sawmill was the aggravation of problems further along the production line, namely, in the area of the planermill, where rough sawmill boards are transformed into various dimensions of finished lumber ready for sale. In January 1977, the Steering Committee extended the action research into the planermill at a time when the crew had developed strong feelings of bitterness and frustration about what appeared to be the virtual impossibility of accomplishing a good day's work in the planermill.

Since January, the improvement in the planermill has been from a level of less than 50% efficiency* to a sustained level of 70% or more. An equally significant indicator of the kind of change which has occurred in the planermill is the decline in the rate of absence from work, which has fallen from a rate of two absentees per shift to a rate of one absentee on an average of every two shifts. (At the same time as this change was occurring in 'C'-Mill, the absentee rate in another comparable planermill on the Mackenzie site increased by almost 100%.)

The Process of Individual Organizational Learning

As well as an improvement in performance, there has been a process of learning at the level of the individual and for the organization as a whole. This is most evident in the experience of action research in the planermill where there were more problems in the organizational structure, as opposed to technical or procedural problems.

Change in organizational roles and structure was not an initial focus of attention in the action research. The problems first identified by the workforce were individual "maintenance" issues, concerning the condition of their machinery, the evenness of the work flow, and the general quality of the work experience in their own particular work area. However, as participation developed, issues of "coordination" arose: between individual operators on the same production line, between production and maintenance workers in general, or between the sawmill and planermill as two related parts of one total production system.

* Efficiency is calculated here by the amount of time during the work-shift in which the key machine of the planermill is actually planing rough lumber. Measurement of this running time and of stoppages for particular problems like jam-ups was derived from clocks which operators had installed at this key machine. The operators' decision to use clocks as a recording device is not a surprising development if it is understood as a means by which workers could obtain immediate and accurate feedback on their performance and the effects of changes they had made in the mill.

It is an indication of how skills and understanding develop through participation, that workers and managers were now able to tackle the complexity and challenge of involvement-in-change of their own roles (and possibly status) within the organization. For example, workers rotating on a particular job in the planermill diagnosed the problem of repeated jam-ups to be the result of their own lack of operator skill and training. However, so long as this job was grouped in a rotation pattern with a number of significantly less demanding jobs, it was unlikely that the skill and training of operators would improve at that job. A trial run to remove this key job from the rotation pattern eliminated many of the production problems and personal disputes amongst crew members. The job has since been made part of another job grouping that includes more skilled work paid at a higher rate.

However, the problem which showed up most significantly in the research team's analysis was referred to as "the maintenance problem". It was a case of strong personality differences amongst maintenance workers (planermen) being aggravated by a form of organization which made individual planermen responsible to separate production shifts that tended to be in competition with one another. Pressure was placed upon planermen to avoid stoppages for maintenance work that was not absolutely required for the performance of their own shift. As a result, much necessary maintenance work was left undone and planermen were blaming one another for problems that were inherited from previous shifts.

In a situation which was the complete opposite of that in the sawmill, maintenance workers in the planermill suffered from being too closely integrated with production crews. On the encouragement of the mill manager, a diagnosis of the problem by the planermen together with the help of the researcher led to the definition of some maintenance objectives and a division of labour with a new shift schedule of maintenance work based upon the special abilities of the different planermen. This new maintenance organization overlapped with the organization of the production shifts so that its implementation required consent from the production superintendent, planermill foremen and 'C'-Mill manager, all currently involved in the management of the planermill.

About the same time, the need for change in organizational roles was beginning to affect the management group itself. The action research had indicated some problems and confusion from the overlap and redundancy of the various levels of authority within the small planer-mill department. The need for change arose also from the new initiative of the workforce who were now seen to require less constant direction and control. As one supervisor reported:

"My job has become easier since the crew started to work together as a group....guys now go help one another, instead of me having to tell people to go help."

This was a period of serious and somewhat difficult self-evaluation by the management group. It led to changes that relied however on initiatives by the staff themselves. The key decision was taken by the 'C'-Mill production superintendent to relinquish many of his responsibilities in the sawmill in order to assume sole supervisory and management authority in the planer mill. This one initiative enabled other changes which have combined to shorten and simplify the levels of authority in both the planer mill and sawmill.

Participation in the development of these changes has provided workers and managers with a greater understanding of the nature of their organization and of the possibilities for their own individual development as members of that organization. For example, action research into specific problems of rotation amongst various jobs has produced a better understanding between management and the workforce about some of the conditions for effective job rotation. These ideas were applied in the negotiation of the most recent collective agreement which designated some new patterns of job rotation in 'C'-Mill. Another aspect of the organization which has become more clearly identified is the extent to which the two apparently separate parts of the operation, namely the sawmill and planer mill actually form one technical system. Understanding of this fact has helped lead to an adjustment in the corresponding social organization with more coordination between the mills on matters of quality control and maintenance, and these initiatives are likely to

develop further. From the start of the action research there has been concern with the possible integration of production and maintenance functions which, otherwise, are often experienced as being in conflict with one another. In both the planer mill and the sawmill, experiments have found various kinds and degrees of possible overlap between the functions (i.e. in training roles or operating maintenance crews). Insofar as these changes developed, maintenance and production workers began to experience an improvement in their relationships on the job.

Through the process of participation itself, supervisors and managers have learned that they could achieve greater understanding and closer contact with their crews. In most cases, management personnel also derived a sense of achievement from the significant improvement in productivity. For some individuals, the group setting of the action research process provided a forum in which they could finally function as leaders.

From the workers' standpoint, the experience of participation has provided a sense of belonging, a greater awareness and control of change in the work environment, a sense of achievement and self-respect, and above all, an opportunity to express oneself.

"I learned that I had a part.....not just management or the big shots."

"We got rid of a lot of little problems that really bothered people on the job."

"Above all, we learned that you can get the orange hats and the workers together."

"A person was giving more of himself.....you felt pride.....you felt that you cared."

"What I learned most of all is that things can get done.....and I got satisfaction out of seeing them done.....and out of realizing that I helped make them happen."

The Battle to Keep the Process Going

From the original concept of the joint leadership of the action research, between the "outside" researcher and the mill manager as a permanent "internal" researcher, a stated objective of the participation project in 'C'-Mill has been to establish action research as an on-going process led by a research capability internal to the 'C'-Mill organization. The various approaches taken to try and sustain the process in 'C'-Mill have embodied the essential spirit of action research itself, in the willingness "to look into what one is doing and to regard this in some measure as experimental rather than based on proven fact or incapable of investigation".(4)

Six months after the start of the action research in the sawmill, the mill manager assumed sole leadership of the program in the sawmill, while the "outside" researcher concentrated on the development of action research in the planermill. What was discovered, however, was that other priorities soon absorbed the time of management personnel in the sawmill, including the mill manager, to the detriment of the action research program.

Even with the best of intentions, supervisory and management personnel found it difficult in practice to give continuing attention to the research task and the satisfaction of human needs, in the face of the demands of the normal work schedule:

"Action research often seemed to be something 'extra', beyond the normal day's work."

"After all, we have a mill to run."

It is probably true that participation will not be regarded as the real work that it is, until it takes place within the "real" time of normal working hours, and not after shift or during days off work. However, the greater difficulty for management personnel in maintaining their involvement in a participative process was likely the persistent tradition of the "star" supervisor or manager who successfully takes the

key decisions on his own. Recognition is as much a concern to the management person as it is to the individual worker, and managers and supervisors often feared a loss of status more than they felt satisfied by the new rewards of a still unaccustomed style of participative leadership. Any deep concern with status may also have been related to a lingering perception of the workforce as people "who are not really with us".

A positive outcome of this experience was nonetheless the willingness of the Steering Committee to try a new approach in the planermill, where after several months the outside researcher withdrew from an active role to be replaced by a new joint research team composed of the mill manager and an employee of the mill who, as shop steward, had achieved a reputation for personal effectiveness with both management and the workforce. The employee selected by the Committee has remained an hourly-paid member of the workforce performing her regular job as a mill grader, but with provision for relief from this job in order to consult with all crews and management personnel in the mill, assisting them in the follow-up to problems or the diagnosis of immediate issues, while also collecting new data and working with the mill manager on preparations for action research on longer-term problems. The employee and the mill manager have also jointly led the meetings of the planermill action research teams.

This new form of joint leadership was designed by the mill manager and action researcher to assist the mill manager in making the necessary time commitment to the action research, while at the same time giving added force to the consideration of the needs of the workforce through their representation on the research team itself. During several months of collaboration in the planermill, this joint leadership does indeed appear to have functioned quite effectively, and as a definite improvement over the previous arrangement in the sawmill.