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How do elderly workers face tight time constraints?

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Abstract. Several statistical surveys, and ergonomic researches, synthesized here, show that: (1) the tightening of time constraints characterizes the evolution of work organization in industrial countries; (2) time pressure often raises major concerns for elderly workers, their health, well-being, and efficiency; (3) where they are given the option, ageing workers manage to reduce the effects of disturbances and avoid being overwhelmed in the event of an emergency. Thus, in designing work situations “for” the elderly, there might be a line of action focused on broadening “spaces of freedom” for individual and team experience-based strategies. © 2005 Elsevier B.V. All rights reserved.

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1. Introduction

The issue we would like to deal with here stems from a contradiction arising between three phenomena. These phenomena, well grounded today, are hardly compatible, and will be less and less so in the future: (i) the working population in the industrialized countries is shifting to older ages; (ii) the work organization modes are increasingly work-intensive with a major consequence: the tightening of time constraints; (iii) but these sharp time constraints are “age-selective”: they reinforce ageing workers’ deficiencies, alter the benefits of their experience, and can drive them away from certain work situations or prevent them from working altogether.

We won’t dwell here on the first observation, which is widely accepted, but the two other statements are worth a more in depth study. The first two sections of this paper will be devoted to further explaining them. Following that we will summarize some ergonomic research findings, in order to better understand the difficulties, linked to age progression,

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arising from tight time constraints, as well as the coping strategies applied by the elderly to partially or fully overcome such difficulties if the work organization allows them to do so.

2. “Hurrying at work”, a growing phenomenon

Work economists and sociologists have analyzed the trends in businesses at the end of the 20th century, in relation to guiding principles: reactivity, flexibility, production diversification, rapid innovation and “tight” staff numbers.

Several resulting paradoxes have emerged in the employees’ life at work [1]. Employees are requested to involve themselves more actively in the life of the company while their jobs are less and less certain [2]. Though they are entrusted with greater responsibilities, their autonomy is limited by the increasingly stringent controls their results are subject to. As for the pressure of time—the issue we are dealing with here—more and more often they are faced simultaneously with different types of constraints, that we will roughly categorize as “industrial” constraints, and “market” constraints.

So-called “industrial” constraints generally prevail in large plants organized on a Taylorist or Fordist model: specific volumes of work per time unit, strict deadlines, rigorous quantity and quality standards, or automatic work paces. These constraints currently persist in the industrial sector, but are gradually spreading to commercial and service sectors in connection with the expansion of IT systems. The speed at which cashiers must scan products at supermarket checkout machines, the number of files processed by a worker in social service departments, the time it takes to give information over the phone, are measured, assessed, rationalized. As for “market” constraints, they characterize sales situations, and clerks at windows, in direct contact with the public: a buyer cannot be kept waiting, the line must not grow too long, adjustment to a variety of situations as well as emergencies must be provided for. At present however, such examples are also multiplying in industry, with “just in time” systems, small series, constant reference to clients, whether they are individual consumers or companies.

This combination of different types of constraints, illustrated by many statistical findings [3], has a major consequence: an increased time pressure which can be reflected by a gradual disappearance of slow periods, the need to often hurry, a progression of emergency or even “acute crisis” situations.

3. Do time pressure and emergencies grow more difficult with age?

There are several ways of showing that being under heavy time pressure is less well tolerated as age increases. This is already suggested by simple demographic studies, for European labor at large. The odds-ratio per age, in terms of combined “industrial” and “market” constraints, decreases after 30—providing for the effects of sex, economic sectors, social categories and, of course, national specificities [4]. Age selection mechanisms are quite obvious here. Epidemiological studies, in turn, confirm the fact that some of the negative effects of time pressure are particularly evident from age 45 or 50 onward. This was ascertained, for instance, in relation with the consumption of psycho-active drugs (sleeping pills, tranquilizers) on a population of female white collars included in the French Estev survey sample, in 1990 and 1995 [5]. Before 40, consumption of these drugs is unrelated to time constraints. But after 50, two and a half times more women consume psycho-active

substances among the employees who claim they “often have to hurry”, as compared to others.

What kind of explanations can be suggested for the difficulties old workers experience under tight time constraints? Though the intention here is not to delve into existing knowledge in physiology and psychology at work in this respect, it is worth reminding that these data do show a slackening of sensory-motor performances and decision processes with age [6]. But this tendency varies greatly according to individuals, and the differences themselves increase with age. Moreover, neuro-physiological mechanisms can only partially explain slower performances, as these are often linked to operating modes: older workers are supposedly more cautious, pay more attention to quality than to speed, and are more concerned about checking the results of their actions. Consequently, the results of laboratory tests cannot be directly transposed to a work situation [7]. A direct analysis of the work activity allows to better understand both the difficulties of older workers under time pressure and the way they draw on their experience to overcome such difficulties if possible.

4. Drawing on experience under time pressure: a few examples

Men and women at work are not inert spectators of their own ageing. As signs of decline begin to appear, as they acquire experience in situations where difficulties have arisen, as the building of skills broadens the scope of the operating modes possible, operators re-assign their trade-offs between the requirements of the task and their own capacities [8]. This is reflected in their gestures, the way they prepare their work, the way they cooperate, and the forms in which they cope with time constraints. Following are a few examples chosen to illustrate different strategies set up by elder experienced workers to cope with the pressure of time.

4.1. “Waste time to gain time”: sequence of gestures in the preparation of a weighing operation

A recent study (unpublished to date) analyzes the activity of a worker whose task is to weigh blocks of ingredients needed to manufacture tires. To do so he must start by cutting the blocks. He has few tools: a knife that he cannot sharpen at his own convenience, and a basin of water to soak the knife in, so as to make it easier for the blade to cut through. A simple count, spanning a few hours of work, shows that old workers soak their knife much more often than young ones (about three times as much). This comparison is done on blocks of identical material, with knives that have similar characteristics (blade profile, bluntness, etc.). What explains this strategy is the need to gain time and better control the cutting. Soaking the blade makes the cutting easier and more reliable. The “time wasted” is amply recovered, with a lesser amount of strength applied and fatigue. The gestures are more precise and consequently, the effort exerted by the right arm on the blocks is about half a minute shorter for each weighing operation. Controlling the precision of gestures as well as time thus ensures greater reliability: if one compares the cases of blocks falling while they are being cut, one can see that these incidents considered as “massively time-consuming”, rarely occur with old workers. Experience, here, favors a more precise quantitative management of time.

4.2. “Anticipating emergencies”: ways of moving around to control steel coils

The example chosen now is a task of quality control of steel coils rolling out of a mill [9]. The controller’s job is to check a number of characteristics: width, thickness, surface roughness, aspect. He must decide whether the quality is good enough to authorize the shipment of the coils to customers. If he notes defects, deviations from the range of tolerance, he must block the coil and report this to several technicians in charge.

An analysis of his work activity shows that each coil check involves moving around the shop floor a number of times. There are roughly two types of reasons for moving back and forth: (a) an “emergency” situation because a problem is occurring with a coil; (b) “anticipating” actions, in most cases to change a tool, or check the state of the process further up the line. When you count the number of times old and young workers go back and forth, you can see that with young workers many coils generate a great deal of moving around called for by emergency action. Conversely, old workers move about much more often to anticipate than young ones do. In this situation, both young and old have their own specific assets to cope with the pressure of time. Young ones have the ability to intervene physically. As for senior workers, they draw on their years of knowledge in the rolling mill where they have previously been assigned other workstations. The technical system and the organization of work clearly allow both strategies to be effective: quality control in either case shows high performance rates.

4.3. “Build and make use of team work”: forms of communication when controlling steel coils

We will revert to the example of coil controllers, already mentioned in the previous example [9]. The point of interest now is no longer their movements around the shop floor but their form of communication. Differences are marked, and statistically very significant: the elderly communicate more often. They have a broader network of relations than the young and they make great use of it. In these forms of communication, controlling time constraints is a constant and clear objective: obtaining valuable information beforehand, knowing whom to seek help from at the right moment, gathering data for a diagnosis of the system enabling a technician to immediately act upon a rolling mill deficiency, are procedures that enhance the value of team work, its construction and use to better cope with time constraints.

4.4. “Taking over new situations”: learning the tricks on an assembly line

The strategies depicted so far and, overall, experience-related work strategies, generally stem from a certain familiarity with the task. What happens when a new task must be learnt, as a result of the reorganization of work, technical changes, the development of polyvalence, professional mobility, etc.? Quite logically, in these changing times, old workers are going to think in terms of transferring part of their previously developed strategies, and/or elaborating new ones that fulfill the same functions: for the purpose of this study, the protective function when faced with heavy time constraints.

This was shown very precisely in the case of an automobile assembly line [10]. For example, on one of the workstations most of the old workers developed a particular “knack” that enables them to store a handful of small parts in their left hand, and this

keeps them from going back and forth to replenish their stocks. This is a subtle “trick”. Parts must be properly placed in the hand in order to recover them one after the other, in the right order, without dropping them on the floor, and without even looking at them.

When a worker learns the job on this workstation, will he develop this particular knack or not, and if he does, when? In the first few hours of his training? It will depend on the attitude of his “tutor”, the operator who knows the workstation and teaches it to him. Either the tutor shows the knack or he doesn’t (because he himself doesn’t have the skill, or thinks it is too hard to teach at the early stages of training). If he does pass it on, of course, the “training” worker is much more likely to pick it up immediately. But the results of observation show that in both cases, if the worker being “trained” is old, there are more chances that he tries this operating mode immediately, because he knows he will need it to cope with the tight pace of the assembly line.

In this learning period, young and old do share the concern of getting to know the actions to accomplish; but old workers, more than young ones, have another concern: managing to be “on top of” the job from the start, learning ways of feeling comfortable with it and not suffering too much from the pressure of time. This double concern (learning the task and learning how to feel comfortable with it) can partly explain why older workers require a longer learning period than young ones.

4.5. “Re-elaborate the working rules”: failure to comply with orders when serving clients in a post office

There is yet a fifth way of regulating time constraints and, once again, it is more commonly found in elderly workers than in the young ones: it consists in obtaining or imposing a change in the task itself, its objectives, or regulatory framework.

A study carried out in a post office [11] recorded the likelihood of failing to comply with at least one of the official rules set by the governing authorities of the national postal services: in this case, requiring clients to produce an ID card, refusing cash withdrawals in too small amounts, not exchanging bank notes for coins, etc.

A multivariate analysis shows that the number of rule infringements is particularly high: (i) when the counter clerk knows the client well; (ii) (whether or not the client is well known) when the clerk is experienced, and, above all, if he or she is experienced and old.

The relative authority due to seniority, trust and complicity among colleagues sharing common professional experience, familiarity with part of the management, an increasingly precise evaluation of the consequences of compliance (or non compliance) with rules in this or that way, are all factors that lead the old experienced clerks to re-elaborate such rules, renegotiate them more or less formally, adapt them to circumstances, and in particular, loosen some obligations when they are under heavy time constraints.

5. Conclusion

These comparative results do not imply that all the elderly are constantly devising strategies to release the pressure of time, nor that no young worker ever develops such strategies. However, and this is confirmed by interviews with workers, such a preoccupation develops with age. The elderly have built up the experience necessary to

conceive these strategies, and they need them more on account of their difficulties. Both reasons are linked: part of the experience develops *because* it is necessary.

This building of specific skills is caught in a contradictory mechanism. On one side, the pressure of time makes the anticipating strategies all the more valuable. On the other, it makes them more difficult, because anticipating implies leaving room for manoeuvre. This is where the combination of “industrial” and “market” constraints raises a serious problem. Faced only with “industrial” constraints, rigid though predictable, experience allows to anticipate and distribute efforts regularly over time—but this no longer works when “market” constraints are added, thus preventing workers from planning their own activity. Likewise, faced only with “market” constraints, there are “peak” periods and “low” periods in the intensity of work, and experience helps to take advantage of slow periods to prepare for more tense ones—but this no longer can be done when “industrial” constraints add on, causing the periods of respite to gradually disappear.

In terms of prevention, in order to reach the objective of Healthy and Productive Ageing, the pressure of time may well be the major obstacle to overcome, because this issue relates directly to models of work organization that are often considered “untouchable”. Hence, the ageing of labor should provide an opportunity to cogitate sustainable work systems and, in particular, time constraints that do not restrict the possibility for workers to build up their health and skills all along their professional life. This would be beneficial for the elderly, but no doubt also for employees at large.

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