

Artigo

The relationship with learning at work: the invisible days of metalworkers¹

A Relação com o Aprender no Trabalho: os dias invisíveis de Operários Metalúrgicos

La Relación con el Aprendizaje en el Trabajo: los días invisibles de los obreros metalúrgicos

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Abstract

The text presents an analysis of the process of learning that takes place within the framework of work in its different dimensions, highlighting, in particular, the strategy of learning at work as survival in the face of multiple mutations in the world of manufacturing production. It is a question of highlighting the testimonies of workers of an important factory unit in the metallurgical park of Bahia, especially "invisible" workers who occupy the base of the hierarchical pyramid, observing how "learning by doing at work" is constituted in the daily life of labour relations and at work. The testimonies that show the qualitative cut of the methodology adopted for the study were obtained through long term interviews, all of them carried out outside the industrial environment.

Resumo

O texto apresenta uma análise sobre o processo de aprender que se desenvolve no âmbito do trabalho em suas diferentes dimensões destacando, particularmente, a estratégia de aprender no trabalho como sobrevivência frente às múltiplas mutações no mundo da produção fabril. Trata-se de colocar em evidencia o depoimento de operários de uma importante unidade fabril do parque metalúrgico da Bahia especialmente operários "invisíveis" que ocupam a base da pirâmide hierárquica, observando como o 'aprender pela pratica no trabalho' se constitui no cotidiano das relações de trabalho e no trabalho. Os depoimentos que evidenciam o recorte qualitativo da metodologia adotada para o estudo foram obtidos mediante entrevistas de longa duração, todas elas realizadas fora do ambiente industrial.

Resumen

El texto presenta un análisis del proceso de aprendizaje que tiene lugar en el contexto del trabajo en sus diferentes dimensiones, destacando en particular la estrategia de aprendizaje en el trabajo como supervivencia frente a las múltiples mutaciones en el mundo de la producción fabril. El objetivo es destacar los testimonios de trabajadores de una importante fábrica del parque metalúrgico de Bahia, especialmente trabajadores

¹ This text takes up some aspects of my doctoral thesis carried out at the University of Paris 8 (2000-2003) under the supervision of Prof Dr Bernard Charlot. Thank you Professor.

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«invisibles» en la base de la pirámide jerárquica, observando cómo se constituye el «aprender haciendo en el trabajo» en las relaciones laborales cotidianas y en el trabajo. Los testimonios que demuestran el carácter cualitativo de la metodología adoptada para el estudio se obtuvieron mediante entrevistas de larga duración, todas ellas realizadas fuera del entorno industrial.

Palavras-chave: Relação com o aprender, Trabalho, Trabalho fabril, Qualificação.

Keywords: Relationship with learning, Work, Factory work, Qualification.

Palabras clave: Relación con el aprendizaje, Mano de obra, Trabajo en fábrica, Cualificación

1. Introduction

The metamorphoses affecting the world of work and the world of education make the imbrications between these two worlds even more evident. This relationship between labour and education is explicit in different fields of life in society and becomes even more visible when we consider the issue of workers' qualifications. That the starting point of our reflection.

We find it difficult, and sometimes impossible, to analyse the experiences of workers' experience in the field of qualification without considering the issue of man's qualification for work, an aspect that involves reflecting on the process of man's social constitution. This is always an unfinished process in which man is mobilized to place himself in a relationship with knowledge and learning within the context of his relationship with himself, the world and others. Thus, it seems to us that the issue of man's qualification for work cannot be considered outside of a historically constituted social process.

It was precisely against a backdrop of the crisis of capital accumulation, transformations and new demands in the organisation and management of productive activity that marked the transition between the 20th and 21st centuries that we saw the huge spread of management and work organisation principles based on what have come to be called 'flexible models'. Such context made 'participatory management', the 'quality' doctrine and multi-skilling become emblematic. The Western capitalist world was 'playing' with the possibility of re-editing new 'miracles', in a different scenario. This required the figure of a worker who was co-operative, participative and willing to learn continuously (HIRATA, 1994, CORIAT, 1990). The miracles did not work out as expected, at least not for the workers, and the precariousness of work increased.

The internationalization of the economy and the spread of 'new' forms of work have not guaranteed the increase in the number of jobs in the same proportion as they are eliminated, nor the mobility of the workforce in the formal market. Therefore, this new logic reduces the number of those who would have the ideal conditions available to negotiate their knowledge autonomously and to build a career. The skills required by the new, flexible and integrated organisational model are moving away from so-called concrete activities towards symbolic activities that require a high degree of abstraction. The spirit of co-operation, the lack of demarcation of tasks defined by the job, multi-skilling and task rotation emerge as the mantras of a 'new' era. Thus, the qualifications required would be linked to certain individual attributes, such as reasoning ability, initiative, dynamism, creativity, responsibility, interactivity and will to learn.



It was therefore imperative to 'qualify' workers, retrain them, mobilise their knowledge as important tools for responding to competitiveness and quality standards, adopting different strategies to establish the 'liberation of the workers' word'. Instead of fragmentation and silence, the need for communication and interactivity is emerging. The workers' *savoir-faire* and the subject's subjectivity are emphasised. The result is a renewed interest in the production sphere, in the knowledge produced by workers in their daily work³ in factories.

Against this backdrop, we see the growth of professional qualification programmes in the capitalist world. Programmes orchestrated by businessmen and bosses against a backdrop of ever-increasing unemployment rates, the 'naturalisation' of outsourcing and the precarious status of workers, plus the weakening of trade union organisations and workplace organisation, allegedly presented as a response to the challenges posed by everyday life in the factory. Programmes that seek to capture, control and even regulate the knowledge produced in the workshops on a daily basis.

As our 'investigative curiosity' led us to analyse this transformation process spreading in all directions, we became convinced of the urgent need to take a closer look at what was happening inside the factories, what the workers were facing in the midst of these mutations in an environment that was strongly unfavourable to them. Here we are referring to the 1980s and 1990s, in particular, and trying to avoid exaggerating approximations' possibility, we could venture that the current context, marked by the SARS-COV 2 pandemic, points to other waves of transformation in work and education. Thus, the workers' speeches that appear in this text are speeches produced at an emblematic moment of reconversion of the human production of wealth; in other words, of human labour. These are speeches produced in the context of my doctoral thesis when I encountered the knowledge of workers, those at the bottom of the hierarchical pyramid, with low levels of education, unhealthy working conditions and long years of experience on the factory floor.

By taking this set of elements into account, at that time we asked ourselves some central research questions, among which we would like to highlight the one that refers to how workers learn what they need to know in order to work, to become workers in the face of constant demands that seemed to 'subvert' years and years of work; how knowledge is built in this learning process, a knowledge that subverts the logic of capital's control countless times. This research question was formulated at the beginning of the 2000s: a time when digital media, the internet and apps were not as widespread as today. At that time, social media did not include Facebook, Instagram or WhatsApp.

But regardless of whether it is a digital or analogue society, demands are continually made on workers to respond to the needs of productivity and technological innovation. The panacea around workforce qualification emerges as a 'saving medicine' in the face of the repeated 'crises of the labour society'. Experts discuss methods and trends from the perspective of a new organisation of work. Companies focus on innovations to rationalise and increase production and job insecurity. However, there are few situations in which workers themselves

³ Everyday life is the life of the whole man, which means that man participates in everyday life in all aspects of their personality. In everyday life, man puts into operation all his senses, all his intellectual capacities, his skills, his feelings. (HELLER, A. 1992).

talk about their experiences, the challenges they face in the face of change, how they learn what it takes to do the job, their understanding of what changes their lives in the factories.

It is within this approach that 'learning at work through practice' is inscribed. Knowledge is the knowledge of an active subject, a subject who has a story, a subject who encounters the stories of other subjects in different situations, including the factory. From this point of view, 'learning by doing' does not simply mean learning a technical gesture in the sense of doing and repeating. It is actually about learning within a situation, learning on the factory floor, learning for life and in life, learning through work and at work, a continuous learning of relationships: with others, with oneself, with life and the world in one's own construction as a human subject. From this point of view, learning at work translates into the elaboration of knowledge within the workshops and, in this sense, an important aspect of our approach is what workers have to say about their own learning process. In other words, how the situation of learning at work is set for them. This is how practice gained its strength.

With these questions and context reflection, we decided to 'take a closer look' at the workers in their daily life at a factory. We investigated the experiences of Fábrika C, who was working in the municipality of Camaçari (Petrochemical Pole). It is a large and important production unit in Bahia's metallurgical park with a long history as a state-owned company that was privatized at the end of the 1980s. But as well as being large and important technologically and economically, it was its workers who embodied the combativeness and organisational capacity of the metalworkers of Bahia who were hit hard by the wave of privatisations that marked the last decades of the 20th century. Today, the mobilisation of this category certainly faces other, more complex challenges with the globalisation of the economy, to name just one of the dimensions that make up increase of this phenomenon.

Therefore, in order to understand what was going on inside the factory at the time, we needed to listen to the workers. In this way, we adopted as our starting point a perspective in which the socio-historical dimension of qualification becomes relevant, in the sense that man educates himself, becomes man, in production and in the relations of production through a controversial process in which the moments of education and de-education, qualification and de-qualification, and therefore humanisation and dehumanisation, are always present and confront each other.

We therefore opted for a qualitative methodology based heavily on long-term interviews with factory workers, the subjects of this study. Although we asked Factory C's management for authorisation to access the library it kept on its premises, contact with the workers did not involve any kind of negotiation or agreement with management. This way, all the interviews were carried out outside the factory premises in order to minimise any kind of pressure or embarrassment for the interviewees⁴. A total of 13 interviews were transcribed and each interviewee received a printed copy of their testimony. Here we will use only 3 of the statements to highlight the perception of learning as a survival strategy.

⁴ Most of the interviews were carried out at the workers' homes in different municipalities of the Metropolitan Area of Salvador comprising Dias D'Ávila, Simões Filho, Camaçari.

Following this path, we have chosen to highlight the testimony of these workers who occupied different positions in production, but also different hierarchical situations, to try to understand what was at stake in life inside the factory. In this context, we are particularly interested in the workers who are more 'hidden' in the corners of the workshops, those who are literally 'at the bottom' and who are generally the least qualified, the least educated ones.

2. Knowledge and Work: Learning and Making People Learn at Work

According to Charlot (1997), man is not, he must become what he is meant to be; to do so, he must be educated to become himself. Based on this premise, strongly grounded in an interpretation of Kantian philosophy, we are led to say that man is not a worker, he must become the worker he is meant to be, he must be educated by those who have already become workers, and he must be educated as a working man, becoming a worker for himself. The long road of education and schooling also aims to build this worker. It is within this framework that the question of qualification for work arises, of professional qualification as an experience of relating to knowledge.

Stating that 'man must become' invites us to see the possibility of saying that man becomes a subject throughout history and that this human essence is the set of social relations, which therefore makes him a social subject. A subject who appropriates the social in a specific way that includes his position, his interests, the norms and roles that have been proposed or imposed on him: a singular being who appropriates the social in a specific way, transmuted into representation, into behaviour, into aspiration, into practices.

Besides, the very condition of man is permanently unfinished, the ever-renewed desire to appropriate the human world in which the world of labour that precedes him is inscribed. A world of work that pre-exists in the form of tools, mechanisms, the worker's status within the factory, hierarchical relationships, relationships among colleagues, etc., where he must learn to live and sometimes to survive.

This continuously partial appropriation of becoming human, of becoming human at work (humanity-work) within the process of humanisation, corresponds to the fact of becoming singular, translating the permanent requirement to learn in order to build oneself. Therefore, to learn is to enter this human condition, to enter a history. Learning to work (becoming a worker) means constructing and being constructed within the singular story of a subject who is inscribed in the wider history of society, of work, of the whole development of human organisation to produce its existence and reproduction; it means entering into a set of relationships and interactions, it means entering into a world where one occupies a social place and where they need to associate themselves to an activity. Thus, to become a worker in a particular factory is to share common and, at the same time, unique conditions insofar as these processes are part of the story of a subject loaded with meanings and constituted from previous experiences in the field of industrial labour; within conditions that allow them to learn together with all the stories of those who have already travelled this road.

The testimony of the investigated factory workers labeled hereafter as C, illustrates this process of putting oneself into a condition, into a story that goes beyond one's own story, but which, at the same time, is the knot of a story where many others intersect. The factory is thus the place to find specific stories as the stories of specific subjects, where a shared story is built that is also a story of



relationships with oneself, with others, with the world, but it is also the space to make use of oneself for oneself and for others.

For Schwartz (1987), work represents the coming together of singular stories: the collective dimension of work brings to the fore the fact that singular stories are directly related, giving content to the more objective concepts of work and particularly to its economic conceptualisation. The author also adds, when referring to workers in manufacturing industries, that the gathering of these men on factory premises, where they are in charge of controlling continuous processes, highlights this collective dimension of labour. This collectivity, this labour collective, is both a technical requirement, a condition for guaranteeing productivity, an aspect that is repeatedly camouflaged, and the site of an "always random alchemy where singular stories and lives seek to express themselves positively in the informal collective acts required by these transformation industries. Two heterogeneous but inseparable elements (p.37).

Work, like education, is this constant movement in which one is constructed by others, by oneself, and simultaneously constructs others in the desire to become. Becoming requires the subject to mobilise towards the situation to make sense to them, since learning requires the practice of activities.

Meaning is produced through a succession of relationships that are established within a system or relationships with the world or/and with others. All the signs⁵, words and events that the subject can put into relation with other signs, other words and other events that they already share with other subjects are meaningful.

The existence of meaning triggers the subject's state of mobilisation in the face of the situation. The idea of mobilisation brings us back to the situation of setting a dynamic in motion that is internal to the subject. In contrast, the term motivation is related to situations in which setting in motion has its origin in elements outside the subject. Thus, to be mobilised is to be able to use oneself as a resource to achieve a goal. Mobilisation is the state that precedes action. It is the required precondition for engaging in an activity, the precondition for making use of oneself.

The approach developed by Schwartz (1987) considers work as "self-utilization" to the extent that it is the place of an emblematic tension, a place where the possibility of negotiation is always present, for there is no execution, but rather utilization.

It is the individual in their being that is summoned, even in the imperceptible; they are resources and capacities, infinitely vaster than those explicitly required by the task. (...) There is a specific and unavoidable demand made to an entity in which we assume a free disposition of personal capital. This is the justification for the use of the word 'utilization' and this is the indisputable form of manifestation of a 'subject'. (SCHWARTZ, 1987, p. 72).

Schwartz also notes that we need to be attentive to understand the dynamic and even the dialectical dimension of the term 'mobilize'. It seems that there is no text provided for translation. Please provide the text you would like to have translated. The refusal to take this controversial tension into account, this

⁵ Making sense does not necessarily mean having a value, positive or negative.

dynamic balance, would be to admit that the acts of labor find the worker as a "soft folder where the memory of the acts to be reproduced will be passively inscribed (p.54)".

Therefore, education and work are self-production. For Charlot (1999), a child cannot build themselves without appropriating a humanity; for Schwartz (1987), the use of oneself for oneself in the realm of work acts is for man the inheritance of what is human within himself.

Within this approach, Charlot (1997) distinguishes the notion of activity from the notions of work and practice to recover this dynamic dimension of the subject. From his point of view, the concept of practice refers to a completed and contextualized action that can have slight variations. The concept of work, in turn, would highlight the expenditure of energy. On the other hand, the concept of activity, adopted in his analyses, seems to him the most appropriate since it emphasizes the issue of motives, highlighting that it is the activity of a subject who has an internal dynamics, which implies an exchange with the world.

It is important to note, however, that there is an entire discussion around the concept of work, a discussion that is even more alive today considering the different intellectuals who carry the banner of the end of the work society, the end of the work⁶ category as a central element of sociological analysis. Despite these theses and despite the approach proposed by the analyses developed by Charlot, we consider that the concept of human work (even understood as the expenditure of physical and mental energy) does not distance itself from the conception of activity, considering that to work we need to engage with the world, with others, and with oneself, as well as to develop a set of actions triggered by a goal and that have a purpose. Therefore, the use of the notion of work throughout the text does not oppose or exclude the concept of activity, but rather moves towards a profound conceptual approximation between the two.

In any case, the dynamics present, whether in activity or work, in its confrontation with others and the world, change the meaning of situations as a source of mobilization. In fact, the subject transforms through this same mechanism even though the meanings are not always known. From this perspective, we highlight that the meanings attributed to the situations experienced within the factory are not always the same for the workers (it is important not to forget the subject's specificity); often the meaning and objectives extend beyond the limits of the factory. Moreover, there is always a difference between the meaning of a situation for the worker and for their employer. Therefore, the dimension of meaning, of mobilization, remains a dimension that escapes the control of company management. The meaning and the mobilization that lead the worker to engage in a situation at work have a certain informal character to the extent that they cannot be prescribed. The management can, and this is what they do, define the purpose of activities, the purpose of men's work based on their own objectives, which are those of the capitalist company, but the company's objectives are not necessarily the objectives of the workers; in

⁶ Dejours, C., Moulinier, Pascale. Le travail comme énigme. *Sociologie du travail*. V.36, n. HS, 1994. Freyssenet, M. Quelques pistes nouvelles de conceptualisation du travail. *Sociologie du travail*, V. 36, n. HS, 1994. Marx, K. *O Capital*. Rio de Janeiro, Civilização Brasileira, 1968, Liv. 1, v.1. Weber, M. *A ética protestante e o espírito do capitalismo*. São Paulo, Pioneiras, 1987. The use of the concept of work, read human labour, rather than that of activity is justified, both because it deals with the productive universe and because it is a démarche based on the formulations of K. Marx.

truth, they are quite different, sometimes even contrary. The engagement of a worker in their job can vary in degrees, its intensity depends on the importance of this goal from the perspective of their life both within and outside of work. If there is strong pressure to engage with the objectives defined by the company, they have the possibility to put a set of strategies into action that create an appearance of participation in the "proposed" situations, being present without truly engaging. This limited participation, which takes the shape of an absent-presence, is a way of refusing a type of engagement "proposed" by the company where "being oneself" becomes a criterion for exclusion from the organization. You need to be "yourself" but the "yourself" that the company desires.

We can think about this issue from the perspective of mobilization and self-utilization. Concrete work situations refer to a constant negotiation between the mobilization and self-utilization that companies expect from workers and the mobilization that workers are willing to make available to companies. Schwartz (1987) indicates that there occurs a type of:

Negotiation of acceptability between what the working conditions demand from us and the use of us in what we are willing to do, because each individual participates in this scene with different demands. What we call work interfaces does not only refer to what is unique in all material configurations but also to the uniqueness of the individuals who, at each moment, have the task of managing these configurations more or less collectively. (p. 54)

The issue of mobilization refers back to the impossibility of prescribing the collective and cooperation. Schwartz (1987) analyzes this issue by proposing a reworking of the notion of *savoir-faire* that is associated with the determination of what is collective in work, a process that seems more visible within the manufacturing industries and which he studies based on the testimonies of shift workers. This author adds that cooperation, as a required exchange, operates a sort of fusion between professional life and each individual's subjectivity. The intensity and quality of this exchange are related to the intensity and quality of this fusion. In this sense, the productivity of the equipment and tools depends directly on the quality of the cooperative relationships among the workers. However, this cooperative relationship cannot be prescribed by anyone; it depends on an agreement that is founded, or not, in the heart of the company: "a non-technical element is directly linked to the technical one (p. 58)."

In a certain way, we find in the importance of the historical dimension of the subject a point that brings together the analyses of Charlot and Schwartz. In this sense, Schwartz points out that "management in the economic sense is not disconnected from the ways of managing oneself," whose content and destiny, which are never determined unequivocally by the objective technical means, refer back to all the dimensions and contradictions of history and the history yet to be constructed.

3. Learning at the work within the factory

Becoming a man, becoming a worker, is entering a world, that is, learning: learning to control machines, learning to repair them, learning to solve problems, learning to convince, learning to have good relationships with



colleagues, learning chemistry, computer science, and there is not just a single way to learn.

Learning can mean acquiring knowledge, intellectual content, or object knowledge. Learning can also mean controlling an object or an activity/work, or even entering relational forms. Thus, there are various ways of learning that do not consist of appropriating knowledge understood as the content of thought. But whatever the way of learning, the diversity of the relationships that the subject maintains with the world is always present.

To try to understand the set of challenges, constraints, and contradictions experienced by workers who are confronted with the demands of learning within companies we need to remain on the question of knowledge. How can we translate what a worker says when talking about their job, their activities when they claim to know how to work? What does it mean to know how to work, to know how to do the job well?

To clarify this aspect, we will draw on Charlot's contributions. (1997, 1999).

Acquiring knowledge allows one to position themselves in the world, to share this world with others. Seeking knowledge implies that the subject of knowledge establishes a certain type of relationship with the world, with others, and with themselves. Aa relationship that prioritizes reason and objectivity in order to become a subject of knowledge, that is, to develop the activities of reasoning, verification, and validation. In the relationships with oneself, the fact of taking sides with science and its implications around autonomy and neutrality stands out. In the field of relationships with others, it is about sharing your principles with a community of knowledge, the intellectual community. Inside the factory, the workers also develop a certain type of relationship with the world, with others, and with themselves within the process of seeking knowledge, of learning. But we always need to consider that there is no pure subject of knowledge.

Therefore, "there is no knowledge except for a subject engaged in certain relations to knowledge." "Knowledge is built within a collective history that is that of the human spirit and human activities, and it is subject to collective processes of validation, capitalization, and transmission." (CHARLOT, 1997, p. 35). Knowledge, it is relationships, it does not exist in itself, it is always a relationship, it is always inscribed in relationships of knowledge as social relationships. Indeed, there is this knowledge constructed collectively that is appropriated by the subject. Knowledge is produced and constructed through the confrontation between subjects. If knowledge is a relationship, for there to be a relationship of knowledge in relation to the world, oneself, and others, subject needs to find pleasure, the pleasure of learning, the pleasure of learning at work, the pleasure of working.

On the other hand, knowledge is never practical. The practical aspect of knowledge becomes evident through its use in a practical relationship with the world. There is knowledge in practices, and it is indeed true that practice mobilizes information, knowledge, and know-how, but that does not mean that practice is knowledge. (CHARLOT, 1997). Moreover, as the object of knowledge is appropriated by someone, it also becomes knowledge; it has been captured by the subject. But, on the other hand, not all knowledge implies an object-knowledge.

"I learned through practice," "I learned by doing" are phrases often repeated by workers when the question refers to how they managed to develop



their work. It seems to us that "learning in practice" is not the same as "learning a practice" ("a practice must be learned to be controlled" Charlot, 1997, p. 62). "Learning a practice" implies the work of learning what already exists and is recognized as valid by a certain community that shares this practice worth conveying to others; to some extent, it means learning what knowledge and understanding exist within a practice. But "learning through practice" goes beyond "learning a practice." Learning through practice is producing one's own practice and a unique practice without which it is not possible to learn. It is about learning in a practical relationship with the world. To learn through practice is to appropriate a practice by giving it meaning; otherwise, the practice is limited to a repetition of movements, an automatization.

It is within this perspective that we analyze the situation of workers in the face of continuous demands to learn that impact productivity and 'participation', and often affect the maintenance, or not, of their employment, in the face of a future that is not always presented clearly.

Thus, we brought the set of these reflections into the factory in order to hear what the workers had to say about their lives at work. We chose, as previously mentioned, to focus on the metallurgical sector due to its dynamism and economic importance both nationally and in the local context of the economy of Bahia, but also because of the political strength of this professional category within the labor movement (national and local) since the 1980s. It is worth noting that Bahia is the most economically important state in the Northeast, with petrochemicals being the main segment of the industry in Bahia.

Thus, among the different manufacturing units installed in an important industrial complex in Bahia, we selected two state-owned factories for this study. However, for this paper, we chose to present only data related to one of these manufacturing units, which even includes a mining and metallurgical complex.

3.1. Contextualizing the Field of Research

The metallurgical park in Bahia where Factory C is located has a long history that dates back to the 1950s, fueled by the dynamism of the petroleum industry reflected in the establishment of the Aratu Industrial Center (CIA) and the Camaçari Petrochemical Complex. (COPEC). Despite all the transformations that occurred over the last decades of the 20th century, some features of the Park remain evident, namely: a) spatial dispersion among production units, b) heterogeneity of the workforce (age, education, wages, selection methods, etc.), c) diversity of factories (production processes, size, labor management, etc.), and d) the long trajectory of union organization. Despite this, the metal-mechanical segment, which includes the metallurgy and mechanical industry sectors, is the second most important in the state's manufacturing industry, in which Factory C plays a particularly significant role. (DESENBAHIA, 2000)

Generally speaking, the first half of the 1990s was characterized by difficulties in the metallurgical sector. The accelerated opening of the economy to international competition, one of the first economic measures adopted by the government elected in 1989⁷, resulted in the bankruptcy of several companies

⁷ In 1989, the first direct presidential elections were held after the 1964 military coup. The Workers' Party (PT) candidate, Luís Inácio Lula da Silva, was defeated by Collor de Melo, the candidate of the National Renewal Party (PRN). It wasn't until 2003 that the PT became President of the Republic, when Lula took office for two terms, between 2003 and 2011, and was succeeded by

and layoffs that marked the last decade of the 20th century⁸. It is at this moment that the introduction of new technologies and new workforce management tools intensifies and spreads. At the same time, the intensification of work articulated with the innovations that the more structured fraction of the Park implemented ensured the growth of productivity, as is the case with Factory C in its long history that dates back to 1870.

The company reconfigures itself over time just like the park that experienced a strong period of contraction in the last years of the 20th century, when the sector glimpsed a novelty: the inauguration of the Ford automotive complex in Camaçari. This unit is composed of about 29 factories in line with a new organizational concept identified as industrial condominiums, configuring a promise of job creation and economic revitalization of a region that at the time had 27% unemployment.

In this regard, Pessoti and Sampaio (2009) demonstrate that the metal-mechanical segment was the only one that achieved a higher realization of investments than that forecasted for 1999. This occurs at the expense of a strong tax exemption policy that attracted the automotive industry through state programs, as was the case with the Ford Automotive Complex⁹.

Factory C, established in this park, until its privatization was characterized as a metallurgical mining complex comprising activities ranging from ore extraction to processing, incorporating production processes organized in different socio-technical bases spread over different plants: open-pit mine and underground mine, Concentration Unit, Metallurgy Unit, Sulfuric Acid Unit, Nickel Unit, Phosphoric Acid and Precious Metals.

It is important to mention that in a manufacturing unit in the metallurgical area, the working conditions are considered aggressive since the daily routine is featured by high temperatures, the risk of explosions, and the risk of contamination by heavy metals. It is in this factory environment that the interviewed workers are found.

4. Learning by doing: life in the factory

The workers are subjects who write their own story in the world of work, particularly that of the factory, in the world of education, of the school, in the world of relationships with others, colleagues, bosses, family, and ultimately in the world of relationships with themselves, in their singularity. This process in which the act of "writing" and "being written" intertwine is always unfinished and never linear, nor does it exclude contradictions. Moreover, this process unfolds in time and

Dilma Rousseff between 2011 and 2016, when she was removed by impeachment proceedings. This led to a brief period in which Michel Temer (MDB) took office (2016-2019). In January 2019, Jair Bolsonaro was elected president of the PSL, a right-wing party that in 2022 merged with the Democrats (DEM), another right-wing party, resulting in a new party, União Brasil. In 2023, Luís Inácio Lula da Silva, from the PT, takes up his third presidential term.

⁸ The Metropolitan Region of Salvador (RMS) has always been marked by high unemployment rates when compared to other regions of the country. In the first three quarters of 2020, the unemployment rate in the RMS stood at 18.17 per cent. In Salvador, this rate reached 17.5% according to the National Household Sample Survey (PNAD Contínua), raising Bahia's position in the national unemployment ranking. The effects of the health crisis caused by the COVID-19 pandemic have worsened the scenario.

⁹ The Ford subsidiary located in the Camaçari Petrochemical Complex opened in 2001 and closed its operations in 2021.



space. The space is that of the Factory, a space that blends with the space of the world, the time is the time of work, the time of everyday life, that is, the time of life.

It is indeed true that, generally speaking, learning is about acquiring knowledge, but also about controlling activities, relating to others and oneself, and, moreover, equipping oneself with references that allow one to interpret "life," "my life," understand others, and know oneself. The work in the Factory takes, in the testimonies, the form of a continuous experience, that of "learning by doing," which requires the mobilization of the individual. This means that the subject must make use of themselves, see themselves as a resource through which they can achieve a certain goal.

From this perspective, one must not forget that the factory floor is always marked by power relations, power relations between those who give the orders and those who must obey them, power relations lived daily and that permeate the processes of learning at work, a situation that we can clearly observe in the testimonies of the workers.

4.1 Learning and teaching at work: a strategy for survival and resistance

Friendship, the relationship with other workers, and the guidance of colleagues are central ingredients for overcoming the numerous difficulties of "learning on the job." Learning from colleagues who have held their positions for long periods within the Factory establishes a reciprocal relationship where knowledge built over time is conveyed. Being accepted in a group that has its own way of working is equally important by gaining the trust of others and trusting others in a world where hierarchy is more or less visible, demonstrating that one is capable of doing a good job, being a good comrade, and navigating the hierarchy are continuous challenges for which there are no pre-existing answers. It was necessary for each of the workers to enter the Factory to learn "the philosophy of the worker," as one of the interviewees told us. Moreover, the policy, discourse, and practice of workforce management adopted by Compañie cannot be overlooked.

I was like that, I didn't know, I only had friendships in the area, I knew some people in the operations area. (...). From the foundry, I went to the foundry, I went to work with a quite... excellent person, of the 5 supervisors they had in the area, I worked with the supervisors, the one they assigned me to was one of the best supervisors they have there to this day, he is a person who, if he doesn't help you, also doesn't hinder you. There, I went to work as a baker. It's difficult, it was difficult. (...). And people would tell me: 'Man, you won't even last a week there, the temperature, the pollution is too much and you won't stay there,' so I kept working, working with my colleagues, always asking for guidance, the supervisor himself guiding me, he was a really nice guy. (Furnace – Foundry, Vitor)

The work in the Foundry, the sector where the working conditions are the most arduous in the entire Factory, was therefore completely new for this Supplier and, in a certain way, represented a professional downgrade compared to the type of work he did previously in the same Factory or even before being hired.



The job as a Furnace Operator is truly demanding; it requires physical strength and the risks of explosion and burns are high.

For 8 years, Vitor had worked as a Tool Controller at a large petrochemical company from which he was laid off in 1988. In 1989, he was hired by C for the same position and remained there for more than 7 years (until 1996). The work in the Tool Shop did not require a specific professional qualification or a high level of education; it was sufficient to have completed elementary school, and that is how Vitor was able to fulfill his duties during that long period. (about 15 years). The work generally consisted of equipping the workers by providing them with the necessary instruments and tools for the different production sectors and, above all, for maintenance tasks, which required the materials to be kept in good condition. This job did not require him to know the operation or use of the tools, but it gave him the opportunity to make contact with workers from all sectors of the Factory. So, it was a more bureaucratic job, "cleaner," lighter, carried out in an environment closer to an "office" than a "workshop," even though it was a shift job and even being aware of the responsibility towards the Company's assets.

When I went to work for C as the Tool Controller, I was already doing that job before (...) besides the experience I already had, I also gained a lot of experience there, (...) I always took some metrology courses to stay updated, to get to know the instrument better, so it became a routine and it wasn't so difficult to perform my function. I also liked doing it, when a person enjoys performing a certain role, you never have difficulty learning, I liked it a lot and now also in the operations area, I have always had a great ability to work in the operations area. (Ovenmaker–Foundry Vitor.)

So, why leave the Controller position, which is more relaxed and socially more prestigious since it is not associated with physical work, and move to a position considered 'poor' in terms of required knowledge?

The transfer from the "office" to the workshop, taking on the task of starting from scratch in a job where I knew nothing and learning in the Foundry, was a strategic "choice" dictated by survival needs.

Since the privatization, the Tooling Sector had been undergoing a drastic reduction in personnel and materials due to an aggressive policy of subcontracting the workforce and maintenance services. Therefore, remaining in the position of Controller meant being unemployed in no time. The "choice" for a much more arduous job, situated in the heart of the Factory, distancing the possibility of subcontracting, stems from a survival logic within a strategy aimed at job security.

There were practically no outsourced workers in the company, and nowadays that's all there is. If you go to the cafeteria at noon, you only see blue, yellow¹⁰, pumpkin-colored overalls. You think... sometimes you stand there with your tray, looking for someone to sit with and eat, because usually, we have more closeness to have lunch together, like the people from your group who have been with you for a long time, and you really can't find anyone. (Operator – Electrolysis, Sinésio)

¹⁰ The outsourced workers wore different uniforms from the workers directly hired by C.



The situation of "learning on the job" at the Foundry proved to be vital and allowed it to resist the changes in workforce management policies adopted by the Company. They need to "make do," observe, try, and rely on the camaraderie of learning with peers; it was in this way that he learned to "be a baker." "Learning on the job," a strategy to secure employment, is a logic that is also found in the testimonies of other foundry workers.

Before being hired as an Operations Assistant in the Raw Materials Sector in 1985, Jonas worked for two years as a contractor in the cleaning area, then in equipment installation and valve maintenance. During this period, he established friendships within the Factory, and thanks to these relationships and a specific political context, he was hired.

But for him, the privatization process (1988) represented a threat, just like for most of the workers. The layoffs affected all sectors, and the staff reduction was dramatic: from 2400 to 1200 workers in one year. The rumors indicated that the workers in the operations sector would be replaced by outsourced workers. In a more or less structured manner, the threat of unemployment has become an effective management tool for the administration.

It was within this context that at the end of the 1980s, Jonas requested his transfer to the Foundry.

It was a period of mass layoffs and the management wanted to transfer me to a department where there was almost nothing to do, but I've never liked having an easy job, so I asked to go to the foundry because the guys there are cool. I liked what my colleagues did to empty the furnace, and I went to learn, and today I am a foundry worker. For me, it was more advantageous in the foundry because no one wants to go to the furnace throat. (Ovenmaker-Foundry, Jonas).

Learning from others is a fundamental aspect of the workers' experience and is present in all their speech, whether they are referring to the past or the present.

Life in the Factories is full of stories, and beyond the situations of continuous learning, there are situations where you help another person, someone who is arriving, learning. The "relationship with learning" and with "making people learn" brings to light, once again, the relationship of these workers over time, which is, in fact, a lifelong relationship. Reading the testimonies, we often have the feeling that the workers find themselves in a kind of "silent commitment" to the "factory community," a principle that is never written or verbalized, which asks them to bring, receive, and share the world of the factory with those who arrive. But there is also, in this process, a way to share a certain working condition in which they know and recognize each other in their heterogeneity.

Because the one who arrives wants to learn, we have the obligation to help, and besides, we are not overwhelmed, as everyone can be part of the work; therefore, we teach the one who arrives. If we show them, people learn and sometimes even climb the ladder more than we do... but at least we pass on what we know. We have a philosophy, independent of the company: why keep something that can be passed on to someone else? It



means nothing, we will harm ourselves. It seems like your message is empty. Could you please provide the text you want to be translated? For example, emptying the oven without breaking the refrigeration unit, cleaning the plumbing without causing an accident to yourself or others. "(Ovenmaker - Foundry, Jon)."

The relationship between the experience of learning and the experience of teaching seems evident to us. In their own way, each of them developed a methodology that highlights how they experienced the learning process through practice at the Factory. But, at the same time, the workers feel that what they have taught is more than what they have learned from others, since they have taught what they have learned on their own, through their own experience, over time.

However, teaching the newcomers at the Factory brings a certain pleasure: the pleasure of realizing that they know something important for themselves, for others, and for the Company; that they know things that are not in school textbooks. The recognition of the other emerges once again.

5. Final Remarks

By analyzing the testimonies, we could observe that the relationship with learning at work can be thought of, at least, in a dual dimension that are not mutually exclusive: that of qualification in its broadest sense and that of a strategy put into operation to cope with the power relations that intersect labor relations and that are simultaneously capable of ensuring "survival" within the factory, survival in the sense of job maintenance, but also in the more subjective sense. We observe that the articulation between these different "senses" of learning is always present on the factory floor.

They needed to learn at work with those who know, and to achieve this goal, they had to engage in relational forms and devices, that is, to manage the relationship with others within the situation of learning at work. It is about learning to inhabit the world of the Factory seen as a space of relationships. What is learned, then, are behaviors, ways of acting within relationships with others and oneself: distrusting the company, "Giving a hand" to a colleague, etc. Another relevant aspect is friendship, camaraderie, trust, all forms of subjectivity that allow understanding what others feel and the actions those feelings can trigger in the relationship with others and oneself. To relate to others is to relate to oneself, and behaviors are always linked to a form of subjectivity. (CHARLOT, 1999).

In the limitations and challenges of hierarchical power, learning through practice is also part of a relationship with the world, a world much broader than the world of the Factory, since it is the world of life of which the Factory is a part of. In the relationship with the world of life and the world of the Factory, the relationship with learning through practice, in the daily work routine, emerged as a necessity to adapt to the demands, a process of continuous adaptation in "very tough" worlds. But it is important to give meaning to the efforts required by an adaptation process capable of challenging the reference points that allow us to interpret "life" and "my life," understand others, and know ourselves. It seemed to us that the meaning attributed to this process was that of adaptation, "adapting to fulfill the task and stay in the company." From this point of view, adaptation can be interpreted not only as a physical matter, the way to do the task well, but also

as the development of "cunning," "tricks," shared knowledge among companions to preserve their principles and their most important values, trust, friendship, a certain complicity: it is a matter of doing what the leader ordered, but not exactly as required.

It is true that "learning the job through practice" was understood as a process of appropriation, particular to each of the workers, since making sense is always a particular form of appropriation of the present, the rules, the manuals, the instructions, despite the managers' efforts to standardize activities and, to some extent, standardize the behavior of the workers. In practice, the workers learned and taught, and this allowed them to "move forward" and discover the secrets of production. Moreover, it was the practice and reflection on this practice that allowed them to develop a particular sensitivity to the production atmosphere: the perception of the noise and rhythms of the equipment, the smells, the production rhythm of copper and steel. On this point, we agree with Charlot (1997), who observes that "the one who has practice" lives in a world where they perceive cues that others would not see and where they have reference points and a range of responses that others would be deprived of. Practice is not blind; it is equipped and organizes its world - it assumes and produces learning. He also adds that "this learning, which is the mastery of a situation, is not of the same nature, either in its process or in its product, as knowledge, an object that can be stated as an object of knowledge (p. 85)."

We advance through practice. We teach every day and every day we learn. He who knows teaches others, and he who does not know learns more. In other words, one thing is transmitted to another. For example, sometimes I discover something and if I see that it is a good thing, then I explain it to my colleague and we move forward until we achieve the goal, which is to produce copper. (Ovenmaker - Foundry, Jonas).

However, the learning situation in the Factories is not just an obligation; it is also experienced as a succession of learning opportunities. Learning, the learning situation always has a dimension of space and time. The workers learn at a moment in their story, and this moment is, at the same time, a moment in the stories of the workers who teach them their knowledge, in the story of the factory where they work, in the history of the society in which they live. Therefore, the learning situation is always a space and a time of oneself shared with others.

If we maintain the approach we adopted to listen, read, reread, and analyze the words of the workers, it seems to us that the learning process in professional life contains within itself a process of involvement in the situation and a process of distancing, of detachment from others and from oneself.

The relationship of "learning by doing" for all workers refers to the relational issue. Learning, learning the "work," is about relating to others, the "people" who already know, those who have already experienced what the newcomer is going through at the moment of arrival, when he will "restart" at the Factory, and then over the years. The relational aspect is linked to whether the worker has or has not had previous work experience in a sector, whether in the same type of industry or another, although parallel experience can give the worker the opportunity to refer to previous situations to overcome difficulties related to the job itself or to relationships with others.

It seems to us that this situation in which workers qualify for the job thanks to a process like "learning through practice on the job" guided by those more experienced is clear to the Factory's management. In a way, the company takes advantage of the informal nature of learning from others, as it reduces costs and the time used for training, especially when it comes to the training of workers at the base of the hierarchical pyramid. We could think that there is a selective qualification at least in the technical aspects. It is possible to assume that for business owners and managers, investing in the technical training of those workers hidden in the nooks and crannies of the factory would be a waste of time and money. But, at the same time, we can glimpse that in this "laisser-faire" companies will derive some benefit from 'laisser-faire' companies take advantage of "learning by doing", the opportunistic validation of certain knowledge that workers produce in the course of their work.

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