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LE TRAVAIL EN TANT QU'ACTIVITE DE RECUPERATION

(WORK AS A RECOVERY ACTIVITY)

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Original Article

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Summary

Recovery activity is defined as the work necessary to reestablish normality in the face of failures, mismatches or disturbances in the process. Recovery is not limited to repairs, but includes adjustments and adjustments to keep the system functioning properly.

This article explores recovery activity in the context of work, a response to ongoing deviations and dysfunctions, often caused by inadequate automation and equipment degradation. It exemplifies how automation can create unexpected recovery needs and how the deterioration of machines requires continuous efforts from workers in the face of variable and often dysfunctional working environment conditions.

The analysis also includes the mental load associated with recovery, such as the anxiety generated by uncertainty in identifying and resolving failures and the overload caused by unresolved incidents. The scientific rationalization of work tends to neglect the importance of recovery, transforming the activity into something more mechanical.

Recovery is placed at the center of human work, with the proposition that the machine should handle production, while humans take charge of recovery. The article suggests that production activities are learned, while recovery activities are acquired through experience. Psychological work analysis must therefore include a detailed consideration of recovery activities to fully understand the worker's experience and the effectiveness of the practices. Thus, it is highlighted that recovery is not only a technical function, but also a fundamental aspect of experience and work.

Keywords : recovery, activity analysis, workload.

WORK AS RECOVERY ACTIVITY

Abstract

Recovery activity is defined as the work necessary to restore normalcy in the face of failures, misalignments, or disturbances in the process. Recovery is not limited to repairs but includes adjustments and regulations to maintain the proper functioning of the system.

This article explores recovery activity in the context of work, as a response to continuous deviations and dysfunctions, often caused by inadequate automation and equipment degradation. It is exemplified how automation can create unexpected recovery needs and how equipment deterioration demands ongoing efforts from workers in response to variable and often dysfunctional working conditions.

The analysis also includes the mental load associated with recovery, such as the anxiety generated by uncertainty in identifying and resolving failures and the overload caused by unresolved incidents. Scientific rationalization of work tends to overlook the importance of recovery, turning the activity into something more mechanical.

Recovery is placed at the center of human work, with the proposition that machines should handle production, while humans are responsible for recovery. The article suggests that production activities are learned, while recovery activities are acquired through experience. Psychological work analysis should, therefore, include a detailed consideration of recovery activities to fully understand the worker's experience and the effectiveness of practices. Thus, it highlights that recovery is not only a technical function but also a fundamental aspect of experience and work .

Keywords: recovery, activity analysis, work load .

There are many ways of analyzing work, that of the organizer or technician of methods, which lead to rationalizations and amplifications, that of the ergonomist, capable of suggesting adjustments from which man will benefit, that of the technician in terms of transformation processes and operations of products, that of the worker, who expresses his difficulties, his tiredness and his complaints, that of the economist who takes stock of the gains and costs and, finally, that of the psychologist who only interests us here insofar as the activities and behaviors inform the way workers experience their work.

For a long time (Ombredane & Faverge , 1955) we have criticized methods of analysis in terms of skills and operations, which were practically the only ones used by psychologists at the time; the language analysis of skills is often just verbalism, that of operations is purely a description of the task, but says nothing about how the worker feels about it.

Subsequently, we proposed to analyze the work in the three activities of production, prevention and recovery: the first example was obtained in the iron mines of Lorena (Leplat & Faverge , 1969), we also showed the existence of an increased risk of accident during recovery (Faverge , 1969, 1977).

Finally, we focus on the analysis of work in terms of production and prevention activities, emphasizing the regulations and interactions that appear when they are present at the same time in the task (Faverge , 1966, 1968).

Today I would like to look more particularly at the activity of recovery during work, and even to give recovery a privileged place in psychological analysis, going so far as to consider man's work as often consisting primarily of recovery.

DEFINITION OF RECOVERY ACTIVITY

Recovery is working to return a variable that deviates to its proper value, to restore a process that would tend to go off track, to make dysfunctions, disturbances or deviations disappear, to restart after a breakdown or incident.

Recovery is not just repairing (a component that has failed), but also adjusting, regulating, that is, bringing it back to normal. Thus, recovery activity is an essential constituent of human work.

E. Quinot says:

> "Practically no system works normally in the strictest sense: vibrations follow the rotation of an engine, noise disrupts communications, a car does not follow the ideal line parallel to the edge of the road. The system was also designed to "recover" these operating deviations: the bearings absorb vibrations, the signals are remodeled to be deciphered, the driver corrects the trajectory of his vehicle. We can say that the state of dysfunction is permanent, but it usually goes unnoticed."

We will add that most of the time it is one or more men who are in charge of "recovering" the system.

Recovery threshold: The signal that initiates a recovery activity can be a more or less large discrepancy from the normal state, sometimes it will be a failure that interrupts production, but it can also be a misadjustment or disturbance manifested in a display by a larger deviation. or less accentuated of the indicator; sometimes even precursor signs of possible disturbances or indirect signs of disturbances that are difficult to observe directly will be taken into account.

The threshold level of the triggering signal is subjective, depending on the operator, as if there were an individual tolerance to the dysfunction; The recovery activity is not completely defined by the task, it depends on the worker, his conception of work, his style and, for this reason, it is at the heart of psychological analysis.

In the degree thesis of one of our students (Piette , 1968), we found a study of these intervention thresholds for operators of a sinter production line in the steel industry. Each operator has, in relation to a parameter (here we are talking about temperatures), a normal range centered on the ideal value within which it does not intervene; this interval is contained within a second interval; when the variation of the parameter exceeds the normal range to enter this new zone, interventions occur whose effect is quick, with limited effectiveness in time, correcting the malfunction without eliminating the cause (for example, modifying the line speed); Outside this second interval, operators' interventions tend to act on the cause of the malfunction (for example, the composition of the mixture), being slow in effect and often requiring adjustments to the line. The author also defines a temporal threshold that differentiates operators; This is the time they allow to pass between the start of the failure and their intervention.

This example suggests and illustrates a method of differential work analysis based on the definition and measurement of several recovery thresholds in workers (three are defined here).

THE GENESIS OF RECOVERY ACTIVITY

I do not want to, and in fact would not, be able to examine the origins of every malfunction that initiates a recovery activity.

But I would like to say a few words about two factors that lead to this activity, due to the insistence with which they manifested themselves during our observations:

Automation: By wanting to automate at all costs, we often create recovery jobs, not previously foreseen, made necessary due to the unreliability of the mechanisms. A typical example was observed in a recent investigation by our laboratory (Rofessart , Obap report).

An engineer who designed a machine for his company (a machine for making small fuses) explained the story of its creation as follows:

> “When we make a machine like this, we are creating an automatic machine. It works alone. Therefore, from the beginning, we consciously eliminated the personnel problem. It's an automatic machine, there won't be anyone. So there is no need to think about it.
>
> “I say consciously or unconsciously, as there are already enough technical problems in building a machine like this that we should not get involved in hypothetical personnel problems that we believe will not arise at the outset.
>
> “And then, we realized that it's not that simple, instead of having a machine as a unit, we need to divide it into two parts and have an intermediate stock between them, because, if we don't do that, it is constantly in breakdown. . Therefore, it will be necessary to place one person in the center of the machine and then one more, as there is an automatic feeder that does not work well, then a third, as a part is not manufactured immediately and will arrive in a year, and finally, there are 12 people around the machine.
>
> “Initially, we thought: <<We don't need to worry about problems with noise, odors, temperature, etc. , as there will be no one around.>>
>
> “Today, machine noise is a serious problem that we would not have had if we had opted for a hydraulic process instead of a mechanical system; but the hydraulic process was slower and more expensive to implement.”

Thus, in addition to unexpected recovery activities, unsuccessful automation generated harm in carrying out these activities.

We find similar examples in the paper industry (Baeckens , 1969); On a very modern and recently introduced cutter-sorter machine, an operator must be positioned to deal with obstructions. A jam occurs when there is an interruption in the sheet stacking process, such as when a sheet becomes stuck, bent or crumpled, becoming an obstacle to subsequent sheets that may also become crushed as they are expelled. The operator learns, through experience, to identify and reduce the frequency of jams (through appropriate adjustments, modifying paper moisture, etc.).

Degradation: The condition of the equipment deteriorates, the machines wear out, gaps and friction appear, worn drives are more difficult to operate, we find off-center pivots, screws that stick, stripped threads, pins that cannot be placed, etc... Leblanchet (1975) argues that there are chain degradations:

> “In addition to workforce burnout, this overload of work with unresolved incidents leads to rapid deterioration of the facility. This, in turn, generates incidents in other parts of the facility, incidents that will be overcome by additional efforts required of workers. Later, when an incident occurs, even for the first time, the worker already knows in advance that the effort he makes at that moment to continue producing will be considered part of his work.”

Thus, there are incidents that repeat themselves following the same scenario. The author gives many examples of this in the continuous foundry where he works as a laborer. For example:

> “For the counterweight maneuver, frequently, when pressing the control button, the counterweight does not descend; the worker then takes a tube and uses it as a lever (recovery by catachresis). The operation that originally required just pressing a button now requires, in most cases, pressing on a piece of pipe.”

Laporta (1965), in his bachelor's thesis, compares two iron ore mines and observes: “What really happens in a bad workplace is that conditions do not remain stable, but deteriorate rapidly over time. As a result, any results of prevention activities can be questioned at any time.

> “For example, if you've just purged, there's no indication that in half an hour you won't have to do it again; the location is bolted down, but you may need to add bolts.”

Restrictions on recovery behaviors

Recovery practices are generally accompanied by risks and restrictions for the worker; I discussed the increased risk in recovery situations (Faverge , 1967, 1977); Here I would like to introduce two aspects of recovery constraints:

Anxiety associated with recovery activity:

Here is an example borrowed from Haumont 's (1977) bachelor's monograph.

These are supervisors in the control room at the facilities of a radio and television organization; They were asked to rank ten breakdowns in order of importance, assuming that they would occur during the weekend, when these supervisors are alone (an electrician and a thermotechnician) and the technical departments are at a standstill.

The binary factor analysis of the classifications (table of supervisors x failures) reveals an axis that separates the least uncertain incidents in terms of recoverability (an event occurred that caused the failure, therefore it is known where to act and how to proceed) from the most uncertain incidents and , therefore, more anxiogenic (the device is defective, but it is not known how to act, because nothing evident has occurred).

Thus, there is a constraint (stress) due to the uncertainty of recoverability, and people react unevenly to this. A supervisor says: “Incident

Some Soviet authors (Gurevitch & Matveev, apud Cristian, 1969) describe anxious behaviors that reach a state of confusion in some subjects during the search for faults in energy installations. The anxiety and tension that generate the recovery burden are understandable, since this burden is related to the latent uncertainty in the situation and the work process.

Recovery overhead:

Leblanchet (1915) insisted on the work overload caused by the incidents:

> “If an incident occurs, the worker's activity must be complemented by additional effort to achieve its useful objective. This effort is part of his job, if he didn't do it production would stop. This is precisely what distinguishes the work of a worker from the mechanical work of a machine.”

This additional effort is not always recognized, especially when the work has been highly streamlined.

The work of the National Institute for Research and Security (Krawsky , Lievin & Szekely , 1975, 1976) clearly highlighted the mental burden due to disruptions of sock-making mechanics (this constraint is assessed using the additional task method). Let us quote just one sentence from the authors:

> "The effect of disturbances on the load during the course of work is confirmed from one experiment to another... Any disturbing irregularity turns out to be a workload factor: proof that work highly rationalized by the organizer remains very sensitive to any unforeseen event, perhaps more than less rigidly organized work, which would allow for a certain amount of self-regulation."

In a way that may be comparable to the above, increases in discomfort experienced by staff who are assigned a computer terminal to meet client demands have recently been recognized, discomforts that manifest themselves in recovery activities.

In particular, the

> "correcting attendant errors becomes more complicated depending on the degree of sophistication of the underlying software:
>
> - in some cases, the employee is obliged to continue the entire procedure until the end, before canceling it and restarting it;
> - in other cases, he can cancel it immediately, but he must restart all operations from the beginning;
> - finally , it may be necessary to resort to special correction procedures which may be time-consuming even if the error is minimal, and these procedures themselves may be the source of additional errors" (Patesson , 1978).

Likewise, the introduction of memory office machines that do not have screens (such as typewriters) makes retrievals very difficult and increases the mental burden on the operator. At this point, we will discuss the difficulties in recovering from errors and incidents.

RECOVERY AT THE HEART OF HUMAN WORK

From the above it is already clear that recovery is at the heart of human work. To confirm this again and also to conclude on the very subject of this article, I will present the following propositions:

- When sharing tasks between man and machine, the machine will preferentially receive the production tasks and the man the recovery tasks;
- In general, production activities are learned during learning, recovery activities through experience;

- Attempts at the so-called “rationalization of work” (OCT) often go in the direction of a reduction or lack of recognition of recovery, that is, of the man whose work then approaches that of the machine;
- We know that when we want to judge a man in his activity (professional classification) or when we want to analyze his work we examine the way he recovers incidents (critical incident technique);
- The methods technician analyzes work in terms of a succession of operations, the classical ergonomist in terms of the constraints present in these operations, the worker in terms of incidents, the difficulties of recovering them, the particular damages where they occur, in short, in terms of the recovery experience; Beautiful comparative examples of analysis were given by Odescalchi (1975).

The worker thinks (Mothe , 1959) that the workshop would cease to function without the recovery initiatives he takes.

To finally return to my starting point, I hope that this presentation has contributed to showing that analysis in the three activities of production, prevention and recovery is a way that can be fruitful in the psychological analysis of work.

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Jean-Marie Faverge , born in 1912 in the French Jura, is a central figure in ergonomics. Graduated in mathematics and psychology, he began his career as a mathematics teacher before dedicating himself to applied psychology and psychotechnics. In 1947, he worked with Professor André Ombredane at the Center for Psychotechnical Studies and Research, where he helped to formulate the concepts of Task and Activity, fundamental to Franco-Belgian ergonomics. This collaboration resulted in the influential " L'analyse du travail ", published in 1955.

In the 1950s, Faverge worked as a professor at the University of Paris and at the National Institute of Professional Guidance, in addition to giving conferences at the Free University of Brussels, where he developed teaching focused on statistical and work analysis. In the 1960s, he directed the Psychology Laboratory at the Free University of Brussels, leading research into safety and reliability that impacted labor legislation in France and Belgium. He was also an important supporter of research in the European Coal and Steel Community.

Faverge challenged the authority of the specialist in methods of analyzing and organizing work, arguing that workers are the best able to describe and explain their own work, provided they have the appropriate means. He criticized methods such as the " time measurement method ", which decomposes actions into coded gestures, claiming that these approaches fail to capture the intention behind actions. Instead, Faverge highlighted the importance of understanding the activity as an integrated and meaningful whole.

His writings, such as " Structure et analysis du travail " published in 1952, were pioneers in introducing fundamental questions that continue to challenge work psychology, especially with regard to the balance between the variability of behaviors observed in situations and the generalization considered necessary to the scientific approach. Their work resulted in essential publications such as " Les Methods statistics en psychology appliquée " and " L'adaptation de la machine à l'homme ", and has great relevance even today, as demonstrated by the authors of the special issue of the magazine " Travail Humain " in his honor. According to De Keyser's text in this special issue, the classic works of industrial psychology that preceded Faverge , or that were not influenced by him, lack depth. An "absence of relief" that would seek to influence workers in a direct and superficial way, without achieving a deep understanding of its underlying psychological activity.

Faverge 's work is one of the foundations of the discipline. Revisiting his work is crucial for any ergonomics researcher or professional interested in a deep and relevant understanding of the work, remaining valuable for ergonomics practice today.