

THEORETICAL PERSPECTIVES ON LEARNING FOR PREVENTION OF FISHING VESSEL ACCIDENTS

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Abstract

Fishing vessels come to grief partly because theory pertaining to accidents and their prevention is unduly Functionalist and obsessed with technical matters (involving equipment). The author applies to fishing accidents a social cartography that emphasizes the importance of power relations and ontology. Four paradigms—functionalism, humanism, radical humanism and radical functionalism—are used to raise issues pertaining to accidents and their prevention. The utility of the cartography is demonstrated by revisiting accident reports concerning Scotia Cape, a large Canadian vessel that disappeared with the loss of seven lives. At the centre of this analysis is the need to broaden prevention programs so as to have adequate regard to human factors and the political economy of the fishing industry.

Résumé

L'auteur soutient que les bateaux de pêche sont impliqués dans des accidents, partiellement parce que la théorie au sujet des accidents et de leur prévention est excessivement fonctionnaliste et met l'accent sur les aspects techniques, comme l'équipement. Il applique aux accidents de pêche une «cartographie sociale» qui insiste sur l'importance des relations de pouvoir et de l'ontologie. Quatre paradigmes; le fonctionnalisme, l'humanisme, l'humanisme radical et le fonctionnalisme radical sont utilisés afin d'analyser le problème des accidents de bateaux et leur prévention. L'utilité de la cartographie proposée est démontrée en réexaminant les rapports d'accidents de Scotia Cape, un grand navire canadien qui a disparu avec sept personnes à bord.

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L'élément central de la présente analyse réside dans le besoin d'élargir les programmes de prévention afin de mieux tenir compte du facteur humain et de l'économie politique de l'industrie des pêches.

On July 21, 1993 the tug *Arctic Taglu* was pushing a barge south in Georgia Strait, British Columbia. Unbeknown to the master of the tug, the fishing vessel *Bona Vista* was immediately ahead. At 2.43 a.m. there was a collision, the fishing vessel rolled under the bow of the barge, and six people were trapped in a putrid mixture of diesel and seawater. Although authorities attempted a rescue, all six died in horrific circumstances.² When fishing fatalities occur they usually do so in isolated places. But, with *Bona Vista*, the people died within sight of Vancouver. Theirs was a public ordeal and fishing vessel accidents were, at least temporarily, a focus of attention. More recently, the December 2, 1997 death of two fishermen after the capsizing of *Pacific Charmer* rekindled debates about previous fatalities. Here are just a few fishboats in British Columbia on which people have died in recent years: *Canadian National No. 5*, *Hili-Kum*, *Dalewood Provider*, *Courageous*, *Musqueam Fisheries Patrol*, *Whiskey Jack*, *Ju-Ju*, *Laurie Louise*, *Little Mama*, *Fat Freddy*, *Flying Fisher*. One of the bodies from *Canadian National No. 5* (a 23 year old) washed up on Tugboat Island, at my property near Gabriola.

Analysis of Search and Rescue (SAR) statistics involving fishboats in Canada strongly implicate human error as the primary cause of incidents and accidents (Canadian Coast Guard, 1987; Committee on Fishing Vessel Safety, 1991). Loss of life in the Canadian fishing industry is primarily attributed to man-overboard situations, capsizing, sinking, groundings, fires, and explosions. High-value activities, such as the westcoast herring fishery, have had a disproportionate share of fatalities. The Canadian Coast Guard (1987) maintains the principal factors leading to human error are "risk-taking for profit induced by increased economic pressures, vessel design and safety sacrificed for economic benefit, poor seamanship" (p. 4). Yet inquests—such as the October 1998 effort to learn from the *Pacific Charmer* tragedy—usually end up with recommendations about equipment (Boshier, 1998, 2000).

² With exceptions such as Roxy Stove who died on *Scotia Cape* and several women passengers on *Bona Vista*, most fishing fatalities involve men. There are women in the fishery, but the main focus for this paper is fishermen. For a useful analysis on women who work on the water see Jensen (1995).

Current Prevention Education

In British Columbia, prevention education is encumbered by industry hostility directed at the *Workers' Compensation Board*, desperation in parts of the fishing fleets, and presence of people who—because of cultural, literacy and other issues—have an approach to safety not amenable to traditional educational methods, techniques and devices. Prevention education anchored in a schooling model is not congruent with the proclivities of fishing communities and rarely informed by principles of adult education. More importantly, there is no evidence to suggest it reaches more than a small percentage of the fleet. It's stuck in a functionalist discourse and based on vague notions of creating awareness or giving information.

There is nothing technically difficult about action designed to reduce fishing vessel accidents. One reason why these actions are not a high priority is because even people trained to use analytical modes of thought believe accidents defy study and are due to "chance," "bad luck" or "the bloody weather." There are also a large number of self-styled experts and fatalists ("you can't do anything") in the fishing industry as well as fundamentalist thought and action.

Psycho-cultural barriers to prevention require research. The trouble is, prevention measures sometimes are perceived as threats by industries or power elites. Thus, when construing prevention, educators or regulators have to consider questions like: Who benefits? Who's in charge here? Who controls this "knowledge" and whose interests are being served?

Delivering Facts

Education for prevention often involves dispensing "facts." But it is overly naïve to think that once people have facts (about personal flotation devices, flares, liferafts and suchlike) they will change their behaviour in the desired direction. As Festinger (1957) demonstrated years ago, people reject or rationalize facts if it suits their purposes. Educational facts (e.g. wear a lifejacket) may seem obvious to the educator. But the way these facts are construed by the recipient, and extent to which he or she has power to act on them, will greatly shape the extent to which having facts leads to change. It is also naïve to think sophisticated equipment (such as navigation aids) necessarily enhances safety. If the fisherman is a risk-taker, the new Global Positioning System (GPS) enables him to cut corners even finer than before (Geller, 1996).

Need For Theory

With limited openings, fishermen sometimes have to travel at night or confront adverse weather. They must be practical with a good knowledge of electrical and plumbing systems, hydraulics, and many other matters. One wrong slip and somebody's father can be overboard, hauled over a net drum or into a winch. This is a practical and life-threatening world and fishermen are not preoccupied with theory. To them, theory sounds airy-fairy and detached from the real world. It doesn't pay bills. Really, who needs it?

There is nothing as practical as good theory. Prevention strategies not informed by theory soon becomes random and ineffective and, thus far, there have been few attempts to theorize fishing accidents or their prevention. Instead of dwelling on weather and equipment, a broadened theoretical approach should embrace human dimensions (and the way fishermen "read" their world) as well as structures that shape the rhythms of fishing operations.

The need is to insinuate structural and human dimensions into discussions typically nested in techno-rational discourses. The task is to view fishing accidents, and their prevention, from the vantage point of different theoretical perspectives. A theory is "a provisional explanatory proposition ... to account for observed data in the absence of any direct empirical manifestation of the relationships" (M. H. Marx, 1970, p. 6). Paulston (1996) provides a theoretical framework for seeing educational change. This framework is useful for viewing fishing vessel accident prevention.

A Theoretical Model for Seeing Prevention Education

Social cartography is the process of mapping theory. It forces the accident investigator or prevention educator to consider multiple explanations for accidents. Paulston and Liebman (1996) draw on Paulston's (1994) global mapping to provide a social cartography. It embraces four paradigms that can offer different ways of thinking about prevention. It rests on two crucial assumptions. One, concerning ontology, is that the way people perceive or construe things is as important as the "objective" world within which they live. The second is the importance of power relations (e.g. between skippers and crews, fishermen and buyers, men and women on fishing vessels). Some prevention efforts, such as the idea men should listen more closely to women, challenge extant power relationships.

Ontology and Power Relations

Figure 1 shows the mapping of social theory that underlies Paulston and Liebman's (1996) model. There are two axes behind the circles. The

horizontal axis concerns ontology—the essence of phenomena. People vary in the extent to which they think there is an objective reality external to the individual. For some, there is a world inhabited by lawfully interrelated variables. They have a *realist-objectivist* orientation and practice *scientism* (right side of Figure 1). For others, reality is a subjective phenomenon that exists within consciousness. It exists “in the mind.” Some people thus have an *idealist-subjectivist* orientation. In extreme forms, they practice solipsism (left side of Figure 1). The women’s movement has been a significant contributor to the popularity of *idealist-subjectivist* orientations. The vertical axis concerns power and self-interest. Somebody’s interests are served when prevention programs are mounted. At the bottom are theories that pose no challenge to extant interests. These are uncritical and regard education as benign—a process of “giving information” or “creating awareness.” These are nested in *equilibrium* orientations. At the top are theories that challenge power relations. These constitute *transformation* orientations.

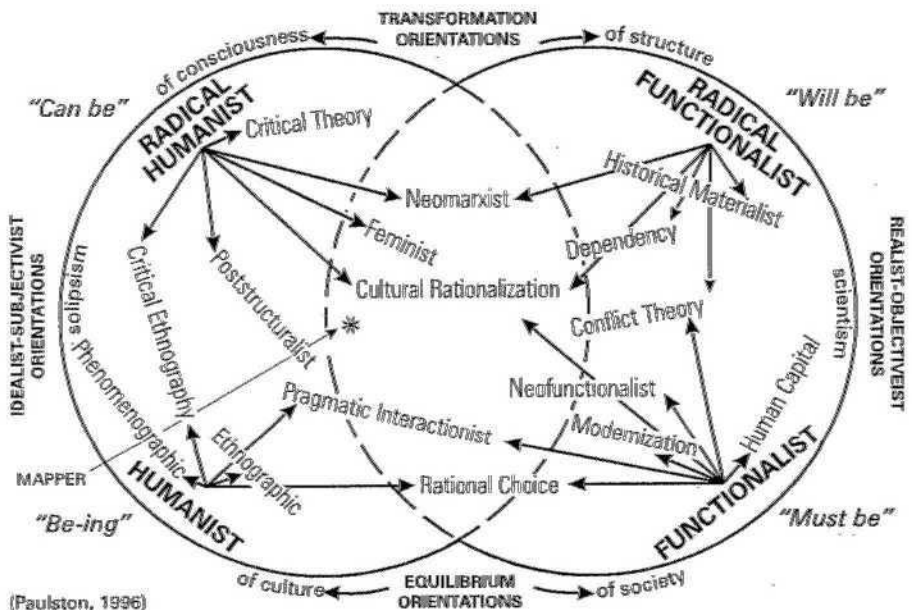


Figure 1. Social cartography used to broaden accident prevention discourse. From “Social Cartography: A New Metaphor/Tool for Comparative Studies” by R. G. Paulston and M. Liebman, 1996, in *Social Cartography: Mapping Ways of Seeing Social and Educational Change* (p. 15), edited by R. G. Paulston, New York: Garland Publishing. Copyright 1996 by R. G. Paulston. Reprinted with permission.

These two axes divide the circles into four overlapping quadrants that comprise four paradigms: radical humanist, radical functionalist, functionalist, and humanist. These four quadrants also correspond to the concepts of can be, will be, must be, and be-ing. Hence, radical functionalists, in the context of fishboats, are less interested in errors made by fishermen than in the political economy of the fishery, corporate owners, and the role of government and unions. In the same way radical humanists are interested in oppressive power relations but more from the viewpoint of learner subjectivity. The skipper or owner has immense power (see Greenlaw, 1999). Deckhands, wives, and others suffer because of the asymmetrical way in which power works on a fishing vessel. For example, when Max Rock swam from the capsized *Pacific Charmer* he did not know where he was. This was the "skipper's business" (Boshier, 2000).

In addition, within the overlapping quadrants are loose zones denoting various theoretical orientations. Like the quadrants themselves, there is some overlap and certain formulations, such as feminism, have more than one theoretical root.

The Four Paradigms

The cartography contains four paradigms that, if adopted, would require different kinds of emphases in casualty investigations and prevention education. For example, a functionalist analysis constructs fishing accidents "scientifically." Humanist, radical humanist, and radical functionalist analyses produces different explanations and troubling implications for the content and processes of prevention education.

Functionalism provides a rational explanation for accident events. It is currently the dominant ideology and is characterized by a concern for social order. Its epistemology tends to be positivist. Functionalists want practical solutions to practical problems and usually are committed to social engineering as a basis for change—with an emphasis on gradualism, order, and the maintenance of equilibrium. They attempt to apply models derived from natural sciences to human behaviour. They assume there is an objective world "out there" that consists of observable, lawfully related empirical entities.

Almost all literature on fishboat accidents is written from a functionalist perspective. Accidents are caused by free surface effect (liquids sloshing in partly filled tanks), downflooding, a fire in the engine room. The investigator typically focuses on "objective" circumstances that immediately preceded the

fire, capsize, or grounding. Data are quantitatively derived and displayed in graphs, charts, or tables.

Theorists located within the *humanist* (interpretive) paradigm are subjectivists in that reality is what it is construed to be. Great effort is devoted to adopting the *frame of reference* of the learner. Social reality is a network of assumptions and shared meanings. Humanists are more concerned with understanding subjectively construed meanings of the world "as it is" than with any utopian view of how it might be. Although they are at the subjectivist end of the ontological dimension, they do not anticipate any threat to extant power relationships.

From this perspective it is important for accident investigators and prevention educators to focus on the way fishermen "read" situations. For example, an immigrant from a poorer tropical country may construe safety differently than someone brought up in a cold northern climate. Similarly, language proficiency was a major contributor to the capsize and loss of the *Flying Fisher* and its two crew members. The Transportation Safety Board (1993) spoke forcefully about the plight of the approximately 1000 Vietnamese-Canadian fishermen on the west coast and cited communication difficulties as frequent contributing factors (p. 11). There is also a need to consider culturally constructed conceptions of safety and different understandings concerning what to do when in distress. It is not just a matter of language. Another example of research nested in the humanist paradigm is Thorlindsson's (1994) analysis of the "skipper effect"—how the skipper "reads" situations and engages in reflective practice.

The *radical humanist* paradigm encompasses theorists who want to upset extant power relationships but are anchored within a subjectivist ontology. Those in this paradigm are usually anti (or post) positivist. Radical humanists want to overthrow or transcend existing social arrangements. Many employ concepts developed by the young Karl Marx to describe how people carry ideological superstructures which limit cognition and create a false consciousness which inhibits fulfillment. Radical humanists want to release people from constraints—which largely reside in their own cognitions. Praxis becomes reflection (or reconstruing) followed by action.

Radical functionalists share functionalist assumptions but are committed to the overthrow of social structures that build false consciousness. If Radical humanists focus on consciousness and meaning, Radical functionalists focus on structures, modes of domination, deprivation, and contradictions within an objective social world. Within this paradigm are those who focus on deep-seated internal contradictions within society and those who dwell on power

relationships. But common to all theories in this paradigm is the notion each collectivity (e.g., fishing company; skipper and crew) is characterized by inherent conflicts. Within these conflicts lie the basis of change.

What Happened to *Scotia Cape*?

Many "isms" are nested within the four broad paradigms. In this section I bring the analysis back to water level. To illustrate how this cartography of theory might broaden understanding of fishing vessel accidents (and thus better inform prevention programs) here is a case study involving *Scotia Cape*, a large fishing vessel that disappeared without trace. Seven people died. This case should be read alongside the more recent *Pacific Charmer* tragedy (Boshier, 2000) and the documentary film *Dying to Fish* (in production).

On Friday, January 27, 1987, at 2300 hours, the 189 ton, 36 metre combination seiner/trawler *Scotia Cape* left B.C. Packers wharf at Steveston, bound for fishing grounds in the Queen Charlotte Islands. There were seven experienced fishermen (one of whom was a woman) on board a vessel that had a reputation for big production and excellent wages. Although bad weather was forecast, nobody left behind heard discussion about the possibility of altering the fishing plans (Transportation Safety Board, 1987). Gales were blowing in the Queen Charlotte Islands from January 27, later upgraded to storm warnings from January 29 to February 5.

Although the skipper had previously capsized on the sister ship to *Scotia Cape*, he apparently decided to press on into the storm. After leaving Steveston, the vessel was last sighted in Goletas Channel, near the tip of Vancouver Island, but its exact destination was not known because the master kept it a secret. In *Passage to Juneau* Rabin (1999) described the sailing directions for this area. "They made much of the ... stretches of open ocean, their thirty-foot swells, sudden gales, treacherous tidal set, and proven shipwrecking abilities." (p. 33).

The *Scotia Cape* had neither an EPIRB (electronic position indicator radio beacon) nor auto alarm (which broadcasts a distinctive tone on Channel 16, the international calling and distress channel). The search for *Scotia Cape* involved two fixed-wing aircraft from Comox; single aircraft from Edmonton, Prince Rupert, and Sandspit; helicopters from Kodiak and Sitka (Alaska) and Sandspit; four Canadian Coast Guard cutters; and a Canadian fisheries vessel. In all, there were 20 aircraft aloft at various times, and six government vessels on the water for a total search time of 700 hours. The

search covered 105,800 square miles with negative results. For eight days authorities and local people risked their own lives and equipment.

The master was dead, along with the 45 year old mate, the 44 year old engineer, three deckhands aged 32, 43, and 28 (all men), and a 33 year old female cook. Like similar tragedies, this traumatized several families. Seven more names were engraved onto the memorial to dead fishermen at Steveston. Apart from the search costs, the value of the lost vessel, the efforts of the Transportation Safety Board investigation, funerals and other matters of immediate importance, there were social costs—for spouses and children at home, which continue over many years—that cannot be quantified. It is also necessary to remember the exposure to danger suffered by searchers obliged to work during a storm. I estimate the *Scotia Cape* incident cost at least six million dollars. Of this, two million dollars was in the form of a survivors benefit paid by the B.C. Workers' Compensation Board. This single incident cost more than the entire national fisheries accident-prevention education budget for one year. Prior to destaffing, the salary bill for the 35 lighthouses in B.C. was \$2.4 million. Hence, light stations could all be restaffed for three years for the price of the *Scotia Cape* incident.

At Sea in Theory

Implications for prevention are now illustrated by positing alternative explanations for the loss of *Scotia Cape*. Each explanation suggests the need for a different focus in prevention programs. Because this vessel disappeared without trace, and there were no survivors to interview, this paper largely depends on the Transportation Safety Board investigation but goes beyond their analysis. In this analysis I consider free surface or a capsized vessel was not the cause but the result of the accident. The causes were in place before the vessel left Steveston.

The task here is to explain the disappearance of *Scotia Cape*. None of these explanations, including the functionalist Transportation Safety Board analysis, represent the ultimate truth of why *Scotia Cape* disappeared. There are multiple truths and each has different implications for prevention. Each is a theoretically different way of viewing the problem. My task here is to raise issues not usually considered in marine casualty investigations and which rarely show up in prevention campaigns. I hope to broaden prevention discourses.

Functionalist Perspective

The vessel carried no EPIRB and searchers were at a huge disadvantage. The system for deploying the liferaft was not adequate and, even if the seven crew got into it, the chances of being picked up were jeopardized by the fact that nobody had their position.

Scotia Cape was a stern trawler with a net that would be towed at 200 fathoms at approximately three knots along a precise contour, irrespective of the direction of wind and sea. *Scotia Cape* was known as a wet ship. The crew worked on deck in waist deep seawater. The Transportation Safety Board (1987) claimed "the crew who sailed on the vessel had supreme faith in the vessel's ability to continue fishing in adverse weather and this was a factor in the crew's high earning capacity" (p. 21). But free surface effect could overwhelm it.

Family members and fishermen on similar boats claimed the vessel was most vulnerable while dragging or retrieving nets. If the net got caught on a snag or difficulties developed while retrieving it this, combined with even a moderate sea state, could have an adverse effect on stability and cause the vessel to roll over and sink. In rough seas everything on the deck would be securely tied down so little flotsam would get loose from the sinking vessel—hence the lack of debris (Rescue Coordination Centre, 1987).

On September 6, 1979 the *Scotia Bay*, sister ship to the missing vessel had capsized and sank while attempting to bring in a large load of fish. On that occasion there was no loss of life. With the earlier incident in mind, from a functionalist perspective, it is easy to conclude *Scotia Cape* went to the bottom in similar circumstances.

Humanist Perspective

Storm-force 70 knot winds were forecast and they arrived. The skipper had previously experienced a capsize in *Scotia Bay* and was now heading into an area famous for rough seas. Unlike others seeking shelter, did he interpret this as an opportunity to get uninterrupted fishing on grounds that had previously produced good money?

Although he would have preferred calmer seas and did not like his crew working in waist high water crashing across the deck, he was secure in the wheelhouse. Previous trips demonstrated *Scotia Cape* could take punishment. Fishermen cannot be choosy about crew, weather, or much else and he had long accepted to "take it as it comes." Others were on the radio whining about weather. For him, every day in shelter was wasted time.

What meaning did crew members ascribe their predicament? This was supposedly a bullet proof ship and they had been here before. Was it just a matter of being on side with lady luck? They would not normally tempt fate by leaving on a Friday. There was security in observing the protective rituals. As waves swept across the deck and the vessel rolled, did anyone doubt the wisdom of what they were doing? What was said, yelled or screamed above the roar of waves and wind? How many crew were gripped with panic and immobilized by fear? If the net got snagged to one side and the vessel heeled would they have the mental resources needed to cut it free?

Radical Humanist Perspective

Nothing was said as the crew piled aboard in Steveston and heard the storm warning for the Queen Charlotte's but, as *Scotia Cape* got near the tip of Vancouver Island, radio chatter suggested other vessels had already run for shelter. Some on those on board felt apprehensive about what they were doing, but once having stepped aboard in Steveston, had no way to get off.

The master had over 25 years experience fishing and, according to the Transportation Safety Board (1987) "had an excellent reputation as a fisherman and master and, although stated to be a cautious person who had considerable respect for the sea, was acknowledged to often fish the vessel in adverse weather" (p. 34). In the pecking order, he had a considerable reputation even though his proclivity for staying out in storms was a source of concern. But, most other heroic male figures—mountaineers, round the world sailors, highliner fishermen—also endured adversity. Even in the best of times, fishing is not the height of luxury. There were good reasons for continuing to crash through the seas. Besides, as U.S. President Harry Truman chided his opponents, "if you don't like the heat, get out of the kitchen."

Was this an individual error or was the master nested in a predominantly male discourse that routinely exposed people to extreme danger? To what extent were crew members in a position to exercise choice? What discourses or dismissive strategies were used to discount apprehensions on the ship? To what extent were the interactions that preceded a capsize nested in sexualized ("you've got no balls ... you want to fuck us out of payday?" Knutson, 1987, p. 238), homophobic ("if you girls don't want to be here, swim ashore," p. 87), or similar discourses?

Were the crew on board concerned that running for shelter might earn them the label wimp? Were they prepared to overlook the precariousness of their situation because of the payday that might lie ahead? If so, why did they

need that money, how were these needs created, and to what extent was their presence in this storm part of a toxic lifestyle? Were their deaths an extension of a generally unhealthy mode of living? Or was this an aberration, an unfortunate conjunction of bad weather and problem with winching gear or stability on the ship?

What was the role of the only woman aboard, who occupied the difficult but lower-status role of cook? In the gendered and overwhelmingly male-dominated culture of a large fishing vessel did she have any power at all? It was almost impossible to prepare food in the mayhem of 80 knot winds and towering seas. Was she a bit of a nuisance among the men? Or had she long ago become "one of the boys." She had no power, not necessarily because of her gender but, as cook, was near the bottom of the status hierarchy.

The crew deferred to the will of the skipper. The cost of opposing his decision to press on regardless would be too high even though the storm was terrifying. Besides, the atrocious weather would eventually abate and those who'd fished through the storm would be laughing, their superior insight intact, their reputations enhanced, pay packets swollen. "Girls" that wimped out would hear about it. In the masculine culture of a large fishing vessel, wimps are accused of having "lost their balls."

Radical Functionalist Perspective

Fishermen enact their lives within a web of class relations. In this case the most salient relationship was the one between owner, skipper and crew. A second relationship concerned "false consciousness"—fictional notions of social mobility that impelled the crew to search for big wages.

Company/crew relations. B.C. Packers is a large corporation incorporated in 1928 but with roots that go back to 1902. Their famous *Cloverleaf* trademark was acquired in 1908. Today they are the largest processor of seafood in British Columbia and many canneries built last century are owned by them.

Scotia Cape was valued at more than \$1 million, yet the owner neglected to purchase and install an EPIRB or auto alarm. An EPIRB is a battery operated transmitter that, when activated, transmits a unique identifier that enables search authorities to identify the name and position of the vessel in distress. The EPIRB signal is detected by satellites that alert rescue authorities. An auto alarm is a device incorporated into the ship's radio. In the event of distress it transmits an oscillating tone that alerts nearby vessels that a distress broadcast will follow. When *Scotia Cape* was lost both items were available at a modest cost. What aspects of the organizational culture at

B.C. Packers created a situation whereby large company vessels were sent into storms without this equipment? If this was the pattern, what norms and expectations surrounded the maintenance of other machinery on company vessels? How could this corporation justify the contradiction of sending ill equipped vessels to sea while maintaining a company executives' aircraft?

There are fishermen from many nations and cultures working in British Columbia. Declining fish stocks and prices are tempting them to take risks, and fishermen are not likely to challenge companies that send poorly equipped vessels to sea. There are ways of neutralizing "shit-disturbers" and, as the *Pacific Charmer* inquest showed, fishermen are prone to embrace corporatist discourse (Boshier, 2000). As Freire (1972) so deftly pointed out, sometimes the oppressed take on the attitudes of the oppressor.

Prevention educators should be careful not to habitually blame the victim. Accidents often arise from structural factors and conditions of work that leave fishermen with limited options and an inability to exercise choice. In this case a company that could not muster the energy to install an EPIRB and auto alarm on *Scotia Cape* later provided their company plane and thousands of dollars for aircraft charters to assist the search. From a radical functionalist perspective, the skipper and crew died because of predatory capitalism. The accident arose from exploitative class relations. The capsized, the fluids slopping in the tanks (free surface) were the end point, not a cause of the accident.

False consciousness. For a radical functionalist, false consciousness also sent *Scotia Cape* crew into danger. The master and crew had long ago adopted fictional notions of upward social mobility to rationalize the fact they pushed the boat and equipment over the edge not once, but time and time again. They thought social and economic advancement depended upon individual initiative and effort. Rewards depend upon individual initiative.

Their aspirations, regarded as normal by most citizens, were uncritically accepted. The company owners—those who profit from the crew's work—enjoy relatively privileged lives in Vancouver. But they earned this right through their earlier efforts. With the right kind of commitment and tenacity, and a few lucky breaks, the crew of *Scotia Cape* could make a handsome living—or so they thought. Risk is an accepted part of the business. After all, "no profit, no gain." Or, as fishermen say, "snooze and you lose."

For a radical functionalist the notion that rewards are inevitably given to those who pursue them is a dangerous delusion, comparable to the bizarre idea that any American can become President. It backgrounds the importance of structural relations. Because of false consciousness or

delusions about rewards for individual initiative, and a tendency to adapt to predatory behaviour by employers, fishermen press harder, go further, stay out longer, and rationalize risk-taking and danger.

Reflection

After a two million dollar effort, federal search authorities had no words of reassurance for *Scotia Cape* families. Indeed, in the Rescue Coordination Centre (1987) report on the search, whereas the officers at B.C. Packers are fully named, the crew's families were reduced to an acronym, NOK (next-of-kin).

The six men and one woman who signed on in Steveston found themselves trapped in a tapestry of unequal power relations that goes back to a time when kings built navies and put an iron-willed captain in charge. The master acted on behalf of the company. He did not need explicit instructions because he knew what was expected. If he intended to defy the weather forecast and push on while the other six wanted to seek shelter, the structure of power on a fishing vessel did not invite challenge. Anyone questioning the master's decision would soon be labeled a "shit-disturber" and sent "down the road."

So, in the end, the question is: Given the various circumstances and availability of different theories, how can education be used to prevent fishing vessel accidents? One answer is that education should be used in many ways, some that focus on the vessel and its equipment, others that focus on the operator and crew, and yet others that embrace the socio-cultural and socio-political context in which fishing occurs. But, in the end, it comes back to ontology and power relations.

Changing Prevention Education

Prevention of fishing vessel accidents depends in significant ways on education that has adequate regard for power relations and the human dimensions of fishing accidents. A more thorough approach to prevention education should involve issues that arise out of humanist, radical humanist, radical functionalist, as well as more familiar functionalist ways of construing accidents and their prevention. With this in mind, now the task is to raise issues pertaining to the content and processes of prevention education.

From Training To Education

Prevention education informed by humanist, radical humanist, radical functionalist, as well as functionalist perspectives involves education rather

than training. Training denotes a fixed content and the notion there is consensus concerning “correct” procedures. The focus is on course content (e.g. collision regulations) usually contained in ring-binders and trotted out year after year. An educational approach that has regard for the socio-cultural backgrounds of the learners places power relationships in the foreground and involves use of participatory techniques, large amounts of group work, and skillful use of case studies (e.g., *Scotia Cape*). The metanarratives (e.g. collision regulations) should not be abandoned. Rather, they should be incorporated into more participatory formats that respect learners. Instructors in marine training institutes have to relinquish some power, give up the urge to constantly “teach,” and find ways of eliciting and legitimizing the experience learners bring to the educational setting. An outstanding example of prevention education that exemplifies this principle is Capt. Barbara Howe’s (1999) “hands-on” work with a scale-model (of a seiner) for learning about stability. She had earlier been plucked from the water by the Coast Guard after her gillnetter sank and was very motivated to learn and teach about stability.

The broadened content and participatory processes go hand in hand. It is not possible to have one without the other. Language and terminology are important. Instead of training, we should have education. Instead of curriculum, we should have programs.

Program Content

Instructors should abandon metanarratives in favour of fluid and differentiated approaches shaped to meet the needs of learners from different ethnic groups, gear types, and positions of power and powerlessness. Prevention programs based on a functionalist analysis of fishing vessel accidents usually involve dispensing information (facts) about piloting, *fishing practices*, or equipment. They also tend to be Eurocentric and place white, English-speaking persons at the centre. Asian-language speaking persons are the “other” who get hectored about learning English and doing things the “Canadian” way (as if there’s some Canadian “essence”).

Ideally, much program content will be drawn from the experience of ethnically defined fishermen in different gear types. More programs should be offered by or in conjunction with vessel owners, unions, ethnic fishing associations, community groups, and other interests. In British Columbia, fishermen wanting to study at marine training facilities face a curriculum designed by experts, many of whom have never set foot on a fishing vessel. Few ethnically defined or First Nations fishermen report for such training.

Power relations in these institutes are profoundly unequal. In some courses, questions are discouraged and the instructor brooks no challenge to the "correctness" of his lecture. Learners are constructed as children.

Fishing vessel accidents would be more likely prevented if educators adopted an ideology of adult education (instead of training). Education programs nested in the theoretical perspectives described here would contain heavy leavenings of psychology, anthropology, sociology, and other social sciences. Investigators and educators would go into but stretch far beyond ergonomics or human factors, let alone collision regulations and emergency duties. Alternative approaches would involve discussion of gender, ethnicity, and the different norms and understandings held by trollers, seiners, gillnetters, crabbers, and so on. There would be a concerted study of socio-political factors (structural relations) that shape fishing operations and influence safety.

Program Processes

Instructors should make more lavish use of case studies but, instead of just telling learners about incidents, should employ participatory techniques that unmask different ways of interpreting "findings" found in casualty investigation reports. If Transportation Safety Board investigators can imbue their reports with a socio-psychological and socio-cultural perspective they will be even more useful than at present. The case study, long a technique favoured by adult educators, is potent with fishermen because, in many instances, learners knew the deceased and are familiar with circumstances (e.g. rough weather, pressure of competition, taking a short cut) of the accident studied. When using case studies the instructor should ensure learners interrogate the case from different theoretical perspectives. They should not uncritically accept the explanation proffered by the investigator, because this will often refer to a result, or end point (e.g., free surface) not the cause (e.g., company negligence) of the accident. The focus should be on causal chains that, in most cases, began long before the vessel left the dock.

Summary and Conclusions

Equipment, machinery, weather, and other objective facts are important. But these preoccupations must be broadened and now is the time for accident investigators and prevention educators to ground strategies in humanist, radical humanist, and radical functionalist, as well as functionalist approaches.

Each approach has been described and used to analyse what happened to *Scotia Cape*. According to the Transportation Safety Board investigation, *Scotia Cape* probably rolled over and sank because of free surface. It is vitally important but was a result, not a cause. The cause of what happened resided in unequal power relations between the company and the crew, the skipper and the crew, and in their false consciousness and subjectively derived notions of safety and risk. These things are rarely brought forward in prevention education programs. Instead it is collision regulations, righting arm curves, marine electronics, piloting, and marine emergency duties—important, but part of a bigger story.

Prevention education programs informed by humanist, radical humanist, radical functionalist as well as functionalist perspectives should involve techniques that elicit and make use of the learners' background and experience. Because the fishing fleet is highly differentiated, content should be adapted to local particularities. Prevention education processes should be participatory, involve fewer lectures, and include more active collaboration with learners.

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