

MANPOWER MANAGEMENT RESEARCH IN THE U.S.A.

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ABSTRACT

The history of labor management research in harvesting in the United States is traced. Particular emphasis is placed on work by the Battelle Memorial Institute, the American Pulpwood Association Harvesting Research Project, and other investigations into manpower management of the 1960's, 70's, and 80's.

INTRODUCTION

The history of industrial-scale timber harvesting in the United States has been fraught with labor problems. A non-technical student, exploring the history of logging, will find more information on labor and labor problems than on the technology of harvesting. Stewart Holbrook's eulogies to the passing of the American lumberjack touch a romantic chord. The turmoil and bloodshed associated with labor strife in the Lake States and Pacific Northwest are more sanguinary (Mannikko, 1990).

Logging was not that different from other industrial or extractive processes of the period. It demanded hard physical labor in an uncontrolled environment, often far away from civilization and the amenities of life. It was dangerous. Rain, snow, heat, cold, snakes, black flies, mosquitoes, widowmakers, logjams, cheap whiskey, and any number of other hazards awaited the unwary. It was young men's work. A place to begin, to get a start, a start which could be used to finance the farm, shop, or other form of lifelong employment. The seasonality of work, especially in those areas dependent upon water transport further

reduced the status of logging as a form of employment. The rapid immigration of labor at the turn of the century and the changes taking place in the American economy assured a supply of labor, whether seasonal, in the Northeast and the South, where off-season employment in agriculture was a key component in maintaining a work force, or in the West, where woods work was a year-round activity.

Despite these problems, skilled labor was generally available. The axe, the saw, and the horse, common logging tools, were also common tools in the greater society. Training requirements were minimal, and could be taken care of on the job.

Texts and research in logging from this era waste little time on labor questions. The technology lay in rigging a spar tree, constructing a railroad trestle, using the proper undercut, and the selection of the proper team harness.

THE ADVENT OF SCIENTIFIC LOGGING

Manpower management research prior to the 1930's was not considered a proper area for research. The success of Gilbreth, Taylor, and others in industry encouraged a few pioneers to attempt similar work in harvesting. Matthews book, *Cost Control in the Logging Industry*, published in 1942, makes little mention of labor management even though that is the actual subject of the book. Other efforts were directed to camp planning, provisioning, and meeting the physical needs of labor. The

old chestnut that a good cook and a good blacksmith made for a good camp was undoubtedly true.

Management was largely by the scalebook and checkbook. Most workers were paid piecework either as individuals or as a member of a crew performing a single task. The individual who could not produce enough to earn a satisfactory wage soon found out that he was not cut out for woods work. The teams or gangs were left to sort out members who could keep up with the tempo.

The availability and productivity of labor became a serious concern in the post-World War II era. Immigration had been constrained. The post-war economic expansion resulted in a demand for labor in urban centers. Agricultural technology reduced the need for rural labor and resulted in the demise of many small "family farms." Rural labor for logging was no longer available on a seasonal, let alone year-round, basis in the numbers required by the expanding forest products industry.

LABOR AS A COMPONENT OF PRODUCTION

The southern pulp and paper industry, concerned that the serious wood shortages of 1955 and 1959 were simply harbingers of more difficult times ahead, commissioned the Battelle Memorial Institute to a structural analysis of the pulpwood production industry in 1960. This perhaps marked the threshold where harvesting was transformed from something that happened into a genuine sphere of influence warranting research and development expenditures.

The Battelle report codified many factors which previously had been only part of the folklore. The wages per hour of a woods worker cutting and hand-loading shortwood were on a par with other industries. The difference was that a woods worker seldom worked 40 hours

per week, encouraging him to leave the industry.

Battelle did find "that high task flexibility among crew members was of particular importance. Assignments of specific tasks (such as felling only) to particular men (the so-called "specialist" concept) produces imbalances in woods operations, leading to low productivity. The relationship between the producer and the workers must be well-defined, and the producer must act as a strong, well-recognized leader. Well-recognized performance standards on the part of the producer and means for assuring that crew aspires to these standards were found especially desirable" (Hamilton, 1963).

"Crew aggressiveness" was identified as a major variable in system performance. Despite its importance, aggressiveness remained elusive. No one could define what it was or how to create it. The dealer system, common at that time, often dampened and distorted signals between the contractor force and the wood-using industry. Mechanization was seen as a critical need to meet the expected future demand for wood, but how it was to be developed, applied, purchased, and controlled was still uncertain.

Non-physical factors--the development and retention of labor--was sublimated. It was interesting to review the recommendations and proposals for continuing work from this effort, now nearly 30 years old, and find that labor is treated nearly as casually as diesel fuel and that management recommendations nearly always were directed to the development of a mathematical programming model.

The Battelle commission was not renewed. The industry was inundated with a flow of new technology, skidders, knuckleboom loaders, better trucks and slashers, which increased man-day productivity from 4.5 short tons per day to nearly 20. Labor problems were again

relegated to a lower priority.

The American Pulpwood Association Harvesting Research Project was formed in mid-1967. The period was one of considerable social, economic, and cultural turmoil. Agricultural mechanization and the widespread use of chemicals had reduced the need for agricultural labor. The civil rights movement was in full flower. The demand for forest products was on the rise; air-conditioning and interstate highways were resulting in rapid urban population growth in the Sun Belt. New employment opportunities were arising in rural communities.

Three resources were considered as limiting future expansion--men, money, and machines. Although there was considerable discussion concerning the substitution of capital for labor, there was a recognition that the only source of capital was from the industrial coffers of the major companies. Too many other investment opportunities which promised to yield better, or at least more predictable, rates of return were available for those funds to allow them to be committed casually to logging mechanization. Additionally, there appeared to be something inherently good about the maintenance of local entrepreneurs serving the industry. Company operations were tried, and in a few instances, have survived. The independent logging contractor proved to be a very robust, adaptable, and efficient means of producing wood. Energies were better spent helping rather than replacing him.

The manpower dimension of this effort took several forms. A survey by industrial psychologists of the community variables affecting the recruitment of labor in one rural Georgia county found that young people intended to leave the county upon completion of school. The majority of students had little knowledge of logging and were really not interested in acquiring more. They considered the job, physical working conditions, and tasks per-

formed unfavorable. The pay and people aspects of the job were considered more favorable (Ronan, Latham, Tatro, and Aral, 1970).

A companion study by anthropologists found similar influences but from different bases. The image of the pulpwood producer was found to be improving as the industry mechanized. Many of the workers involved had previously worked in factories or other industrial jobs but preferred woods work because of pay, fresh air, informality, and no night shift. The hourly wages were again found to be competitive but short hours per week reduced total take-home pay. The inefficient contractors were found to be self-consuming as a result of low morale and high turnover. Workers had varying attitudes toward benefit packages. Some were concerned that benefits would reduce their take-home pay while those with factory experience wished for comparable packages. Neither the contractors or workers were interested in training programs. Minimum instructions in machine maintenance, operation, and safety were felt adequate (Bailey and Kim, 1971).

The industrial psychology approach appeared to offer greater promise for immediate application, and a series of studies focusing on the critical behaviors of the contractor which were related to success or failure followed. Goal setting was found to be one of the strongest motivators available at that time, especially when coupled with a reward structure. This effort culminated in the preparation of a manual, *Pulpwooding with Less Manpower*, by Warren and Raburn (1973).

Looking back at this effort, one finds that the anthropologists' views, while lacking in the recommendations for immediate action at the time, were more descriptive of the subsequent evolution of the industry.

With the demise of the Harvesting Research

Project, manpower management research again fell far behind other areas of interest. The American Pulpwood Association continued its strong interest in safety and loss control, especially in the area of chainsaw safety. The expected out-migration of labor from the rural areas did not occur to the extent originally feared. The mechanization of the 1960's and 70's was doubly successful. It increased labor productivity five- to seven-fold on an hourly or daily basis, and the all-weather capabilities increased weekly or monthly productivity by another 50 to 75 percent. By the mid-1980's, the industry's problem was one of constraining rather than increasing production.

Timber harvesting is still physically demanding, but feller-bunchers and hydraulic loaders have removed much of the heavy lifting that once wore men out before their thirtieth birthday. A survey by Corwin (1987) found feller-buncher operators with 15 years of harvesting experience, loader and chipper operators with 25, and skidder operators with more than 35 years in the woods. Harvesting is no longer a job for only the young, allowing stability in the crews and reducing the need for replacements.

The need for manpower management is always present in any industrial activity. The dynamics of society require constant attention to and anticipation of forces which can disrupt the process. Programs such as *Tackling Productivity in Mechanized Logging* by Beaulieu et al. (1989) are needed to assure that labor is fully productive. The revised Occupational Safety and Health Administration guidelines, the new Commercial Driver's License regulations, and the imposition of Best Management Practices are altering training and management requirements.

SUMMARY

Forest operations must recruit and work labor

in an environment that is "close to the stump." The size and diversity of cultures, timber types, forest industry, and political environment in a country the size of the United States make it difficult to generalize about strategies and practices. This industry does not have the opportunity to create a culture that is distinct from the larger society as factory-based industry does. When a machine tender goes to work in the mill at Kawerau or Tokoroa he enters a different culture, a mill culture, and does not re-emerge until quitting time. Harvesting lacks the walls, roof, and other isolating artifacts required to create this different environment. A skidder operator is isolated from others in the crew, leaving just him and his thoughts.

Preparing this paper has been interesting because it required a review of a considerable body of work--some with which I was associated, and some which was done before my time. At risk of being tiresome, I would like to share some thoughts which came to mind during this review.

1. The forest industry is seldom large enough to shape society. Society shapes the industry. The success of any manpower management or development program will depend upon how closely it coordinates with social development.
2. Intensive training is appropriate only in cultures where it is an expected condition of employment and labor tenure is expected to be sufficiently long to justify the expense. The reactions to training collected by Bailey and Kim in 1970 are the same as those encountered in another interview in 1990.
3. Simplification reduces the necessity for training. A misconception prevalent in the 1960's was that manual tasks required less training than machine-based activities. If work skills are drawn from those used in the

broader society, less specialized training is required. Feller-buncher, skidder, and log truck operation are closely linked to skills used in driving a car. It is easier to train a new feller-buncher operator to perform his task safely than it is to train someone to use a chainsaw or lift a bolt of pulpwood properly.

4. The "team" aspect of harvesting is very important. Contractors who have been able to develop a team identity have proven to be the most successful. Teamship both provides a sense of identity and reduces the level of management required of the contractor. Good contractors appear to have more in common with an orchestra conductor than with the "Bull of the Woods" of recent history. They assemble a crew that can work well together, set the tempo, and direct processes, while allowing the members of the team some freedom in finding the best way to work together.

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