Power, Profit, and Precarity: Occupational Health and Safety in the Tree Planting Industry

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Introduction

Tree planting is rite of passage for many young Canadians, and in British Columbia, with its rugged and often mountainous terrain, the challenges of this difficult job are significant. Every spring thousands of would-be tree planters, many of them students, flood from the cities and towns across the country (and sometimes beyond) to live in remote bush camps, work long hard days outdoors, and try to make as much money as they can in a few short months. Tree planting is a mentally and physically draining job and each completed season is worn like a badge of honour by veteran tree planters. The friendships forged, the adventures had, and the experiences lived are, to many, worth all the pain and hardship that also comes with the job. Indeed, tree planting is often said to be as much a life style as it is a summer job.

But beyond simply being difficult, tree planting is also dangerous work and carries a high risk of worker injury every season. This paper makes the assertion that conditions specific to tree planting regarding the work process, workforce demographics, and labour organization contribute to occupational health and safety (OHS) problems concerning not only a high risk of worker injury, but also the ability to collect accurate data used to inform and enforce OHS regulations. These conditions include the remoteness and decentralized nature of work sites, difficult and variable terrain, the work process itself, a primarily young, non-permanent, and seasonal work force, and the nature of labour relations and organization in the industry. The aforementioned conditions create a precarious working situation in which there are incentives at both the labour, management, and licensee levels to subordinate the adherence to OHS regulations in order to maximize profits within a temporary and seasonal working period.

To support this assertion, the proceeding paper first examines the organization and work process of tree planting. How tree planting companies are organized, the contract bidding process, and the physical mechanics of tree planting are all described. Included in the empirical description of the organization and work process of tree planting is a brief overview of the injury statistics associated with tree planting, highlighting the high level of risk to injury and identifying some of the less obvious negative health consequences of tree planting. This empirical description of the work is drawn from various articles describing the political economy of tree planting such as Ekers and Sweeney's "(Dis)Organizing Tree Planters: Labour and Environmental Politics in the British Columbia Silviculture Industry," the mechanics and health effects of tree planting from occupational health journals such as the *Journal of Occupational Medicine and Toxicology*, and publications by industry agencies such as the Western Silvicultural Contractors' Association (WSCA). Supplementing and informing the research process of these sources is the author's five years of experience in the silviculture industry as a tree planter, first aid attendant, and foreperson.

Following the description of the work process, the paper turns to begin explaining why injury rates in tree planting are so high with an examination of tree planter monitoring and control. Starting with a look at work process theory, the case is made that unlike many modern forms of employment, due to the remote, expansive, and variable work sites of tree planting, the principles of scientific management that prescribe a systematic disempowering of the workforce are largely ineffective. Instead, Ian Radforth's description of pre-mechanization logging in Ontario provides a more useful analogy for describing how workplace power in the form of skill is maintained by the worker. Following this theoretical discussion is a break-down, focussing on the role of the foreperson, of how tree planters are directly monitored in the areas of worker transportation, tree quality standards, and OHS. Noting that the opportunities for direct supervision in tree planting are limited, the paper turns to a middle ground in terms of workforce discipline between Braverman, Radforth, and modern tree

planting: the crucially important role of the piece rate. It is explained how the piece rate is a motivating force for the imperatives of production where direct supervision is difficult, but also allows workers a significant amount of control over the pace of their labour and creates a tension between the imperatives of safety and production. The question is left as to why tree planters drive themselves to the point of overexertion and injury despite this control, and to this end the paper turns to the theory of precarious employment.

The section on precarious employment starts with a brief description of the theory with an emphasis on the work of Leah Vosko. Next is a detailed analysis of tree planting through the lens of precarious employment, starting with the aspects of tree planting most easily associated with precarity. These aspects include the temporary seasonal employment conditions, the extreme levels of labour intensity, the piece rate, and importantly, the lack of unionization or other forms of labour organization. Following this, the more nuanced elements of the precarious conditions of tree planting are explored.

First, the wage of tree planters which appears relatively high when compared to other forms of precarious employment, is shown to be low when compared to the rest of the resource sector and when the amount of energy expended by tree planters is considered. Next the complex gender dynamics of tree planting are explored by examining the feminized view of the work as reproductive, service based, and casualized labour in relation to the more typically masculine biases of the resource sector as a whole. A counter movement consisting of an internal masculinized dynamic that exists within the culture of tree planting is also examined with the aid of Thomas Dunk's analysis of male working class culture in Thunder Bay as an analogy. Finally, the role that student workers have had in increasing the precarity of tree planting is described. Owing to the financial burden for tuition and, as described by Marlea Clarke, Wayne Lewchuk, Alice de Wolff, and Andy King, the willingness of students to work in temporary and unsustainable situations while they complete on their education, students find themselves in an vulnerable to exploitation in precarious employment relations. In the broader context,

this student exploitability translates into an increase in the precarity of tree planting as the numbers of students in the industry rises. Parallels are drawn between this observation and W. Scott Prudham's description of the effect of migrant workers in Oregon's tree planting industry from his book *Knock on Wood: Nature as Commodity in Douglas-Fir Country*. Finally, the dialogue between Braverman and Radforth is revisited in an example of the removal of skill from the worker through a work process change in the 1990s which has resulted in furthering the precarious nature of the industry.

The final section of the paper looks at the OHS implications of tree planting as precarious employment. It begins with an in-depth look at the propensity of student tree planters as precarious workers to sacrifice their health by overexerting themselves in their present employment in an attempt fund their education to achieve future career ambitions. A quick treatment of issues concerning the lack of OHS committee participation in tree planting camps is followed by a deeper examination of the health implications concerning the dearth of unionization in the tree planting industry. The writings of Michael Quinlan, Claire Mayhew, and Philip Bohle are drawn upon here to identify issues with worker knowledge of entitlements and rights concerning injury compensation as well as issues for accurate OHS data collection used in policy development. Closing out this final section is a discussion of the merits of understanding tree planting as precarious employment from an OHS perspective and some suggestions on how the injury rates in the industry may be lowered by targeting the conditions of precarity. However, before the conditions and OHS implications of tree planting as precarious employment can be properly explored, how the work is actually done must be understood.

The Work Process[1]

[1] This section relies significantly on the author's five seasons of experience in the tree planting industry as a tree planter, first aid attendant, and foreman, as well as a stark insight into the dangers of tree planting due to personally suffering a significant and debilitating injury during a planting season. This information was collected through a systematic interviewing DISCUSSION and recording process with the aid of a research supervisor and then augmented and supported by information collected from existing studies and literature on the work process and organization of the

To understand the issues concerning OHS and precarity in the tree planting industry, it is first useful to understand the organization of the industry and work process of the job. In British Columbia, approximately 230 million trees covering 180,000 hectares are planted annually by manual labour alone.[2] Tree planting is discontinuous and seasonal work due to biological and logistical factors regarding seedling survival.[3] Typically, planting occurs from early May to late July in the interior and is split between the late winter to spring and late summer until early fall on the coast.[4] Although there are no lists of the specific number of BC tree planters employed in the industry at any one time,[5] estimates range anywhere from around 5000[6] to 10,000[7] workers which are split between an estimated 203 registered firms.[8] This variability in the size of the industry is dependent on the state of the logging industry since only those cut blocks that have been logged can be replanted by tree planting firms (contractors). These firms can range in size from a single crew of half a dozen workers, to several hundred workers split between different camps each with several crews. These firms compete with one another for tree planting contracts offered by private timber-harvesting firms (licensees) or the Ministry of Forest (MoF), depending on the particulars of the land tenure situation.[9]

Tree planting contracts are awarded through a sealed bid process whereby the licensee will call for tenders regarding the cost per tree planted, with the work typically going to the lowest bidder. The cost per tree embedded in the contract bid price is directly correlated with a piece rate per tree which is

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industry.

2 Alastair N.H. Hodges and Michael D. Kennedy. "Physical Exertion and Working Efficiency of Reforestation Workers," *Journal of Occupational Medicine and Toxicology* 6, no. 20 (June 2011): 1

3 W. Scott Prudham, *Knock on Wood: Nature as Commodity in Douglas-Fir Country* (New York: Rutledge 2005), 43.

4 Michael A. Ekers and Brendan Sweeney, "(Dis)Organizing Tree Planters: Labour and Environmental Politics in the British Columbia Silviculture Industry," *BC Studies* 166 (2010): 74.

5 Jordan Tesluk, "Health and Safety in the Tree Planting Industry," report prepared for WSCA BC SAFE Silviculture Project (December 2006), 13.

6 Ekers and Sweeney, "(Dis)Organizing Tree Planters," 79.

7 D.G Trites, D.G. Robinson, and E.W. Banister, "Cardiovascular and Muscular Strain During a Tree Planting Season Among British Columbia Silviculture Workers," *Ergonomics* 36, no. 8 (1993): 936.

8 "B.C. Silviculture Employers Turnover Tracked in Special Report," April 12, 2012, WSCA, accessed May 12, 2012, http://wsca.smartt.com/index.php?Page=225.0&Key=854.

9 Harry J. Paarsch and Bruce S. Shearer, "The Response of Worker Effort to Piece Rates: Evidence from the British Columbia Tree-Planting Industry," *The Journal of Human Resources* 34, no. 4 (Autumn 1999): 647.

the primary way that tree planters are paid. This piece rate is determined by the bidder based on an estimation of the average daily production per planter and is negatively correlated with land conditions.[10] In other words, a company planning to pay a given amount on a contract will assign a bid price correlating to the estimated daily production rate per worker dependent upon the degree of difficulty of terrain. Essentially, the higher the estimated production per planter the lower the bid price, and consequently, the lower the piece rate. To complement this piece rate pay system for tree planters, forepersons and supervisors are usually paid by commission based on a percentage of crew and camp production respectively.

Tree planters come from all over the country and are, although hardly an exhaustive list, a mix of "rural residents, counterculture enthusiasts, and university students."[11] The tree planting workforce is approximately 70 percent male and averages 25 years of age, although over 65 percent are between the ages of 18 and 26.[12] Related to this youth, in a recent study, students and non-career workers were found to constitute up to 80 percent of all tree planters.[13]

Tree planters must make their own way from wherever they are in the country prior to the start of the season to the town in which their planting contractor is based. Planters must also invest in their own personal gear (including sleeping arrangements) and job specific equipment. Once they have made it to the contractor's base town they are transported by the company to the planting camp. Camps are often hours away from even the smallest urban centres[14] and are managed by a supervisor with individual crews run by forepersons. These camps are distributed throughout the province and often move a few times during a season in order to minimize transportation times from camp to work sites.[15]

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[10] Ibid., 648.
[11] Benjamin Cashore, George Hoberg, Michael Howlett, Jeremy Rainer, and Jeremy Wilson, *In Search of Sustainability: Forest Policy in British Columbia in the 1990s* (Vancouver: UBC Press, 2001), 220-21
[12] Tesluk, "Health and Safety," 18-9.
[13] Ibid., 23.
[14] Alastair N.H. Hodges, Jacqueline D. Ellis, and Donald C. McKenzie, "The Effects of 10 Weeks of Reforestation Work on Body Composition," *Wilderness and Environmental Medicine* 16 (2005): 3.
[15] Trites, Robinson, and Banister, "Cardiovascular and Muscular Strain," 937.

The camps tend to be laid out haphazardly, with large open spaces generally designated for vehicle parking and large structures. Personal tent sites are clustered wherever there is free space, and areas with shelter from the wind and the sound of camp generators are at a premium. Each camp provides a kitchen facility, dining tent, gear drying tent, first aid tent or trailer, wash area, showers, and latrines. For a daily fee of approximately $25 deducted from worker pay called 'camp cost,' planters are given two hot meals, food for lunch, and transportation to and from work sites.[16]

The standard day for a tree planter starts around 6am when a hot breakfast is served. Each worker is individually responsible for ensuring they pack an adequate amount of food and water for the day, as well as ensuring that they are appropriately dressed for the conditions and prepared for changes in the weather. Throughout the work day, workers may have multiple responsibilities beyond planting trees such as crew management, first aid duties, and driving vehicles. Crew vehicles are often heavy-duty pickup trucks or, decreasingly, makeshift transports called 'crummies'. There is also normally a crew transport vehicle in camp that doubles as an emergency transport vehicle (ETV) outfitted with occupational first aid level three (OFA 3) gear including patient packaging equipment. Since workers are paid only for trees planted and not for time spent on pre-work preparation like loading boxes of trees into the trucks or travelling to cut-blocks,[17] crews leave soon after breakfast in order to maximize the time spent planting before they must return to camp for dinner approximately 12 hours after breakfast.

To properly understand the precarity of the work and how this precarity relates to issues concerning OHS, a sound understanding of the work process is essential. Planting trees is notoriously difficult work; it is both physically and mentally taxing and requires long hours in variable and often inclement environmental conditions. Days consist of repeating specific physical movements and tasks thousands of times and carrying approximately 17 kilograms over 16 kilometres of rugged, variable

[16] Ibid.
[17] Ibid.

terrain.[18] “Planting terrain may be steep, rocky, hard packed, have a thick layer of organic material (duff) ... and may be covered to a varying degree with bedrock, surface water, logging slash, and non-merchantable logs.”[19] The three primary tools used in tree planting are a short 'D-handled' shovel with a narrow blade specially designed for tree planting, “canvas or soft-synthetic buckets called planting bags [which strap] around the waist to carry tree seedlings,”[20] and a 3.99m 'plot-cord' used for checking tree density and quality. Each load of trees is called a 'bag-up', and the work day consists of multiple bag-ups with short breaks to reload.[21] Planters carry loads of anywhere between approximately 100 to more than 500 seedlings, depending on the size of the seedlings, before needing to reload, but a general rule of thumb is only to take as many trees per bag-up as can planted in an hour or less; this ensures regular (at least hourly) chances to re-hydrate, eat, and rest at the cache. The specifics of how each planter fills their designated land, called a 'piece', is up to the worker as long as contract density is met, but the standard method is to plant the end of the piece furthest from the cache first, working the piece in such a way that the land adjacent to the cache is filled or 'closed' last.

Tree planting isn't purely about production rates as the quality of planted trees must meet minimum standards. Checking tree quality is done by throwing ‘plots’. The 3.99 metre plot-cord is looped around the handle of a shovel with the shovel standing vertically and planted firmly into the ground. Using the shaft of the shovel as a focal point, the taut cord is walked in a complete circle and the trees that fall within the circumference of the circle are counted for density and checked for quality. Counting trees for density is a simple matter of arithmetic and aggregation. Quality checking, on the other hand, consists of ensuring that the depth of the tree in the ground is correct, that the tree and roots (called the 'plug') are both straight and vertical, that the hole is closed without air pockets, that no two

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[18] Delia Roberts, “In-Season Physiological and Biochemical Status of Reforestation Workers,” Journal of Environmental Medicine 44, no. 6 (June 2002): 559

[19] Trites, Robinson, and Banister, “Cardiovascular and Muscular Strain,” 937.

[20] Hodges and Kennedy, “Physical Exertion,” 5.

[21] Ibid., 5-6.

trees are planted too close together, and any other possible specifications stipulated in a given contract.

The mechanical act of planting each tree can be generalized into a number of steps, although myriad variables are possible within a single bag up. First, holding the shovel in one hand and a seedling in the other, a micro-site is selected by the approaching planter, ideally somewhere high or near a stump and neither too dry or too wet. Next, excess logging slash and debris must be cleared from the site to ensure the seedling's lateral branches are able to grow freely. This is often accomplished with either a shovel scrape or a kicking motion called 'screefing'. It was once required that *all* organic material had to be screefed away so that trees could be planted straight into mineral soil, but a change in foresters' philosophy of micro-site selection in the last 15 years has meant that trees are now planted into the organic fermentation-humus layer.[22] It is important to remember this change in work process as it will later be shown to have clear implications for OHS problems concerning modern tree planting. Next, the ground is opened with a downward shovel strike to create a hole for the seedling to be planted. Following this, bending at the waist the planter slides the tree along the back of the shovel blade and into the hole, ensuring straight roots or 'plug'. The shovel is then removed leaving only the seedling in the hole. Finally, closing the hole either by hand or with a 'toe tap' of the ground in front of the tree, ensuring the hole is entirely sealed and the plug is covered or, in some cases, flush with the soil.[23] This process takes between 5 and 60 seconds to complete depending on terrain and worker skill and is repeated between 1,000 – 4,000 times a day, depending on terrain, for an average of nine hours straight with short breaks to reload planting bags, hydrate, and eat.[24] After work, workers have an average of three and a half hours for dinner and leisure, assuming eight hours for sleep.[25] This daily cycle continues for 4 to 6 day shifts with usually only a single day off between shifts. Over the course of the season this labour intensity takes a toll on the workforce.

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[22] Ekers and Sweeney, "(Dis)Organizing Tree Planters," 79-80.
[23] Trites, Robinson, and Banister, "Cardiovascular and Muscular Strain," 937.
[24] Hodges and Kennedy, "Physical Exertion," 4-5.
[25] Trites, Robinson, and Banister, "Cardiovascular and Muscular Strain," 940.

Tree planting is not only extremely difficult and tiring work, it is also dangerous. Injury rates for tree planters are very high with "16 lost time claims per 100 estimated person-years of work ... compared to the calculated forest industry sub-sector injury rate of 9.6."[26] In a single season the risk of debilitating injury is as high as 20 percent resulting in 8500 lost workdays a year.[27] When expanded over the course of five seasons, a tree planter faces a 50 to 90 percent chance of injury.[28] The most common body parts injured include knees, feet, ankles, the skin, eyes, wrists, and fingers.[29] Repetitive strain injuries (such as tendonitis and bursitis) and overexertion injuries account for most of the injury claims made to the Worker's Compensation Board of BC (WCBBC).[30] These high injury rates betray tree planting as dangerous and debilitating work that exposes its young workforce to a significant risk of injury.

Beyond the high rates of acute injury associated with planting, high rates of exertion day after day take a subtler toll on the health of workers as well. A study by Dr. Delia Roberts found that planters suffer from long term energy deficits over the course of the planting season despite consuming approximately 5000 calories a day, a caloric total "well in excess of the recommended intake for extremely active occupations including lumberjacks, construction workers, heavy manual digging, and rickshaw pullers."[31] Related to these energy deficits, another study on the effect of ten weeks of reforestation work on body composition found that despite the extremely high caloric intake of planters, in just 49 work days they were losing an average of 55 grams of body mass per day and with an observed maximum loss of 14 kilogram. The same study hypothesizes that because the body mass loss occurred in such a short period of time and because tree planting is seasonal, that the body changes

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[26] Ernst Stjernberg, "A Pilot Study to Develop Guidelines for Reducing Tree Planter Injuries," Report prepared for Worker's Compensation Board of British Columbia by the Forest Engineering Research Institute of Canada, (Vancouver: March 2006), 8.
[27] Roberts, "In-Season Physiological ," 559.
[28] Hodges, Ellis, and McKenzie, "The Effects of 10 Weeks," 3.
[29] Trites, Robinson, and Banister, "Cardiovascular and Muscular Strain," 936.
[30] Stjernberg, "A Pilot Study," 8.
[31] Roberts, "In-Season Physiological," 563.

were likely transient and points out that “repetitive weight loss and regain has been shown to have health detriments.”[32] Related to this long term net energy deficit, the high levels of energy being used by planters leaves their blood glucose at near hypoglycaemic levels throughout the day. This has implications for reduced awareness and motor-reflexes which can impact foot placement and balance on the uneven terrain upon which planters work. As explained by Delia Roberts: "another potential implication is the role of low blood glucose levels in vehicular accidents, as planters may be assigned driving duties at the end of the planting day.”[33] Beyond blood glucose and net energy deficits, there are further negative physiological effects of tree planting on workers.

Another detrimental health implication of tree planting on workers is something colloquially termed 'burn out'. This qualitative term describes the mental and physical condition of tree planters after a season of work and can include debilitation, sickness, and under-performance.[34] Nominally identified in writing on silviculture as early as 1990,[35] burn out has since been determined to be likely related to elevated serum enzyme activity. Specifically, particular serum enzymes associated with ongoing stress and trauma to the musculoskeletal system are found to be above pre-season base levels for the entirety of a planting season.[36] This elevated serum enzyme activity combined with increased levels of stress related hormones such as cortisol means that by the late stages of the season, planters suffer from suppressed immune systems needed for fighting infections and repairing injuries,[37] as well as muscle weakness, soreness, and general tiredness.[38] This 'burn out' effect, as well as the implications of lowered blood glucose and energy deficits, likely contributes to the high rate of injury of tree planting.

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[32] Hodges, Ellis, and McKenzie, “The Effects of 10 Weeks,” 5.
[33] Roberts, “In-Season Physiological,” 562-3.
[34] Trites, Robinson, and Banister, “Cardiovascular and Muscular Strain,” 936.
[35] R.C. Jones, “People: The Vital Resource,” in *Regenerating British Columbia’s Forests*, ed. D. P. Lavender et al., (Vancouver, BC: University of British Columbia Press, 1990), 16.
[36] Trites, Robinson, and Banister, “Cardiovascular and Muscular Strain,” 942.
[37] Roberts, “In-Season Physiological,” 563.
[38] Trites, Robinson, and Banister, “Cardiovascular and Muscular Strain,” 945.

Control Over the Work Process

To understand why tree planters subject themselves to such a high risk to injury and overexertion it is important to examine where power resides in the workplace. With its geographical remoteness, constantly changing work sites, and decentralized workforce it is clear that the conditions of work associated with tree planting are not like those of many jobs. Consequently, the methods by which the work process is controlled and the workforce is disciplined are also atypical to the modern context. The high levels of direct supervision and work process control by management akin to the methods of work process organization associated with scientific management are often inappropriate to tree planting. It is from the past, from forest workers prior to the mechanization of the forestry industry, that parallels can be drawn to the organization and location of power within the tree planting industry.

Useful lessons about power and control in the work of tree planting can be made by drawing an historical analogy from Ian Radforth's description of logging in Ontario prior to mechanization. It is important to note that it is not necessarily the lack of mechanization that makes the tenets of scientific management inappropriate to tree planting, as the theory is meant to apply to the control of labour at all levels of technology.[39] Rather, it is the highly variable conditions of the natural world within which tree planting takes place (and which defies mechanization as in the case of Northern Ontario logging), that resists the methodical appropriation of worker skill, discretion, knowledge, and therefore, power in the work place. These variable conditions that workers and management alike must confront throughout each day mean that, like Radforth`s loggers, each tree planter necessarily must retain a high level of skill in order to meet and adapt to ever changing conditions inherent to the environment of tree

[39] Harry Braverman, *Labour and Monopoly Capital: The Degradation of Work in the Twentieth Century,* (New York: Monthly Review Press, 1974), 110.

planting.[40] The step by step appropriation of skill and knowledge by management as prescribed by scientific management[41] would make overcoming these variables much more difficult, thus slowing overall production. In other words, the ever changing natural conditions defy the creation of routine and tightly controlled direction from management.

Unlike what is prescribed by scientific management, there are no formal training manuals or official methods administered or demanded by management in the tree planting industry. Instead, training is done by and at the discretion of the forepersons, who are the closest and most constant connection between management and labour. Like Radforth's foremen, tree planting forepersons are hired from within the ranks of workers, for productive prowess, seniority, their ability to manage people, their reputation among other workers, and their experience gained from years of work in the bush rather than due to formal or technical training.[42] In turn, inexperienced workers gain the skill necessary to plant trees at a high rate through a form of informal lateral training. Forepersons and experienced planters spend time with newer workers either working together on the block or socializing after work sharing best practices and discussing technique. As stated in a 1993 study on tree planting from the journal *Ergonomics,* "achieving a competent level of planting skill can take a planter up to three years to acquire in British Columbia's diverse and rugged terrain."[43] Even though micro-site selection has been simplified by removing much of the need to 'screef' since the 1993 study was done,[44] thus removing some of the "skill" required,[45] it remains largely true that it takes multiple seasons to gain the competency necessary to achieve consistently high rates of production and quality. With a basis of understanding how skill, training, and thus power in tree planting is in part retained

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40 Ian Radforth, *Bush Workers and Bosses: Logging in Northern Ontario 1900-1980*, (Toronto: University of Toronto Press, 1987), 67.
41 Braverman, *Labour and Monopoly Capital*, 118-9.
42 Radforth, *Bush Workers and Bosses,* 52.
43 Trites, Robinson, and Banister, "Cardiovascular and Muscular Strain," 937-8.
44 Hodges and Kennedy, "Physical Exertion," 1-2.
45 Ekers and Sweeney, "(Dis)Organizing Tree Planters," 79-80.

within the worker, the specifics of how management monitors and controls the work process must be examined next.

Direct Supervision

The work process of tree planting is controlled by two primary mechanisms which are fundamentally in tension with one another. These mechanisms are direct supervision and the piece rate, and each will be described in turn. Direct supervision is carried out by several different levels of management from first aid attendants to camp supervisors and even foresters employed directly by the licensee, but the primary point of contact between workers and management is the foreperson. Direct worker supervision by forepersons consists mainly of worker transportation, quality control, and OHS policy enforcement.

Just when a crew leaves camp for work is primarily determined by the foreperson. Since forepersons are paid by a commission of their crew's production, there is a financial incentive to expedite this process. Also concerning direct supervision of transportation is the task of driving itself. If a crew consists of a single vehicle, the foreperson will almost always have sole driving responsibilities. If a crew consists of more than one vehicle, designated drivers will be assigned in addition to the foreperson, but it is up to the foreperson to ensure that their drivers follow the rules of the resource road network. In addition, industry vehicles that are designated to use the resource road networks are identifiable by company-specific, forward-facing, vehicle ID plates. Violators of proper radio usage on radio controlled roads, excessive speed, or reckless driving can be reported to either their company managers or the MoF using these vehicle ID plates. With this in mind, forepersons have an incentive to carefully manage the operation of their crew vehicles, whether driven by themselves or by their designated drivers, lest they risk being demoted back to the greater workforce or worse, cause an accident.

Worker transportation is not the only place that workers experience direct supervision; tree quality is almost completely reliant on direct supervision through on-site audits of planted trees. Although each planter carries a plot-cord and is expected to throw plots on themselves periodically, it is the foreperson that is responsible for the overall quality of the cut-blocks planted by their crew. If in the course of throwing plots on their planters the foreperson finds failing quality, the planters may be required to re-plant their piece. This includes sweeping through their planted land throwing plots and fixing failing quality trees until the piece at least meets minimum quality standards. Re-planting is unpaid, as no new trees are planted and the piece rate only counts for trees planted the first time. After the cut-block has been completely planted and the work checked by the foreperson, an official tree-checker hired by the contractor or the licenses will throw their own plots to determine if a cut-block passes or fails. These tree-checker plots are called pay-plots, and they determine if the planting company pays any fines for inferior quality or density. This is a final inspection, the results of which are the primary means by which the contracting timber-harvesting firm determines the quality of service provided by the planting company. Failing cut-blocks causes planting companies to incur fines and risk losing future contracts and is therefore taken quite seriously by management. Poor quality is attributed to crews in their entirety, and the foreperson will then determine which planters need to improve and will discuss it with them in person. Consistently failing pieces or blocks can lead to planters or even forepersons being fired (although a foreperson will likely face demotion back to planter before being fired for quality issues).

Related to quality is the matter of hiding or throwing seedlings away called 'stashing'. This act is discouraged by the risk of the foreperson walking across a planter's piece at any time combined with threats of immediate dismissal if caught. Other than catching would-be stashers in the act, the foreperson can identifying potential stashing by noting discrepancies between the numbers of planted trees claimed by a planter and the density the foreperson found on the planter's land while checking

quality and density.

The final aspect of the work that is predominantly controlled through direct supervision is OHS. The OHS aspect of monitoring in tree planting is a management driven system with forepersons, supervisors, and first aid attendants as the primary agents of control. Planting companies have their own OHS policies which must be in accordance with government regulations, but an industry-wide consideration is a program called the Safety Accord Forest Enterprises (SAFE) companies program. This is an initiative developed by the BC forest sector in association with the Forest Safety Council (FSC) that provides a way to evaluate individual companies' safety programs and performances using standardized audit protocols.[46] This program involves auditors inspecting the operations and programs of companies in a seasonal audit, with every third audit being carried out by an external third party auditor.[47] Because many timber harvesting firms now have internal regulations that state only SAFE certified companies can be awarded tree planting contracts,[48] the SAFE company certification program can be seen as a kind of non-government market based approach to regulating the safety standards of forestry companies, including planting companies. This has the effect of creating a burgeoning tree planting industry standard for OHS. In combination with standard WCB regulations, this SAFE company certification is the formal framework that informs the OHS practices and policies of individual tree planting firms.

The daily OHS operations of a planting camp are managed through the enforcement of safety policy and regulations by direct supervision at varying levels of management. First aid personnel are responsible for ensuring records of any first aid incidents are kept and that first aid equipment is available in the right places and in working order. Forepersons are responsible for ensuring that their

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[46] "What is the SAFE companies program all about?" BC Forest Safety Council, accessed May 13, 2012, http://www.bcforestsafe.org/node/580.

[47] "Who does the audit?" BC Forest Safety Council, accessed May 13, 2012, http://www.bcforestsafe.org/node/584.

[48] "Why would a company wish to be a SAFE certified company?" BC Forest Safety Council, accessed May 13, 2012, http://www.bcforestsafe.org/node/581.

crew vehicles are well maintained, undergo regular pre and post-trip inspections, and have the required emergency fire suppression gear aboard. Workers are advised by foreman, supervisors, and first aid personnel to observe practices and techniques that will lower the risk of injury. This information is a combination of best practices shared from personal experience, as well as Worksafe BC regulation and publications. Workers are educated on emergency evacuation procedures through practice drills in camp which are periodically run during the season; these are executed by the first aid attendants, who have provincial OFA 3 certification or equivalent. The adherence to safe procedure and regulation mainly comes from management personnel and enforcement is through direct supervision and limited attempts at increasing the awareness of risks, but all forms of direct monitoring only cover a fraction of a tree planter's day.

The Piece Rate

Tree planting does not take place on Braverman or Taylor's factory floor; rather, the remoteness, variable location and topography of the work sites, and decentralized and scattered workforce mean that the direct, methodical, and constant supervision prescribed by scientific management is simply not feasible with tree planting. Further, with forepersons spending much of their time restocking tree caches and planting their own trees for extra income, even they as the primary agent of worker supervision only exercise direct supervision over their workers for small parts of the day. However, workers and forepersons alike are under a constant form of indirect and decentralized control: the piece rate. Called "the invisible foreman,"[49] by Radforth, the piece rate fulfills the crucial function of maintaining production where direct coercion by management is difficult by tying worker wages directly to their production totals.[50]

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[49] Radforth, *Bush Workers and Bosses,* 72.
[50] Prudham, *Knock on Wood,* 45.

The piece rate is derived from the initial bid price of the contract set prior to the commencement of the planting season and, like the bid price, is negatively correlated to land conditions.[51] In Harry Braverman's description of scientific management and Taylorism, workers under a piece rate system often exhibit "systematic soldiering," collectively limiting production in order to maintain a higher rate of pay per unit (assuming management has an overall target level of anticipated expenditure on wage pay) and a lower expected level of production.[52] On the other hand, in another similarity between the tree planting industry and Radforth's loggers, high rates of production are not viewed as rate wrecking, but rather as admirable individual accomplishments.[53] This is due largely to the fact that piece rates are set by contracts *prior* to the commencement of planting, and are more or less fixed for the duration of the contract. As Paarsch and Shearer point out, the piece rate works effectively to push production in tree planting because the piece rate is not negatively affected (lowered by management) during the course of any one season in response to the performance of high ability workers. Use of piece rates in tree planting, in combination with seasonal work and fixed rates within a given season, are effective in both aligning the production objectives of management with wage incentive of workers and also overcoming some of the difficulties of direct supervision.

The piece rate is an over-arching pressure that influences nearly every aspect of the work process. An effective instrument for driving production, the piece rate also creates a tension between the goals of quality and safety and the goal of production. ıncentives exist to cut quality and regulatory corners in order to increase production and thus wage.[54] This tension is exacerbated by the fact that tree planters are *only* paid for trees planted, not for any time spent in transit to or within cut blocks, setting up caches or loading/unloading trees, executing safety checks and inspections, or following safety regulations that negatively impact the pace of production. In fact, the primary agents responsible for

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[51] Paarsch and Shearer, "The Response of Worker Effort," 645-7.
[52] Braverman, *Labour and Monopoly Capital*, 98.
[53] Radforth, *Bush Workers and Bosses,* 75.
[54] Prudham, *Knock on Wood,* 45.

executing direct supervision (forepersons, first aid attendants, and camp supervisors) are also often paid by piece rate or a percentage commission derived from the daily earnings of the workers under their supervision. This means that not only do the workers have an incentive to cut corners in order to maximize profits, but so do the managers whose job it is to enforce quality and safety regulations in the first place. Since maximizing personal production carries no risk of lowering the piece rate during the course of a single season and because the only labour that is financially compensated is planting trees, through the instrument of the piece rate, the imperatives of production take precedent over all other activities throughout the season for both the individual worker, for all the workers on a crew, and for management at all levels of the contracting firm.

Although the piece rate is a powerful instrument employed by management to prioritize production, it also works to empower workers as well. Like Radforth's loggers, tree planters retain some level of power in the workplace through both the difficulty of directly monitoring workers and also through the necessary retention of skill within the worker. The piece rate, although a constant pressure, still leaves the pace and method of labour largely in the hands of the worker. With these factors in mind, tree planters should theoretically be able to resist the high levels of labour power exploitation associated with comprehensive forms of labour process control such as scientific management. But this leaves us with the question: if the combination of minimal direct supervision and the piece rate allows for a self-regulated pace of labour, why do planters work themselves to the point of near certain injury? Beyond the absence of countervailing incentives in the workplace itself, the theory of precarious employment sheds some light on this apparent contradiction.

Tree Planting as Precarious Employment

It is the contention of this paper that the work of tree planting is in fact a form of precarious employment. Furthermore, it is this precarious nature of tree planting that is the key contributor to the

high risk of injury to workers. However, before the nuances of tree planting can be considered in relation to precarity, it is useful to first briefly describe the concept of precarious employment and its typical application.

Leah Vosko has contributed significantly to the study and understanding of precarious employment in the Canadian context. She describes precarity as "[encompassing] forms of work involving limited social benefits and statutory entitlements, job insecurity, low wages, and high risks of ill-health."[55] Vosko continues by stating that precarious jobs are often in the "service sector, ... are labour-intensive, characterized by non-standard forms of work ... and [in industries] dominated by small firms."[56] Precarious employment is shaped by institutional conditions such as whether work is self-employed or wage based or whether the work is temporary or permanent, as well as demographical elements such as age, "race," gender, and politico-economic factors.[57] In other words, precarity can describe many different kinds of work and is more of a relative concept than a categorical definition in binary opposition to standard employment relations (SER).

Gender issues play a defining role in Vosko's writing on precarious employment. The SER is conventionally seen as the relations of labour for specifically male primary bread-winners thus, precarious employment as non-standard employment is often characterized as feminine or feminized. Feminization is associated with the inferior conditions of employment often experienced by women "related to their presumed role in social reproduction and their presumed status as secondary breadwinners."[58] In effect, the feminization of labour is linked closely to the casualization of labour, as the precarious nature of this non-standard employment is pitched as a beneficial form of 'flexibility,'

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55 Leah F. Vosko, "Precarious Employment: Towards an Improved Understanding of Labour Market Insecurity," in *Precarious Employment: Understanding Labour Market Insecurity in Canada*, ed. Leah F. Vosko (Montreal-Kingston: McGill-Queen's University Press, 2006), 3.

56 Leah F. Vosko, *Temporary Work: The Gendered Rise of a Precarious Employment* Relationship (Toronto: University of Toronto Press, 2000), 160.

57 Vosko, "Precarious Employment," 3-4.

58 Vosko, *Temporary Work*,162.

suitable for those workers (often female) who it is assumed are unable to make the commitment to permanent full-time employment due to the private obligations of social reproduction in the home. This creates a paradox as the supposed benefits of flexibility result in an erosion of the employment security associated with SER (such as full-time, permanent work) but, subsequently also the benefits meant to aid in social reproduction.[59] Precarious employment is a relational concept that speaks not only to the nature of work itself, but the social context of work as well.

Turning to the case of tree planting, there are a few ways in which the conditions of labour in the industry closely resemble the concept of precarious employment, although the fit is imperfect. Like many precarious workers, tree planters are forced to engage in short-term, seasonal, and non-permanent employment.[60] Further, there is a level of employment uncertainty inherent to tree planting, within the already temporary seasonal context, as there is no guarantee as to how many days of work there will be in any given season. Also matching descriptions of precarious labour is the extremely labour-intensive character of tree planting which, as has been shown, contributes to the high risk of injury to workers. Tree planters also do not receive any social benefits, overtime pay, or sick leave despite the high risk to injury and overexertion faced by workers. The piece rate itself acts as a kind of individual-planter contract and passes on risk of uncertain production rates to the workers,[61] and so not surprisingly, piece rate payment schemes are often associated with precarious employment.[62] Although there is some security against the wage variability of the piece rate in tree planting due to a form of mandatory 'topping up' to minimum wage should a worker's production fall below that level, if this 'topping up' becomes routine, a worker is often fired for lack of production. Beyond the piece rate, financial risk is

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[59] Judy Fudge and Leah F. Vosko, "Gender Paradoxes and the Rise of Contingent Work: Towards a Transformative Political Economy of the Labour Market," in *Changing Canada: Political Economy as* Transformation, ed. Wallace Clement and Leah F. Vosko (Montreal-Kingston: McGill-Queen's University Press, 2003), 195.

[60] Vosko, *Temporary Work*, 161-2.

[61] Prudham, *Knock on Wood,* 45.

[62] Michael Quinlan, Claire Mayhew, and Philip Bohle, "Global Expansion of Precarious Employment, Work Disorganization, and Consequences for Occupation Health: A Review of Recent Research," *International Journal of Health Services* 31, no. 2 (2001): 350.

further farmed out from management to workers as tree planters must supply the majority of their own gear and tools, much like the precarious temporary workers described by Vosko.[63] The tree planting industry also currently lacks any form of worker organization, such as unionization or co-operatives, which seriously undermines the ability for workers to resist downward pressure on wages and working conditions.

Leah Vosko identifies unions and other forms of labour organization as key to control over the labour process and therefore power for workers,[64] and this lack of organization is a key condition of tree planting that points to precarity. Sweeney and Ekers describe the various barriers to worker organization in the tree planting industry in their account of the failures of both the Industrial Wood and Allied Workers of Canada (IWA) and a planter driven group called the Canadian Reforestation and Environmental Workers Society (CREWS) to organize tree planters in the late 1990s. These barriers include factors such as "a young seasonal workforce with no long term commitment to the industry, dispersed work sites, a lack of organizing resources ... a ubiquitous spirit of libertarianism that permeates the workforce and contractors alike ... [and] the piece-wage system [which] inhibits many of the traditional bases of collective action and solidarity as it individualizes workers' material interests while simultaneously aligning them with those of their managers or employers."[65] There is also a class based frustration to organization as many students (and therefore tree planters) have more affluent middle-class backgrounds, maintaining guarded relationships with unionization and embracing individualism at the expense of organization.[66] An absence of worker organization such as unionization means that tree planters have little ability to change or resist the conditions of precarity that exist within the industry.

On the other hand, in some respects tree planting does not appear to fit with the concept of

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63 Vosko, *Temporary Work*, 180-1.
64 Vosko, "Precarious Employment," 31.
65 Ekers and Sweeney, "(Dis)Organizing Tree Planters," 93.
66 Ibid., 94.

precarity. First, the daily earnings of tree planters are on average significantly higher than many precarious workers considering an average tree planter with a few years' experience can regularity make over $200 per day. Also, the majority of tree planters are male and the forestry sub-sector as a whole is not typically equated with feminized work relations. The tree planting work force is also comprised primarily of either post-secondary students[67] or graduates,[68] a demographic group with better long and medium term job prospects than the typical precariously employed worker. Related to this student classification is that most workers have no intention of planting trees for a career, and are capitalizing on the temporary seasonality of the job in order to pay for school and obtain a different career.[69] Finally, the maintenance of skill within the worker, as was discussed earlier in comparison to Radforth's loggers, suggests that tree planters should be able to maintain more power and control over the process than many precarious workers. In these ways the work of tree planting does not seem to fit with the definition of precarity. However, a closer look reveals that this is not the case.

Even the aspects of tree planting that appear at first glance to resist the conditions of precarity, when examined and interpreted as relative conditions, point towards a situation of precarious employment. First, although the average rate of pay for tree planters of around $22.50 per hour is well above the provincial minimum wage, within the context of the resource sector as whole, this pay rate makes tree planters "among the lowest paid resource sector workers in the province."[70] Not only are tree planters poorly compensated in relation to other resource sector workers, in the last decade the combination of declining piece rates and inflation has seen average tree planter earnings fall by 30%.[71] This coincides with the timing of the deskilling associated with the removal of screefing from the work process mentioned earlier in this paper. A further point on the wage of tree planters is related to the high

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67 Tesluk, "Health and Safety," 23.
68 Katia Dilkina, "WSCA Silviculture Worker Survey Report," report prepared for WSCA (March 2012), 5.
69 Dilkina, "WSCA Silviculture," 30.
70 "Wages and Work Culture Important to Recruiting and Retaining Workers," March 30, 2012, WSCA, accessed April 19, 2012, http://wsca.smartt.com/index.php?Page=225.0&Key=852.
71 Ibid.

level of labour intensity required for tree planting; there is a discrepancy between the amount of energy expended by tree planters, which are well above those of other extremely active workers like loggers,[72] and the earnings of tree planters which are well below those of other resource sector workers. Although tree planting often pays higher than many other precarious forms of employment, in the context of the resource sector, the pay of tree planting is actually low, is on the decline, and does not accurately reflect the labour intensity of the work.

Tree planters may be primarily male and in a sector traditionally associated with 'masculine' employment relations but, tree planting actually more closely resembles the feminized work that characterizes precarious employment. First, although tree planting is part of the larger extractive sub-sector of forestry, tree planting itself is actually a service. Tree planting firms provide reproductive labour by planting trees grown by nurseries for timber-harvest firms rather than extracting timber or producing lumber themselves. Also, within the resource sector, tree planting is often seen as 'feminine' work since not only are there more women in tree planting than most other resource jobs, but there is also a lack of both heavy machinery or a need for raw strength, with tree planting instead relying on hand tools and endurance. In other words, there is no assertion of power and control by the worker over a subservient machine in the exploitation of 'mother nature'. Instead, it is low-tech work, restoring the damage done by primarily male loggers and the machines they operate. Bearing this in mind, as Prudham points out, tree planting has lower pay, worse conditions, a more marginalized work force, and inhabits a generally inferior position within the industry than other forestry work.[73] In these ways, despite its existence in a male dominated and masculinized sub-sector, tree planting is ‘feminized’ in relation to other forestry work in the context of the resource sector as a whole.

Complicating the gender narrative, there is actually an opposite movement within the worker culture of the tree planting, in which a form of masculinized gender bias exists. This internal masculine

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[72] Roberts, “In-Season Physiological,” 563.
[73] Prudham, *Knock on Wood,* 44-45.

gender bias is displayed as high production totals are seen as feats of physical prowess, power, masculinity and worthy of more respect than planting high quality trees which is seen as a matter of attention to detail and care for the survivability of planted trees at the expense of production. Production is rewarded officially through higher daily earnings, but also often unofficially with prizes or rewards given to workers for achieving the highest total seasonal production in a given camp, whereas exceptional quality is rarely afforded the same level of prestige or recognition. There are similarities with this internal 'masculine' bias in tree planting and Thomas Dunk's description of working class male culture in Thunder Bay, Ontario. Dunk explains how the boredom and alienation of industrial sites (like cut-blocks) is re-interpreted by the workers as a test of masculinity or strength.[74] Particularly applicable to tree planting, Dunk explains how difficult and dangerous working conditions are seen as a test of masculinity rather than an expression of exploitation in capitalist labour relations.[75] Indeed, a common saying among tree planters is "shut up and plant," embodying the sentiment that the conditions are something to be simply accepted, even embraced, and a "real" tree planter will work without complaint. This has the effect of entrenching precarious working conditions by stifling open opposition and complaint about conditions by the workers, with the stereotypical perception that "men do not whine or gripe."[76] From within tree planting there is a culture that privileges stereotypically masculine ideals but, from the perspective of other resource sector work, it is more typically feminized, creating a tension that works in two ways to entrench tree planting as a form of precarious employment.

The fact that many tree planters are students actually contributes to the precarious nature tree planting employment as well. Simply being a student does not say anything about conditions of precarity, but the related need for money to pay for school and the typical youth of students does; it is this combination of financial need and youth that has consequences for precarity. The financial burden

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74 Thomas Dunk, *It's a Working Man's Town: Male Working-Class Culture in Northwestern Ontario*, (Montreal-Kingston: McQill-Queen's University Press, 1991), 97.
75 Dunk, *It's a Working Man's Town,* 97.
76 Ibid., 100.

of post-secondary education (which can extend after graduation in the form of student loan debt) means that many students are willing to accept precarious forms of employment in order to meet the financial pressure of paying tuition or servicing debt.[77] Compounding and related to this vulnerability, is that accomplishing the goal of paying for school by tree planting has increasingly become more difficult in the last fifteen years as average tree planter earnings have been falling while at the same time tuition prices have been increasing faster than the rate of inflation.[78] This means that there is more pressure on students to accept precarious conditions of employment and within tree planting to push for higher and higher production rates. Students often fall into a category of precarious employees called "on-a-path" workers which consists of those who (among other things) are working precarious jobs they only intend to keep in the short term as they simultaneously pursue their "real" career choice.[79] This means that students and other planters who do not consider tree planting a career (up to 80% of all tree planters[80]) have no incentives to combat management, or even more directly, licensees, concerning declining long term average earning rates since they do not intend to be working the job for long. Furthermore, whether an active choice concerning whether or not to combat management may be moot given that tree planters may not actually recognize long term trends in wages and conditions given their short amount of time in the industry.

Also, concerning how the large element of student tree planters influences precarity in tree planting, the role students have played in the composition of the workforce of tree planting in BC may be compared to the role of Mexican migrant workers in the Oregon tree planting industry as described by W. Scott Prudham. Like the Mexican migrant agricultural workers in Oregon,[81] students in BC are

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77 Marlea Clarke et al., "'This Just Isn't Sustainable': Precarious Employment, Stress and Workers' Health." *International Journal of Law and Psychiatry* 30 (2007): 322.

78 "Paying For Higher Education," last modified December 1, 2008, Statistics Canada, accessed April 5, 2012, http://www.statcan.gc.ca/pub/81-004-x/200409/7018-eng.htm.

79 Clarke, "'This Just Isn't Sustainable'," 315-6.

80 Tesluk, "Health and Safety," 23.

81 Prudham, *Knock on Wood,* 49.

free to work full-time during the exact period during the year that seedlings should be planted in the BC interior (where the vast majority of trees are planted provincially[82]) from a biological perspective. Also like Prudham's migrant workers, students have a narrow window for full-time employment and are willing to work for less pay and in inferior conditions in order to secure as much work as possible during a limited time frame. In the late 1970's, as migrant workers began to comprise a larger percentage of tree planters in Oregon, wages declined. Likewise, in BC, as students and non-career workers began to displace career tree planters (36 percent non-career workers in 1997,[83] compared to 80 percent in 2006[84]), a similar decline in wages can be seen as bid-prices (from which the piece rate paid to workers is derived) fell by 40% in the same ten year span.[85] Like the migrant worker tree planters in Oregon, given their vulnerability due to financial need and lack of organization, students are less likely to complain about long hours or poor working conditions (although for different reasons regarding age and class) than career tree planters with a long term interest in the relations of employment.[86] From perspective of management, the vulnerability and inherently short term character of student workers means management is able to avoid providing a standard employment relations (SER) situation. In fact, there is an incentive for management to work temporary seasonal tree planters harder than would be sustainable for not only a career, but for even a single calendar year given that most tree planters are only employed for a few months a year. It is in the economic interests of the planting firm to use up all its available labour power by end of the three month season, counting on the intervening eight or nine month off-season to be enough time for planters to recover. Despite the middle-class backgrounds of many students, their financial needs and youth still leave them in a vulnerable position, contributing to the precarity of the tree planting industry.

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82 WSCA "Report on the State of the BC Silviculture Sector: Statistical Appendix August 2011" 4.
83 Coopers & Lybrand Consulting, "Profile of Core Silviculture Contracting Activities in British Columbia: Forest Renewal British Columbia," report prepared for WSCA (August 1997), 17.
84 Tesluk, "Health and Safety," 23.
85 Ekers and Sweeney, "(Dis)Organizing Tree Planters," 79-80.
86 Ibid., 77.

Finally, like Radforth's loggers, tree planters are able to maintain a certain degree of the skill and although the natural conditions surrounding tree planting have meant that it is resistant to the "de-skilling" that Braverman associates with Taylorism, it has still occurred. The change in foresters' philosophies during the mid-1990s concerning micro-site selection that eliminated the need for most 'screefing' also had the effect of removing some of the 'skill' required to plant trees and changed the work process to favour younger more athletic workers, marginalizing older career planters.[87] This change has also contributed to modern tree planters now spending 71-94% of the work day performing the physical act of planting trees[88] as opposed to 55-61% measured in the early 1990's.[89] This drastic increase in labour intensity is likely due to the fact that the change in work process has allowed for higher production totals. These higher productions rates have in turn likely contributed to the falling earnings of tree planters, as bid-prices (from which the piece rate paid to workers is derived) fell by 40% in the ten years following the change in work process.[90] Despite some capacity to retain skill within the worker, the process of tree planting has still been subject to a degree of "de-skilling" and this has had the effect of furthering the precarious aspects of the job, which in conjunction with the many other conditions of precarity that surround tree planting, have significant implications for OHS in the industry.

Precarity, Occupation Health and Safety, and Tree Planting

According to Michael Quinlan, a study conducted in Washington State on worker compensation found that injury claims frequency, claims cost, and lost work days per worker were higher among precarious workers than workers with more standard forms of employment in most industries and this

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87 Ibid., 79-80.
88 Hodges and Kennedy, "Physical Exertion," 6.
89 D. Giguere et al. "Ergonomics of Tree-Planting Using 'Multipot' Technology," *Ergonomics* 36, no. 8 (1993): 967.
90 Ekers and Sweeney, "(Dis)Organizing Tree Planters," 79-80.

difference was even more pronounced in high hazard industries.[91] With its high rates of injury and lost workdays annually, tree planting clearly falls into this category, but why?

The conditions related to precarity, such as those observed in tree planting, have negative consequences on many aspects of OHS, and it is within the context of precarity that the high rates of injury in tree planting begin to make sense. First, Clarke, Lewchuck, de Wolff, and King found that "on-a-path" workers, like many tree planters, are often willing (and may even feel it necessary) to compromise their health and ignore pain to further future career goals.[92] Perhaps not surprisingly, they also found that "some of the worst health indicators were reported by younger workers."[93] This has clear implications for tree planting, as the vast majority are young, student, and non-career workers using tree planting as a means to pay for school for the ends of a different career. This situation has been exacerbated in the tree planting industry by the piece rate and the combination of declining earnings and raising tuition, shedding light on the willingness of tree planters to over-exert themselves to the point of injury. Indeed, a study by Jordan Tesluk from 2006, found that many tree planters felt that the ability to increase production in order to keep up with income requirements is no longer achievable without physical risks.[94] This driving of tree planters to the limits of production is reminiscent of Taylorism's overall goal of extracting the physiological maximum productivity that can be obtained from a day's labour power.[95] Those tree planters that are working to further other career goals are at an increased risk of exploitation to the point of injury as they prioritize current earnings over the long term sustainability of their current working situation.

Even for those tree planters that are not categorized as "on-a-path," there are other negative OHS implications concerning the precarious conditions of tree planting. Quinlan and Mayhew identify

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91 Michael Quinlan and Claire Mayhew, "Precarious Employment and Workers' Compensation," *International Journal of Law and Psychiatry* 22, no. 5-6 (1999): 511.
92 Clarke, "'This Just Isn't Sustainable'," 319-20.
93 Ibid., 325.
94 Tesluk, "Health and Safety," 4.
95 Braverman, *Labour and Monopoly Capital*, 97.

potential "adverse health effects associated with ... a lower level of participation in OHS committees, unions, and so forth."[96] Concerning OHS committees, Tesluk found that despite requirements by the Workers Compensation Act, less than 40% of the camps he visited in his research on health and safety in the tree planting industry had an active OHS committee or representative.[97] According to Quinlan and Mayhew, unions play the role of "discouraging employer victimization and arranging expert evidence and representation in disputed cases,"[98] but as has been shown, contemporary tree planting in BC is completely without unionization or related worker organization. The negative health consequences of a lack of unionization in tree planting also extends into the realm of worker knowledge of compensation entitlements.

Temporary and seasonal workers, particularly those who are young or lack unionization like tree planters, are at an increased risk to injury owing to ignorance of their regulatory rights and entitlements.[99] This ignorance of worker rights means that some "workers are reluctant to make claims for fear of interfering with income flows or future employment prospects."[100] Quinlan and Mayhew, drawing from the Australian Bureau of Statistics, have found that this lack of knowledge and understanding concerning worker rights and entitlements is particularly prevalent in seasonal resource-based industries such as forestry and occupational groups that show a "propensity to employ young inexperienced workers,";[101] the comparisons that can be drawn here to tree planting are clear. This lack of knowledge about worker rights has implications for the development of regulations and policies in the first place. By not reporting incidents and injuries, workers distort the information used in the OHS policy development process. As Quinlan and Mayhew state, "in countries like Canada ... the combination of recent policies more closely integrating compensation and prevention agencies and the

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96 Quinlan, Mayhew, and Bohle, "The Global Expansion," 347.
97 Tesluk, "Health and Safety," 43.
98 Quinlan and Mayhew, "Precarious Employment," 505.
99 Quinlan, Mayhew, and Bohle, "The Global Expansion," 352.
100 Ibid., 363.
101 Quinlan and Mayhew, "Precarious Employment," 494-5.

growing influence of risk management/loss control techniques in government and industry has been associated with even greater reliance on compensation data."[102] With tree planters under-reporting the frequency/intensity of injuries, the data used to formulate preventative OHS policy will be distorted, meaning that some worker compensation agencies may be developing inappropriate or inefficiently targeted policy based on faulty aggregated compensation statistics. Even where active prevention policies are not in practice, the distorted compensation data could be an additional barrier to attempting to develop and implement active prevention policies.

By recognizing tree planting as precarious employment the wider social and political economic factors that influence injury rates can be identified in order to improve the OHS situation of tree planting. Another benefit to recognizing tree planting as a form of precarious labour is that lessons can be drawn from other precarious forms of employment in an attempt to find ways to lower injury rates. With an understanding of the indicators, causes, and health implications of precarity in tree planting it is possible to dodge the trap of essentializing the health risks of tree planting as simply "part of the job" and instead see through to the social, economic, and political factors that create the context in which tree planting exists and gain a better understanding of how these contexts create a risky environment for tree planters. Recognizing the precarious nature of tree planting also allows a clearer understanding of the limitations of potential solutions to the high injury rates of tree planting that do not address precarity. Technical recommendations about the appropriate shovel length[103] or about increased monitoring and regulation[104] do not address the incentive structures that influence injury rates or the realities of the work process that make direct monitoring difficult. Also, given the difficulties in organizing tree planters, the prospect of some form of labour organization arising to empower workers currently seems unrealistic, thus labour organization cannot be counted on to fill the void of worker

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[102] Ibid., 510.
[103] WorkSafeBC, "Preventing Tree Planting Injuries," (2006), 5.
[104] Tesluk, "Health and Safety," 42-4.

empowerment at this time. Rather, the fundamentals of precarity must be targeted first, after which, the job may able to begin to attract long-term interest by the workforce and shift some power back towards labour from management.

In terms of targeting the precarious conditions that are currently symptomatic of tree planting, there are some potential solutions that can have an immediate effect. First, incentive structures could be addressed by financially rewarding the quality and not just the quantity of trees planted. This could have the result of lowering injury inducing production demands by both improving the survival rate of the trees (allowing timber-harvest firms to plan on higher seedling survival rate and thus requiring less trees to be planted) and also lowering the necessary amount of planted trees needed for planters to meet their desired income targets. In order to prevent tree planting companies from simply adjusting rates of compensation, this would likely have to incorporate some form of government regulation that marries both production *and* quality to tree prices as well as government monitoring of company records to ensure provincial minimum wages accounting for overtime were being paid to workers. This concept admittedly falls victim to the lack of worker knowledge concerning entitlements and rights, but if those hurdles could be overcome it would allow workers to substitute away from production and towards quality by requiring fewer trees to effectively restock the cut-block and hit income targets. Second, the individual incentives for forepersons to cut corners on safety could be removed by de-coupling forepersons' earnings from the piece rate. Since forepersons are the part of management most directly responsible for worker supervision this change could have a significant positive influence on the effectiveness of OHS policy enforcement. From a management perspective, the WSCA recognizes the benefits of retaining employees in the industry in the long term,[105] but as long as the conditions of tree planting remain as precarious as they are, the turnover rate of tree planters will likely remain high. By targeting some of the key indicators of precarity, the long term interests of both management and

[105] WSCA, "Report on the State of the BC Silviculture Sector: Statistical Appendix," (August 2011), 3.

workers can be improved by reducing the injury rate of tree planting.

Conclusion

Tree planting is iconic to Canadian student and youth culture, as much a life experience as it is a job. However, no job is worth getting hurt over. Although there comes an inherent risk to any job undertaken in a remote wilderness context, tree planting is more dangerous for its workers than it has to be. The precarious conditions of tree planting including risk transferral to workers via piece rates, downward pressure wages that do not properly reflect the labour intensity of the work, a temporary seasonal and largely non-permanent workforce, and a lack of benefits and labour organization all contribute to an unacceptably high rate of injury. As long as direct monitoring remains difficult and incentives are aligned at both the management and worker level for maximum production at minimum allowable quality and safety standards, the high rates of overexertion and corresponding health issues among tree planters will continue. Given that increased monitoring and worker organization currently seem unrealistic, it is recommended by this paper that changes to the incentive structures of both worker and forepersons are likely the most effective ways to target some of the key indicators of precarity and create a more physically sustainable working situation. Due to the many positives of a more experienced, competent, and safer workforce, improving the conditions of precarity that result in negative OHS consequences is a goal that would benefit worker and management alike. As the BC Forest Safety Council's "Forest Safety Accord," states: "We believe in a culture where the health and safety of all workers is an over-riding priority,"[106] but until the precarious conditions of the job are addressed, production will continue to take precedent over health and safety.

[106] "Forest Safety Accord," BC Forest Safety Council, accessed May 14, 2012, http://www.bcforestsafe.org/about.html.

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