

Melchers, G.; Labib, G., 1974: Somatic hybridization of plants by fusion of protoplasts. Molec. gen. Genet. **135**, 277.

Richtlinie 90/220/EWG vom 23. April 1990 über die absichtliche Freisetzung genetisch veränderter Organismen in die Umwelt (online, zitiert: 19. Februar 2001). URL: <http://www.bba.de/gentech/90-220.htm>

Schweizerische Verordnung vom 25. August 1999 über den Umgang mit Organismen in der Umwelt (Freisetzungsverordnung, FSV), (online, zitiert 19. Februar 2001). URL: http://www.admin.ch/ch/d/sr/c814_911.html.

Wicks, Z. W., 2001: Principles of crop improvements [online, cited 20. February 2001]. URL: <http://www.abs.sdstate.edu/plantsci/teaching/ps383/breeding/tritcal.htm>.

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Information technologies and intensification of work – some results of the FLEXCOT-project*

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Research into flexible work practices linked to new communication technologies highlights that rhythms and intensification of work are key issues in work organisation and working conditions. Starting from results of the European FLEXCOT project – “Flexible Work Practices and Communication Technologies” –, this paper deals with the impacts of just-in-time production, on-line working, workflow integration, electronic performance monitoring, and the pressure from the clientele as important factors of the intensification of work.

Introduction

The article was written on the basis of results of the FLEXCOT (Flexible Work Practices and Communication Technology) research project. The project was carried out for the European Commission (DG XII) within the Targeted Socio-Economic Research programme (TSER), which is a part of the Fourth Framework Programme for research and technological development of the European Union. The two years project (1998-1999) was co-ordinated by Fondation Travail-Université, Namur in collaboration with other research centres from the University of Newcastle upon Tyne, the University of Paris North and the Fondazione Pietro Seveso, Milan. Two other research centres were also involved in the case studies: Centre for Tele-Information in Aarhus (Denmark) and Fundación de Estudios e Investigaciones Sociolaborales in Valencia (Spain).

The overall objective of the FLEXCOT project was to determine to what extent the new generation of information and communication technologies (ICTs) can be used in order to develop new flexible work practices, which would be socially more sustainable than the current ones. Following the analysis of the state of the art of current research, a series of case studies was carried out, focusing on four distinct sectors: printing and publishing, civil engineering, banking and insurance and decentralised health services. The case studies were carried out in six European countries (B, DK, F, I, E, UK).

Some results of the FLEXCOT research project

“Sweat and strain” says the song, this still characterizes many workplaces today. In an economy where services constitute the driving force, where knowledge is a determinant factor of production, and where information and communication technologies pervade the working environment, working conditions are undergoing major transformations.

In an industrial society, the main threats to health and safety at work are material: machines, accidents, dangerous products, noise, hard physical labour, etc. In an information society, these threats have not disappeared, of

course, but other forms of deterioration of working conditions are developing: mental fatigue, stress, constant control, a demanding pace of work, pressure from clients, the weight of uncertainty. All of these factors have their origin in organisational, rather than material, factors and their impact can be summarised in one word: “intensification” or “growing density” of work.

Some of the structural changes that characterize the information society undeniably cause intensification of work. This is the case of “just-in-time” production and pressure from the clientele on the production process. Technologies are also among the factors which lead to increasingly dense working time.

The pressure of time

The “just-in-time” production in principle organises an interdependence in the management of time of all the successive phases of production and marketing of a good or service. The smallest delay causes major disturbance in the chain and is considered costly by companies. The pressure of time is transferred to subcontractors, suppliers, distributors in a cascade.

At the end of the chain, the pressure of time has repercussions on the worker, who is both the most flexible link of the chain and the only one whose capacity for reaction and adaptation is better than that of the machines and networks. A study done by Stichting Technologie Vlaanderen in Belgium shows the paradoxical impact of flexible organisation and “just-in-time” production methods: although they valorize qualifications and skills, for a large number of workers they also cause additional stress which results in various disorders. This is true to such an extent that the abbreviation JIT has been nicknamed “just in trouble”.

Pressure from the clientele

Pressure from the clientele is another important factor of intensification of work. In a survey published in 1997 by the European Foundation in Dublin, 75 percent of workers attributed intensification of the pace of work to pressure from the clientele rather than pressure from the hierarchy in their companies. This pressure from the clientele has an effect first and fore-

most on workers who are in direct contact with the clients, either face-to-face or on the telephone.

Call centers are a typical example of a company where the entire organisation of time is determined by the need to satisfy the clientele: hours of accessibility, immediate response, timing and monitoring of conversations, guiding conversations by scripts displayed on screen, measuring the effectiveness of contacts, etc.. A minute lost may be a client lost. Strict management of time takes precedence over any considerations about the quality of the work.

But pressure from the clientele also has other effects that increase the intensity of work. Travel of itinerant technical or commercial employees is organised to maximize the time spent with the clients, to the detriment of time spent with colleagues and personal time – travel is no longer considered to be a rest period between two clients, it has become a race from one client to another. This is not without risk. For the second consecutive year in France, the 1998 annual INSEE survey on industrial accidents shows a rise in the number of accidents on the road during professional travel.

Finally, in the organisation of work, transfers from one professional category to another, and specifically the expansion of the category of executives, leads to an increase in workload. Executives’ working hours are particularly flexible and overtime “comes with” the status.

Certain technological innovations are powerful instruments of intensification of work, even though they are not always used as such.

Work on-line

Certain authors have highlighted a series of factors in the workload specific to on-line work, i.e. to workers who are constantly connected to a corporate network or the Internet:

- the overload of information and messages coming through e-mail, newsgroups and forums; constant pressure to reply, even if the reply is not really an answer (acknowledging receipt of an e-mail, for example, or telling a forum that you are busy on-line);

- the mental fatigue caused by the constant combination of significant and insignificant information;
- the absence of “organisational filters” in messages to be processed when they are sent to a large number of addressees without an order of priority or a priority address;
- the need to be constantly accessible and available;
- the loss of references in time and space, associated with the apparent elimination of distances and time differences; “real-time” is time that is real for no one ...

But few workers are constantly connected to the Internet at this point, and other technical instruments play as important a role in the intensification of work.

Integrated workflow and management software

This is the case for integrated workflow and management software, like Electronic Resource Planning (ERP). The purpose of this software is to dictate in a very direct way, the content and order of jobs to be done, by eliminating any “porosity” in the flow of information and in time spent by operators in organising this circulation of information. With management software like ERP, each piece of information that enters the system is instantaneously accessible (in principle, when everything goes well) by all departments of the company that have access to it. After “zero stock” (just-in-time) and “zero defects” (total quality), we now have “zero delay”. If any kind of problem should arise, the pressure on time is still stronger, because everything must be done to catch up to the “zero delay”.

In companies like department stores, the computerised management systems calculate the quantity of staff needed at any time to carry out all the assignments (cash registers, restocking shelves, personalised service). The result is a very strict planning of working hours and the use of part-time labour. Other service companies use similar methods, notably the banking sector, fast food restaurants, cleaning. In certain countries, like Great Britain, there are “on-call contracts” – these are employment contracts which do not specify the working

hours, except for availability during certain time slots to come to work on call. The English expression “on-call job” has sometimes been translated into French by “travail au sifflet” (work when I whistle).

Electronic monitoring of performances

One last aspect of the role of technologies in the intensification of work concerns electronic monitoring of the worker’s performance. Computer systems and networks now make it possible to continuously collect, process, store, analyze and consolidate a large quantity of information on how workers do their assignments. These are no longer simple measurements of physical quantities, like the number of operations or the number of clients; they also include behavioural measurements. In call centers for example, the monitoring system allows for sampling of conversations and the measurement of the frequency of certain terms or certain expressions. There are also voice recognition systems which analyze the tone of the conversations.

Electronic performance monitoring systems (EPMS) are a source of stress for workers. Restriction of the use of these systems is a subject that may be regulated by law and collective bargaining agreements, as is already the case in Germany and in France.

The consequences on working time

Intensification of work is not unrelated to the more general problem of the length of the work week. It is not fair, mutually supportive, nor even rational to construct a society where workers are more and more pressed for time, more and more under stress, alongside a growing number of unemployed and atypical workers with dwindling job security, who are also under stress.

According to Yves Lasfargue (1998) the impact of intensification of work is characterized by one key problem: the reduction of working hours and job-sharing.

“Sharing work (...) will only be possible if we take care not to confuse “sharing working hours” and “job-sharing”. It is relatively easy to reduce working hours, which are synonymous with the time of attendance at work, in

order to share jobs in traditional industrial systems where production is proportional to the time spent at work. (...)

But in the information society, there is a risk that no jobs will be created by a trend to simply reduce the time of attendance on the job, because reducing the time of attendance can induce an increase in time really worked, and it will also induce a rise in density of work for those who have a job. (...) The solution is probably not to share time, but to learn to share assignments and responsibility. This is the only way to create jobs for some, and to reduce stress for others (translated by FTU).”

Reducing the density at work therefore cannot be done without adjusting working time. With the development of the information society, trade unions, employers and the authorities must demonstrate an effort in creativity to develop schemes which make it possible both to reduce the number of hours worked and to reduce the density of work. But this also poses the problem of how working hours are measured.

The final project report is available on the web site of the European Commission: http://www.cordis.lu/improving/src/hp_ser.htm
A publication in French will be published by De Boeck editions in September 2001.

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References

Lasfargue Y., 1998: L'ergostressie: une tentative d'innovation pour favoriser la mesure et le partage du travail des cadres. In : Education Permanente, n° 134/1

Vendramin, P.; Valenduc, G., 2000: L'avenir du travail dans la société de l'information, enjeux individuels et collectifs. Paris: Editions L'Harmattan.

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The Work and Technology Research Centre

The main purpose of the Work & Technology Research Centre of the FTU is to develop a capacity of research, analysis and intervention on the social aspects of technological changes. For more than fifteen years now, it has carried out research projects financed by Belgian or European programmes. It participates in international research networks. The current activities of the Work & Technology Research Centre address three research areas:

- Technology assessment, technology and society
- Information society, work and employment
- Innovation, environment and sustainable development.

The Work & Technology Research Centre is a part of the Fondation Travail-Université. It is located in the Technology Centre of the University of Namur.

The Fondation Travail-Université (FTU) was established in 1967 in order to build up a bridge between academic research and social organisations in the French speaking part of Belgium. Nowadays the FTU is an independent para-academic research institution. The status of the FTU is a non profit organisation of public interest, registered as ASBL (association without lucrative purpose). Besides the Work & Technology Research Centre, the Foundation currently runs another office in Brussels and develops contact with various universities in the French-speaking part of Belgium.

Web site of the research centre: <http://www.ftu-namur.org> (in construction, available within a short delay).

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