

# New technology and its impact on well being

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**Abstract.** Great changes have come about in the last decade regarding the organization of work. High technology and the steadily increasing ideology of technocracy has produced a profound effect on the organization of work in some workplaces. This effect has made the psychosocial and physical working environment tougher, especially for women. The results we are presenting here show that when dividing fishing factories into three technological stages; low technology, middle technology and high technology, the job strain was highest and the decision authority by the employee was lowest in the high technological factories. This even had an impact on health and on the atmosphere at the workplace, where the employees in the high technological factories were more likely to complain about several health problems as well as about low degrees of cheerfulness at the workplace and tiresome jobs. However, these same people were the most positive towards the implementation of the high technology and the new way of organizing their job that the technology introduced.

Keywords: Technology, work environment, organization, gender, well being

## 1. Introduction

In this article, we are going to analyse the relations between the level of technology and the organisation of work in some Icelandic fishing factories and its impacts on women's and men's well being. By this we mean social risk factors, such as decision authority, job strain, and the atmosphere in the workplace. The main question is: Does new technology in the fishing industry, applied primarily to increase productivity and to facilitate surveillance of the workers, have an impact on the organization of work and workers' well being?

We are in a period of rapid technological development in the workplace that influences us in different ways. New possibilities as well as new problems appear in relation to technology; risk and uncertainty, power and expertise are intertwined in our images and expe-

riences of a constantly changing technological landscape. Technology is socially shaped and class and gender is crucial in its development, production and use [2,17].

There has been disagreement concerning the likely outcomes of this technological development for work and employment patterns. This debate is certainly not a new one. Before the middle of the 19th century Karl Marx wrote about alienation in capitalistic society. Marx's notion of alienation came most directly from Hegel. According to Marx, it was vital to establish the right relationship between man and his environment. Marx discussed several types of alienation. He reasoned that economic alienation was as fundamental as work was man's fundamental activity [12]. Blauner [3] develops Marx's idea about alienation and makes a case on the basis of four points thereof. Powerlessness, meaninglessness, isolation and self-estrangement.

Later in the 19th century, the sociologist Emile Durkheim [6] dealt with the harmfulness of anomy and egoism that occurred when a rapid development upset a society's way of life, according to valuations and norms. Both Marx and Durkheim believed that the

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problems and discomfort of the individuals were not always due to their own personal problems, but to the society in which they were living and even the organisation of their work. They even believed that new technology and economical changes did not always increase the well-being of the people.

Now, at the beginning of a new millennium, an example about the prevailing discussion today regarding the rapid changes in the workplace concerns the content of work, forms of labour, working conditions, and communication. The information society, information technology (IT), computerisation, telework and electronics have been widespread terms. The changes that often indicate this concern the organisation of the working environment that has led to increased flexibility and more creative work for a growing group of people, while at the same time leading to increased monotony, and less influence collectively for others [4]. There are two images of what IT means for this new way of working. One is utopian, in which organisations where management is conducted through shared values and trust. The other is dystopian, that is, the new way of working means that staffs are kept in their place through total control.

Many workplaces have experienced a shift from physical to psychosocial demands and to monotonous jobs with too much or too little to do. Demands on attention and concentration increase while the importance of certain skills decreases. The distinction between management and workers is growing bigger.

Stanworth [16] gives a good overview of the development of these ideas. She points out that the optimistic conception of the information age has roots in the functionalist paradigm, most notably the post-industrial writings of Bell [1] and shares in post-Fordist conception of flexible specialization. Failure to adopt the new technology precipitates economic deterioration, higher unemployment, and increased industrial strife. Stanworth points out that the information age, at its most ambitious, will lead to a society where unskilled, low productivity jobs will be almost eliminated by technology. He also claims that there is evidence that the globalisation of some activities produces a shift to higher-skilled work, more reflexive life style, and more possibilities for increased democratisation [9]. Other writers, like Warhurst and Thompson [19] are more pessimistic. They point out that, in some cases, jobs are actually being re-labelled rather than undergoing a process of genuine increased specialization.

Since the end of the seventies, there seems to be an increase in stress and many unexplained problems

among workers in the EU and the USA. This has been caused by the work situation. The pace of work and demands for training has been intensified. There are fewer jobs and remaining jobs have become tougher. At the same time, it is also true that some employees have generally been given more say in their work [13].

According to Theorell and Karasek [10,11,17], social class has a considerable bearing on the psychosocial strain one is exposed to at work. Individuals from the lower classes often have demanding jobs, but without good salaries, career prospects, or control. Research shows that the risk of heart disease is higher among workers who have more demands placed upon them, but have less control. This risk is also higher for workers whose efforts are not rewarded. There are no major differences in the level of demands placed men and women in the workplace. On the other hand, women have less control in their work than men, which puts them at a higher risk for health problems [5].

A Swedish survey, conducted between 1980 and 1995, questioned 3000 members of a labour organisation and 3000 safety representatives. The results showed that working environment problems were just as common in 1995 as in 1980. The greatest change for workers concerned the psychosocial working environment. Many members – a full 70% of the women – also said that their jobs were stressful. The main reasons for their stress was the fast pace at which they have to work, compounded by the fact that the work was physically demanding and that the influence of the workers themselves plays only a limited role. Awareness of psychosocial problems and the organisation of work have increased since 1980. However, despite this, there is an increase in problems in real terms [13]. Carina Nilsson sees the structural changes in the labour market, where companies with fewer workers must produce more than ever before, as the key cause of the increase in stress and psychosocial problems [8].

When evaluating social and psychological factors at work in the occupational health context, we need to take into account factors such as theories of job strain, work motivation, and organisational theories. With the development of the Human Relations Movement (HRM) in the 1940s, the focus shifted to finding alternatives to work specialization. The HRM had a more sophisticated explanation of workplace organization and activity. The workplace was understood as a social system where the culture and conditions of the work-group affected and often restricted output [18]. Several principles were developed: job rotation, job enlargement, job enrichment and work redesign. The following tasks

were of importance: 1. Skill variety (the number of things a person does in a job), 2. Task identity (the extent to which a worker does a complete or identifiable part of a job), 3. Task significance (the perceived importance of a task), 4. Autonomy (control of the work task), and 5. Feedback (the extent to which the worker knows how well the work is performed).

The Job Strain Model was proposed by Robert Karasek in 1979 and maintains that the effects of demands, or stressors, depend on the possibilities for control. This model, usually termed the “demand-control model”, proposed that strain, i.e. distress or adverse health effects, occurs when a worker is exposed to a combination of high demands and low control. The demands are assessed by asking the employee whether (s)he has to work very fast or very hard and whether conflicting demands arise. The level of control is measured by asking whether the employee is free to decide what should be done and how. According to this model, high demands and little control give rise to dangerous levels of stress. Stress increase if the social situation is poor, i.e. support from fellow workers and managers is lacking. High demands by themselves do not necessarily lead to stress if they are accompanied by sufficiently good control over the work situation. If the demands are low, limited ability to make decisions independently does not necessarily produce stress either. Demanding too little of one’s workers, on the other hand, may lead to depression. If a person can exercise control in a demanding situation, he or she can tolerate high demands without suffering any adverse health effects. Indeed, the combination of high demand and high level of control may produce growth and strengthen health [11].

The rewards we receive from our work play a decisive role for our social status. Therefore, the relationships between the efforts invested in work and the rewards are central to us. The Effort-Reward Imbalance Model asserts that the balance between the efforts that we invest in work and the rewards that we obtain help determine our level of health.

The Effort-Reward Imbalance Model maintains that high levels of effort combined with no, or random, gratification will adversely effect our health. Research has shown that workers who put forth a high amount of effort combined with low rewards, low job security, and low status, have a 2 to 4.5-fold higher risk for coronary heart disease compared to workers who report a satisfactory effort-reward balance [14].

Organisational theories mainly focus on organisational structure, practices, and leadership and their relation to motivation, job satisfaction, competence, and

productivity. However, the organisational context of work also shapes the health and well-being of employees in a variety of ways.

## **2. Technological development in Icelandic fish-processing plants**

In the last decade, great changes have come about in the automation of fish processing and the organisation of such work.

The fish-processing plants in Iceland provide low-income jobs, mostly for women. Women comprise around 70% of the work force. All of the workers in the plants are unionised and are paid according to the same pay scales. Despite equal pay scales, women, in fact, receive lower wages. Their jobs are defined as not requiring skill or training. The men who work in the freezing plants are usually either between 60 and 70 years old, under 20 years of age, or foreign. There are not many Icelandic men in the prime of their life working in such places, except in management positions or in maintenance. By contrast Women of all ages and nationalities work side by side and do the same jobs.

The freezing plants are characterized by clear gender segregation. Even if fish processing is commonly thought of as a woman’s job, there are fewer jobs within plants that are defined as women’s jobs than as men’s jobs. Women cut, clean, and pack the fish. Some are floor managers, although there are fewer women in these positions than men. Women’s jobs are more monotonous than men’s jobs; they stand or sit at the same place all day long performing the same job. Women’s work at the conveyor belt is repetitive and they must work at a continuous speed. With some exceptions, men typically work in the freezing room and feed the machines. They are commonly floor managers and only men hold positions in machine maintenance. Old men sharpen the knives for the women who cut, and before the first conveyer belts came in the eighties, young men would bring in and take out the fish. Men generally run the plants [15].

The following description of work processes and the work environment in three kinds of freezing plants in Iceland is not chronological. It depicts the changes that have come about in the last couple of years. The first factories described belong to what we here prefer to call technological stage one. In this stage, the mechanisation is quite low. In this type of factory, two or more women worked together mainly standing at each table. They cut and packed the fish that was brought

to them. They had to know different cuts for different kinds of fish and for various markets. Most often young men brought the fish to the women or they got the fish on a simple conveyor belt. The same women cut, weighed, and packed the fish, which meant that they moved between two or three locations. The women who worked together would either be paid as a unit or on an individual basis. When they were paid as a unit, it was important to know the abilities and reputations of the other women, as one would only choose to work with someone who had at least the same abilities as oneself, so as not to be penalized by another person. In these factories the smell of the fish was often strong and the floors were often wet, which increased the risk for accidents.

In the factories belonging to the second technological stage, the mechanisation and the flow line – a production line with conveyor belts – had been introduced. It consisted of a system of conveyor belts, which transported the fish through the decapitating and filleting machines to the women, who stood or sat side by side at the flow line, taking the fish fillets that were brought to them on the conveyor belt and cut and trimmed the fillets. The fish were then moved on conveyor belts to the packing area, after which they were frozen. In this area there were other workers, mainly women, who were not quick enough in cutting the fillets. With this kind of conveyor belt, it was only possible to have a “house bonus”, due to the fact that the productivity of individual workers could not be monitored. In these plants, the job had become simpler. There were cutting machines in operation that could cut the fish and clean it of bones.

The factories belonging to the third technological stage are the most highly technologically developed freezing plants. As in the second technological stage, the women work on a flow line, now sitting in specially designed chairs that can easily be adjusted to each women’s needs. With the aid of modern computer technology, which streamlines the work, close account is kept of the utilization of fish and individual productivity. In the most highly technologically developed freezing plants, management has implemented new information technology designed to increase productivity and monitor workers. Work methods have been re-organised and the division of labour extended in order to increase efficiency. In the scientific spirit of Taylorism, work is broken down into a series of simplified routine tasks and the workers are observed so that the employers can see the amount of work produced by each individual and the quality of his or her product.

Each woman carried around a small magnifier, which she used as a key to the different rooms after entering the factory, on her way into the dressing room and then to the corridor to the processing room. When the women came to their tables, they punched the key into a hole on the table so that they could be identified and located. While they were working, there were different defined areas on the table so that everything that went to and from individual women was weighed in order to find out how much they as individuals produced and how well they utilized the material. Instead of floor managers staying in the processing room, they were located in front of computer screens from which they observed production. A list with all the names and individual productivity level was printed out twice a day and placed on a message table so that each woman could see how she was doing. However, the list also showed workers how much all the others were producing and who was to blame if not much fish was going through the plant. The motivation is to make the best workers proud of themselves, and to make the women who worked more slowly speed up. The system is designed to make those who work more slowly feel ashamed when their workmates see how ineffective they are, because they are working in a group accord system, which means that they influence each other’s salaries [15]. Computerized information technology was primarily directed at the women who worked on the conveyor belt.

We will now consider if these different technological stages in the fish-processing factories described above has any impact on women and men who work in the fishing plants included in the research.

### **3. Methods**

In the research presented here, the technological stage, work organisation and well being of the workers in Icelandic freezing plants was analysed. Both quantitative and qualitative methods of analysis were used: a standard questionnaire (45 questions), observations, and interviews. The selection of psychosocial factors at work that are covered was mainly based on theoretically grounded concepts and empirical evidence of a relationship between the well being of the workers and the working organisation.

Nineteen fish-processing plants were included in the research. Most of these plants are in northern and western parts of Iceland. Only fish-processing plants where similar kinds of fish, such as cod, redfish, and catfish, are processed the whole year round are included

in the research. This means that factories, mostly on the east and south coasts, where herring and shellfish are also processed during a certain period of the year, were excluded. This is an important distinction because the working process with shellfish and herring is very different from the process used for cod and redfish.

The plants that were included in the research were divided into the three levels of technological automation presented above. Seven hundred and one employees received the questionnaire. The response rate was 50%, of which 73% were women and 27% men, which accurately represents the gender proportion in the fishing factories. The response rate is also representative for the different kinds of factories, i.e., the three technological stages involved in the research.

In Iceland, there are an increasing number of foreign workers in the fish-processing plants. At present, they are mostly from Poland. Most of the foreign workers come to work on a temporary contract. Their work permits are limited to one particular company, and consequently they are not in a strong position to protest or to make demands. This may explain the fact that the response answer rate was only 26% among the Polish employees, while it was 59% among those who answered the questionnaire written in Icelandic.

We visited all the factories included in the research and made observations in many of them. Formal interviews were carried out with thirteen persons and one interview was done with a focus group, consisting of four women working in two high technology factories. Many informal interviews were done in connection with observations and visits. We had a short meeting with the employees during a coffee break, where we described the questionnaire and distributed it to them. On the other hand, the employees had to put the questionnaires in a stamped envelope that was distributed together with the questionnaire, and post it themselves. In another study, where we analysed these same factors in high technology shrimp factories, we waited in the factories while the employees were answering the questions. At that time, the response rate was 82%. In the shrimp factories, the automation and the working organization was very much reminiscent of the situation in the factories in the third technological stage in this study. The results from the shrimp study are very similar to the results from the third technological stage presented here.

In this article we will mainly discuss the results from the quantitative part of the research, which involves decision authority, job strain, and atmosphere.

## 4. Results

### 4.1. Decision authority

Most of the people in the fish-processing factories generally had to work at a fast pace. Almost three times more women than men said they could never decrease their working speed without lowering their salary. Employees in the high technology factories had the least possibility to decrease their working pace without lowering their salary. One third of those in the fish-processing factories where the technology is low said they could not slow down the working speed compared with 58% in the high technology factories.

In the interviews, the employees who worked in the high technology factories complained more than others about too little freedom to choose between different tasks in the factories and few possibilities to participate in various plans to change the organisation of work or the working environment. Even if we observe this tendency in the quantitative data, the result is not significant. Most of the employees, or 89%, said they would like to participate in planning. Those who were not participating in planning have a 2-fold higher risk not to be content in their job in comparison to the others and were also less likely to feel cheerful in their jobs.

The employees were asked to estimate how easy or difficult it was to stop working for telephoning and to leave the workplace for about half an hour to attend to private affairs. The possibility to stop working for such reasons was best in the low technology factories and worst in the high technology factories. Sixteen percent of those in the low technology factories said it was difficult to stop working for telephoning compared with 21% in the middle and 37% in the high technology factories. It was difficult for 17% of the employees in the low technology factories to leave the workplace for about half an hour to attend to private affairs compared with 39% in the middle and 45% in the high technology factories. There was, on the other hand, no difference according to gender. Those that had this freedom at work were more content in their work and they were more likely to feel cheerfulness at the workplace (Tables 1 and 2).

### 4.2. Job strain

When estimating the job strain, we asked the workers to answer questions regarding the working pace, the diversity of their job, concentration, precision, and difficulty. A large majority, specifically 83% of the

Table 1

Questions decision authority	Technological stage			Chi-square
	Low	Middle	High	
				$\chi^2(6) = 13,707$ $p > 0.05$
Cannot decrease the working pace without lowering the salary *	32%	50%	58%	$\chi^2(2) = 6.494$ $p = 0.039$
No freedom to choose between different tasks in the factory	60%	58%	72%	$\chi^2(2) = 5.740$ $p = 0.057$
Employees' participation in planning	54%	71%	66%	$\chi^2(2) = 2.846$ $p = 0.241$
Difficult to stop working for telephoning **	16%	21%	37%	$\chi^2(2) = 11.030$ $p = 0.004$
Difficult to leave the workplace for private affairs *	17%	39%	45%	$\chi^2(2) = 6.748$ $p = 0.034$

The significant level is indicated by \* for 0.05, \*\* for 0.01, and \*\*\* for 0.001.

Table 2

Questions decision authority	Gender		Chi-square	Odds ratio	
	Women	Men		OR	CI
			$\chi^2(6) = 13,707$ $p > 0.05$		
Can not decrease the working pace without lowering the salary **	59%	36%	$\chi^2(1) = 8.832$ $p = 0.003$	2.238	1.306–3.835
No freedom to choose between different tasks in the factory*	61%	76%	$\chi^2(1) = 5.470$ $p = 0.019$	0.486	0.263–0.897
Employees' participation in planning	69%	61%	$\chi^2(1) = 1.906$ $p = 0.167$	1.456	0.853–2.486
Difficult to stop working for telephoning	27%	26%	$\chi^2(1) = 0.022$ $p = 0.882$	1.046	0.580–1.885
Difficult to leave the workplace for private affairs	39%	42%	$\chi^2(1) = 0.246$ $p = 0.620$	0.876	0.518–1.480

The significant level is indicated by \* for 0.05, \*\* for 0.01, and \*\*\* for 0.001.

women and 64% of the men, said they generally had to work at a high pace. There was not a significant difference between the individual factories. However, the results showed a correlation between the technological stage in the factories and the diversity of the job. In the low technology factories 72% of employees said the work was physically monotonous compared with 68% in the middle technology factories and 81% in the high technology factories. There are no significant differences between the factories according to mentally monotonous jobs (Tables 3 and 4).

Women were three times more likely than men to say the job was physically monotonous and more than two times more likely to say it was mentally monotonous. Employees with physically and mentally monotonous jobs were not as content with their job in comparison to the others, and they felt less cheerfulness among their workmates on the job.

Looking at concentration and precision, 56% of those working in low technology factories said the work required high concentration compared with 73% in the

middle level and 86% in the high technology factories. Seventy-six percent of those in the low technology factories and 90% in high technology factories said the job requires high precision. There is no significant connection between gender and intense concentration and precision at work, but the employees who said the job requires intense concentration and precision are more likely not to be content regarding their job.

When inquiring as to whether the job was physically difficult, there were no differences between the various technological stages in the factories or by gender, although around 2/3 of the employees said the work was physically difficult. However, when inquiring as to whether the job was mentally difficult there were greater differences between the technological stages in the factories. The more advanced the technology in the factories, the more mentally difficult the job was, according to the workers. Seventeen percent of the employees in the fish-processing factories where the technology is low said the job was very or rather mentally difficult compared with 30% in the middle level

Table 3

Questions job strain	Technological stage			Chi-square
	Low	Middle	High	
Most often working at a high pace	84%	76%	83%	$\chi^2(2) = 2.509$ $p = 285$
Physically monotonous job *	72%	68%	81%	$\chi^2(2) = 6.587$ $p = 0.037$
Mentally monotonous job	73%	74%	78%	$\chi^2(2) = 0.698$ $p = 0.706$
The work requires high concentration ***	56%	73%	87%	$\chi^2(2) = 14.181$ $p = 0.001$
The work requires high precision **	76%	93%	90%	$\chi^2(2) = 7.477$ $p = 0.024$
Physically difficult job	64%	68%	70%	$\chi^2(2) = 0.382$ $p = 0.826$
Mentally difficult job **	17%	30%	42%	$\chi^2(2) = 8.536$ $p = 0.014$

The significant level is indicated by \* for 0.05, \*\* for 0.01, and \*\*\* for 0.001.

Table 4

Questions job strain	Gender		Chi-square	Odds ratio	
	Women	Men		OR	CI
Most often working at a high pace ***	83%	64%	$\chi^2(1) = 12.822$ $p = 0.000$	2.801	1.572–4.992
Physically monotonous job ***	78%	55%	$\chi^2(1) = 15.655$ $p = 0.000$	2.923	1.696–5.036
Mentally monotonous job **	79%	62%	$\chi^2(1) = 8.988$ $p = 0.003$	2.320	1.327–4.056
The work requires high concentration	79%	72%	$\chi^2(1) = 1.623$ $p = 0.203$	1.460	0.814–2.618
The work requires high precision	92%	85%	$\chi^2(1) = 3.338$ $p = 0.068$	2.045	0.937–4.463
Physically difficult job	70%	64%	$\chi^2(1) = 1.114$ $p = 0.291$	1.338	0.778–2.300
Mentally difficult job	33%	35%	$\chi^2(1) = 0.083$ $p = 0.773$	0.923	0.536–1.590

The significant level is indicated by \* for 0.05, \*\* for 0.01, and \*\*\* for 0.001.

and 42% in the high technology factories. There was, on the other hand, no difference between women and men. Those that felt the job was physically difficult were more than two times more likely not to be content in their work and those that felt the job was mentally difficult were five times more likely to be unhappy in their job. There was no difference between gender and cheerfulness or gender and being content at work, but cheerfulness was highest in the low technology factories. The employees who were not content with their job and those that did do not feel cheerfulness were more likely to feel tired on the job, have back pains, headaches, and pain in their muscles in comparison to the others (Tables 5 and 6).

## 5. Discussion

The main results of the study presented here show that when dividing the fish-processing factories into three technological stages, where the low technology factories correspond to stage one, the middle technology factories to stage two and the high technology factories to stage three, the decision authority is lowest and the job strain highest in the high technology factories, i.e. stage three, while the decision authority is highest and the job strain lowest in the low technology factories, stage one. This impacted how content the employees were with their job, the level of cheerfulness at the workplace, and on health factors such as

back pain, muscle pain, and headaches. Technological development in these factories, according to our conclusions, is not to the advantage of the employees in these factories, especially not the women.

The interviews we conducted with some of the workers showed that the women working on the conveyor belts in the high technology factories felt more tired and tense after the implementation of the new technology corresponding with the third technological stage. The results presented above show that people, especially women, working in high technology work environments were working under a more psychosocial and physical strain. However, the women and men who were working in the low technology factories gave the impression of being much more negative regarding the working conditions in the high technology factories than those who were actually working under those conditions. Forty two percent of the employees in the fish-processing factories where the technology is considered low were positive in regard to the new technology and the new way of organising work, compared to 57% in the middle level factories and 75% in the high technology factories ( $p < 0.001$ ). The men were generally more positive than the women ( $p < 0.05$ ).

In the interviews the managers in the high technology factories emphasised that the workers did not complain about the working organisation. This is consistent with our results. The women in the high technology factories said they were glad because management could follow the latest technological developments and make the

Table 5

Questions decision authority	Cheerfulness	Chi-square	Odds ratio	
			OR	CI
		$\chi^2(6) = 13,707$ $p > 0.05$		
Can not decrease the working pace without lowering the salary ***	62%	$\chi^2(1) = 10.452$ $p = 0.001$	2.069	1.328–3.224
No freedom to choose between different tasks in the factory***	74%	$\chi^2(1) = 10.978$ $p = 0.001$	2.219	1.379–3.571
Employees' participation in planning	75%	$\chi^2(1) = 7.745$ $p = 0.005$	1.964	1.217–3.171
Difficult to stop working for telephoning *	35%	$\chi^2(1) = 6.283$ $p = 0.012$	1.863	1.142–3.041
Difficult to leave the workplace for private affairs	43%	$\chi^2(1) = 1.177$ $p = 0.278$	1.280	0.819–2.000
<i>Job strain</i>				
Most often working at a high pace***	88%	$\chi^2(1) = 11.923$ $p = 0.001$	2.801	1.538–5.104
Physically monotonous job ***	83%	$\chi^2(1) = 11.313$ $p = 0.001$	2.438	1.439–4.131
Mentally monotonous job***	86%	$\chi^2(1) = 14.981$ $p = 0.0001$	2.974	1.689–5.239
The work requires high concentration	78%	$\chi^2(1) = 0.083$ $p = 0.773$	1.079	0.643–1.811
The work requires high precision	90%	$\chi^2(1) = 0.0005$ $p = 0.993$	0.997	0.478–2.078
Physically difficult job	71%	$\chi^2(1) = 0.779$ $p = 0.377$	1.236	0.772–1.980
Mentally difficult job *	43%	$\chi^2(1) = 8.058$ $p = 0.005$	1.958	1.228–3.124

The significant level is indicated by \* for 0.05, \*\* for 0.01, and \*\*\* for 0.001.

Table 6

Questions decision authority	Unhappy at work	Chi-square	Odds ratio	
			OR	CI
		$\chi^2(6) = 13,707$ $p > 0.05$		
Can not decrease the working pace without lowering the salary	52%	$\chi^2(1) = 0.003$ $p = 0.957$	0.984	0.554–1.779
No freedom to choose between different tasks in the factory	76%	$\chi^2(1) = 3.628$ $p = 0.057$	1.944	0.972–3.888
Employees' participation in planning*	81%	$\chi^2(1) = 4.573$ $p = 0.032$	2.191	1.053–4.558
Difficult to stop working for telephoning **	42%	$\chi^2(1) = 7.461$ $p = 0.006$	2.320	1.255–4.292
Difficult to leave the workplace for private affairs *	58%	$\chi^2(1) = 8.851$ $p = 0.003$	2.452	1.342–4.479
<i>Job strain</i>				
Most often working at a high pace	85%	$\chi^2(1) = 0.839$ $p = 0.360$	1.445	0.650–3.258
Physically monotonous job **	88%	$\chi^2(1) = 6.722$ $p = 0.01$	3.090	1.269–7.524
Mentally monotonous job***	94%	$\chi^2(1) = 11.236$ $p = 0.001$	6.173	1.866–20.413
The work requires /claims high concentration *	64%	$\chi^2(1) = 6.313$ $p = 0.012$	0.450	0.239–0.848
The work requires /claims high precision *	83%	$\chi^2(1) = 4.245$ $p = 0.039$	0.424	0.184–0.978
Physically difficult job*	83%	$\chi^2(1) = 5.558$ $p = 0.018$	2.441	1.141–5.220
Mentally difficult job ***	65%	$\chi^2(1) = 28.634$ $p = 0.0001$	5.054	2.690–9.496

The significant level is indicated by \* for 0.05, \*\* for 0.01, and \*\*\* for 0.001.

appropriate investments. The attitude that “all things that come along with the new technology are good and modern” was strong. Is this a false consciousness or a strategy to survive in a tough organisation from which they could not escape? The interviews showed that the women did not feel that they had the freedom to decide how to do their work or that they had a say in what happened in their job. Or, as one of the women said: “Why complain – things will not become better anyway. It just makes life boring”. In other words – it is better to try to adjust and accept the situation than to grumble over a situation from which you cannot escape.

Incidentally, in the interviews some of the women in the high technology factories complained about increased monotony and observation even if they were

somewhat ashamed when they said they did not like the increased observation and measurement “because they had nothing to hide”.

In his discussion of Bentham's Panopticon, Foucault [7] points out how increasing observation of individuals in society is a part of the power system or the society's system of discipline, where the aim is to control individuals in body and in spirit. The highly technological fish-processing plants exemplify such a control system.

Observation and the recording of results with the aid of new information technology is primarily directed towards the women who work on the conveyor belts because these jobs are measurable. The managers stay in front of computer screens and can observe individual

workers in terms of pay or diagrams, and compare individuals over various periods. New technology allows for increased surveillance of a woman's every move and makes it possible to see, right on the computer screen, if any of them work more slowly one minute or another, or one day compared to the next.

At the beginning of this article we asked if new technology in the fishing industry has an impact on the organization of work and workers' well being. As we have already shown, this new technology has some negative impacts on the organization of work and the well being of workers. Although this study focuses on fisheries as an example, the authors have seen the same mechanism in other branches of the labour market as well, such as the telecommunication and the shrimp industries, where new technology has made the dividing line between humans and machines less distinct.

Technology, indeed, has the power to shape the future. But technology is not created by itself. People create it. This study provides evidence to suggest that employers and managers should empower their employees with new technology. The evidence suggests as well that the way work is integrated with the new technology is more important than the mere presence of technology in the workplace.

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