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From lean manufacturing to smart factory: communication in work organization processes in contemporary capitalism

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Abstract

This article aims to reflect on communication in flexible labor management through a discussion that dialogues with critical studies on the new forms of labor exploitation in current capitalism. More specifically, we seek to address ways of mobilizing communication in support of the organizational logic of work assumed by companies that consider themselves flexible and lean, or smart. The main focus is on the critical examination of the constitutive elements of a particular narrative, present in the contemporary world of work, which combines technological transformations and the precariousness of human labour.

Keywords

Communication and work; Lean manufacturing; Smart factory.

Introduction

In the context of the present capitalist setup, supported by the gradual use of technological resources in the forms of exploitation of human labor, the companies have sought to present themselves as flexible organizations aligned with principles, concepts and practices that come to making present in the world of work contemporary.

Under this aegis, it is possible to observe the constitution and circulation of a narrative in society that disseminates a certain idea about work related to the concepts of Industry 4.0, fourth industrial revolution, advanced manufacturing, smart factory, as well as platforming and uberization. These are ideas that have full-bodied a certain referential discourse through which the press, think tanks and the own academy usually debate and, each in their own way, to guide governments and various social groups in their actions.

This discursive referential was already historically charged with other elements, such as lean manufacturing, flexible management, Toyotism, Taylorism-Fordism, among other terms that represented - as, to a large extent, still represent - principles and practices (these also in the sense of artifacts and methods) of work organization that are commonly applied in in factories, offices and other production environments. And finally, in all the spaces where those¹ living labor itself selling perform the functions of, on the one hand, provide society of goods and services and, on the other, generate profits for those who employ them (i.e., for those who buy their ability to work as a commodity).

With this in mind, the objective of this article is to reflect on the role of communication in support of the organizational logic of flexible work essential to the world of work, discussing issues such as: what characterizes the concepts and elements mobilized in the narrative linked to that logic; what social and economic processes are linked and how do they correlate? There is something common behind the genesis of its principles and its practices that underlies and gives them consistency?

Although these concepts and elements are mobilized by their agents in order to represent the concrete reality of the companies' work processes based on a neutral, impartial and detached perspective from the objective and subjective class positions , - and in this sense, they present the mere function of describing reality as it is - apparently, they defend ideas and ideals, the ultimate purpose of which is to direct the historical process, to promote unilateral worldviews and trained behaviors.

This is an inquiring universe in which Sociology and Communication, dedicated to studies on human work, meet. And it is through this meeting that we intend, in the present text, to examine the above questions.

Work and capital accumulation

Capitalism inherited from production modes based on the private appropriation of the work of others an aspect that is crucial to this type of corporate organization: the control of the generation and diffusion of knowledge (as a theoretical and practical activity) and the control of the use of time and space. In retrospect, slavery had deprived workers not only of decisions about the activities they were required to carry out, and of access to their results, but also of professing their services, speaking the languages of their ancestors, and rescuing their own collective life. Feudal servitude would advance little in this regard: official religiosity constituted the main ideological cement of this form of labor exploitation and, provided that peasant serfs (or apprentices in the corporation) were not in themselves private property of feudal lords (or masters) of profession), submitted to them by means of a strict control in their work activities,

1 For expository simplicity, without any hierarchical or other connotations, a single pronominal form will be used in the remainder of this text when dealing with subjects. And it should always be understood by her that they are human beings, men and women, without distinction.

which they carried out, for the most part, in other means of production, being also separated from the results at the end. Home and workplace were confused and, if an apprentice had to dream in one day, perhaps, to be a master of trade (if he did not compete with the corporation in which he was formed), the peasants had something similar to abandon their masters and with that, the protection of life itself.

Capitalism, supposedly, would have innovated in these aspects, by guaranteeing, at least legally, freedom of choice for people (as individuals and according to the rules of each country or region) where to live and for (or with) whom to work. But, as warned Marx (1976, p. 579), “these newly freed men became sellers of themselves only after they had been robbed of all their own means of production, and all the guarantees of existence afforded by the old feudal arrangements”. In other words, capitalism started from a society of the dispossessed and, not only maintained, but expanded what was already underway: the concentration of the means of production as the private property of a social group, which thereby exploits labor large mass of the population.

Although every mode of production based on the appropriation of the work of others (as were the slave and the feudal) articulated their mediations around the control of the needs of the workers’ existence, in capitalism this historical process acquires unusual subtleties and complexities, because the owners of the means of production do not acquire work by buying, in body and soul, those who work; the working capacity of these people is bought, and for a given period of time. This has serious consequences, which are not always clear, because behind the apparent probity and liberality of this arrangement, there is a gigantic mechanism of psychosocial oppression and the extraction of unpaid work, against which slavery or feudal servility were mere prototypes.

Take, for the beginning of the analysis, the fact that it is up to the direct producers themselves (whether salaried or self-employed) to reproduce, by themselves, the merchandise they sell, namely: the capacity of work, and the necessary means the execution of the work itself (in the case of freelancers). It seems obvious, but what happens is that reproducing and being able to sell your own work as merchandise is *conditio sine qua non* for these people to simply exist; otherwise, they become superfluous beings and there is no rule or law that leads someone or any institution to employ or keep them alive.

In fact, capitalism does not allow any collective modality of planning the production and distribution of the fruits of social work (not even the surpluses that may come from a technical increase in productivity or the temporary satiety of a given social segment). These measures - which could result, among other things, from a gradual reduction in working hours, or from a more precise control of the side effects of consumption, such as environmental pollution - are blasphemous to the supposedly libertarian rules of this system². Of which, paradoxically, results in a waste chronic social work capacity (as in the crises of overproduction) and live of all beings the species (including human, therefore, unable to sell their own work, not are few people who die annually from starvation)³.

Unemployment and the consequent excess of immobilized workforce, in addition to trivializing waste and life, more than supposedly unwanted effects, are functional processes for the reproduction of the capitalist system insofar as they attack the bargaining power of those who depend on their own work to survive, in the face of those who buy someone else’s work and not only live with it, but also profit.

2 In the words of Marx (1992, p. 579), “the idea that accumulation is achieved at the expense of consumption - considered in this general way - is an illusion that contradicts the essence of capitalist production, in as much as it assumes that the purpose and driving motive of this is consumption, and not the grabbing of surplus-value and its capitalization, i.e. accumulation”.

3 According to a recent publication by the United Nations (Hunger, 2019): “about 820 million people worldwide did not have sufficient access to food in 2018, compared to 811 million the previous year, in the third consecutive year of increase. (...) The pace of progress to halve the number of stunted children and babies born below ideal weight is too slow (...). Hunger is increasing in many countries in which economic growth is stagnant, particularly in middle-income countries and in those that depend to a large extent on international trade in raw materials. (...) Income inequality is increasing in many of the countries where hunger is increasing, which makes the situation even more difficult for the poorest, most vulnerable or marginalized, in the face of the economic slowdown and recession”.

The labor force, due to its attribute of conserving and, more than that, of adding value to the means of production, is the most valuable commodity to be consumed by those who own them, it is the source of all industrial and commercial profit. For the working class, however, labor, as a commodity from which it must intermittently alienate itself throughout life, becomes a means of survival. This at best, when considering work with a fundamental right, as it is the guarantee of protecting one's own life. But that criterion does not go beyond the dead letter of regulations solemnly ignored by companies and states.

It is interesting to note that, like the labor force, the means of production are also produced and purchased as goods by the business community. And just holding your possession is insufficient. They must be set in motion so that they generate products and services, which, again in the form of merchandise, are sold and converted into cash, restarting the cycle. It is not, therefore, sought, as is known, to recover the same amount of money in advance in the purchase of means of production (and of labor power), but a surplus: profit. Far from being the result of speculation (such as buying cheap and selling expensive), nor the salary on which businessmen survive (as this would not be possible to increase reinvestment and, from it, the expanded reproduction of accumulation), profit is a portion of the amount of work purchased at a cost always less than the result of that work actually carried out and delivered. And this is only possible because entrepreneurs do not buy, under capitalism, any capacity for work, nor do they exploit the full power of their salespeople (workers) under any conditions.

Capitalism is, above all, a mode of production founded on cooperative work, albeit in a very particular sense of cooperation: most products and services result from work processes that are carried out within spaces (even if virtual and geographically dispersed) in which, through a technical and social division, different specialized individuals operate, at the same time and in a combined way, private means of production built on a large scale. The productivity resulting from this type of social arrangement allows extracting a much greater (and growing) result from the work of these people compared to what would be obtained if they were producing alone. However, it is in the condition of individual parts of these immense corporate gears that workers receive their payments in exchange for the mass of value that they generate when operating, collectively, these means of production, which are not only legally concentrated as private properties, but technically designed to carry out precisely this type of massive social exploitation.

The efficient and continuous consumption of the means of production becomes, therefore, also something of the greatest relevance in capitalism. And since the labor force can only be made available for intermittent time intervals (daily, monthly and yearly), beyond which these means of production (and the inputs that feed them) inevitably devalue, capitalism has engendered technical artifacts and organizational methods that process and intensify human skills and energies to levels unimaginable to previous societies. In the absence of a collective macro-structure that coordinates the production and distribution of the results of social work, there is a daily tour de force in the entrepreneurial micro-sphere to extract profit from every penny spent and for each bubble of time elapsed, setting, whenever possible, the means of production to operate at the maximum limit of their capacity, over the 24 hours a day, 7 days a week and 365 days a year. Hence the need for varied work shifts, overtime or various ways to make flexible or even circumvent work hours.

The organization of work in capitalism

In this war - between, on the one hand, those who force themselves to turn this mill to extract the right to life from it, and, on the other, those who hold it as capital to extract not only their own life, but, above all, profits - simple ostensive violence is no longer used, in the primitive way of cursing and whipping. In contrast, the most formidable control engineering is undertaken, involving everything from investigation and the assimilation of know-how, to the metrification and imposition of perception and conduct standards

on workers, from the socio-collective to the individual-psychic sphere and the spheres management at operational levels in companies - and in their own homes, in the case of work performed remotely. The so-called industrial revolutions, so memorable by the said technological advances achieved, were nothing but the result of this entrepreneurial quest to continuously raise productivity through the most absolute control of work activities and their execution in environments (spaces and artifacts) and under conditions (organizational) obstinately designed to generate maximum profits, rather than better livelihoods⁴.

The manufacturing system, since its implementation at the end of the 18th century, already exposed this need for control when moving workers out of their living quarters to operate, albeit initially under traditional methods, equipment disposed on a large scale and under management private and centralized (Marglin, 1976). Over the years, a managerial staff started to accumulate the vernacular know-how of workers and to impose a profound technical subdivision of activities in the work places, which, then reduced to hollow and repetitive tasks, started to be distributed among watertight groups of people, in a process that, at the end and after decades, turned ex-artisans into culturally and physically mutilated workers (often in a literal sense) (Marx, 1976).

This depleting specialization made room for a unilateral and reductionist design of work artifacts, which, in parallel to the more versatile techniques for obtaining and applying energy (with the use of fossil fuels and electricity), allowed for work automation, with the advent of increasingly complex machines that started to run from the driving force to the operations themselves with the tools on the work objects, first intermediating, but over time even replacing the presence of the human being, and, above all, changing social and culturally, the relationship between this and the object of labor. In overcoming, in many cases, the human capacity in speed and precision in tasks that, previously complex and intuitive, were reduced to reflexive and repetitive acts, the machines started to be used massively since the 19th century, changing the work environments and assimilating functions (such as controlling oneself, supplying oneself, etc.) in a movement that spread from industry to mining, agriculture, transportation, communication, finally changing the social relationships of the human being, which includes, of course, the use and perception of space and time.

The emergence of a chronometer measurement system for each physical and mental act, executed with special tools in a carefully designed work space to suck up every lapse of productive time, as Taylorism undertook at the turn of the 19th to the 20th century, was not, therefore, more than an advance in this same trajectory (Pinto, 2013). Soon afterwards, the introduction of the Fordist series line would engender not only production, but mass consumption, in a society in which not only knowledge about work and the act of working itself, but the subjective perception about the right, the duty and the means to obtain the result of the work, started to be reframed and manipulated (Gramsci, 2000)⁵. This proves the endemic subjection of the emerging middle class (and even sectors of the proletariat) in the 20th century to the commodification of labor and its results, and resignation to the colossal bureaucracy and the machinery

4 According to Rosdolsky (1977, p. 455): "The most conspicuous feature of this economic order is, and remains, its insatiable urge for constantly growing profits. Consequently, only those 'goods' are produced as are at the same time values; and so material human needs are only satisfied to the extent that satisfying them appears indispensable for increasing surplus-value. Thus, for example, the creators of all social wealth, the workers, have large (and fortunately constantly growing) needs; however, they can only satisfy these needs if their labour-power is a saleable commodity on the market, and it can only be sold if it proves itself to be capable of creating surplus-value. The same applies to the so-called 'objective factors': even the most perfect machines and techniques of production are only employed if they promise to raise the rate of profit. And finally even the 'total capitalist' himself is limited in his comforts and pleasures by the necessity for constant accumulation".

5 In the words of Gramsci (2000, p. 286): "the history of industrialism has always been a continuing struggle (which today takes an even more marked and vigorous form) against the element of 'animality' in man. It has been an uninterrupted, often painful and bloody process of subjugating natural (i.e. animal and primitive) instincts to new, more complex and rigid norms and habits of order, exactitude and precision which can make possible the increasingly complex forms of collective life which are the necessary consequence of industrial development". Comments on this Gramscian perspective can be seen in Pinto

employed in it⁶, configuring the Marcuse (2002) denominate as the advent of a *one-dimensional* human being.

The next step in this process, starting in the 1970's, with the oil crisis, was the worldwide diffusion of the Toyota Production System (Coriat, 1994; Hirata, 1993; Monden, 1984; Ohno, 1988), nicknamed in the USA as *lean manufacturing* (Womack et al., 1990). The innovation in relation to Taylorism-Fordism lies in the fact that, in addition to greater efficiency in the consumption of materials and time in production, Toyotism allowed the elaboration of a greater variety of products (or services), even under the large-scale production. To achieve this, Toyotism requires a resizing of the productive space, eliminating the traditional mat of the series line and introducing spaces (cells) that integrate teams of varying sizes and with multipurpose workers, to whom an increasing number of diverse activities and the operation is imposed, often simultaneous, of more than one type of equipment. That is why Toyotism (or its Western reinterpretation, lean manufacturing) is attributed the aura of flexibility as opposed to the rigidity of Taylorism-Fordism: the ideal type of company is the one that adapts quickly to the anarchy of an increasingly market convulsed and oscillating. And as companies are nothing more than buyers and mobilizers of other people's work, here comes the ideal of the flexible worker, able to adapt to the sudden changes caused by competition in qualifications and in contractual labor relations, including dealing with unemployment itself (Antunes, 1995, 2013; Antunes & Pinto, 2017; Pinto, 2011b).

However, flexibility is what all these systems of organization engendered by capitalism demanded from the working class. The peasants were required - together, of course, with the suppression of their properties - to adapt themselves to leasing or to wages in the countryside; or migrate to the cities, where they would compete with the ex-artisans, turned, also under the risk of succumbing, to manufacturing workers. The subsequent introduction and increasing use of electromechanical-based machinery in industry, mining and the field, in addition to intensifying the work (especially when it is impossible to extend the hours more, aiming at amortizing costly investments) (Dal Rosso, 2008), would take also countless people in a disposable condition, in a movement that has acquired special virulence since the end of the 20th century with the introduction of electronics and computers in equipment and work spaces (Harvey, 1990; Lojkine, 2002; Schaff, 1995; Wolff, 2005) .

The diffusion of computers of various sizes and their integration in networks supplied with servers, operated by increasingly complex software and, at the same time, more versatile and accessible to users, caused an exponential growth in the capacity of storage, mining and data processing. Combined with the sphere of communication, configuring the list of Information and Communication Technologies (ICTs), these new productive forces have enhanced the control of human work through automation, by allowing the collection of data produced by workers on their journeys (local or remote) of work, making it possible to show in detail the know-how in a kind of "electronic text", as expressed by Zuboff (2015, p. 76).

Already in the early 1980s, Zuboff (2015, p. 76) reported in his articles a qualitative change in the automation of human work since it became, in his words, "computer mediation". If, up to now, the forms automation realized been limited to simplify the work and the replacement of the human being machines offering greater control and continuity, the introduction of ICT still would add another rule layer of labor by capital the generation and accumulation of data, produced simultaneously during the course of the work, whose processing (and analysis) separately "(...) provides a deeper level of transparency to activities that had been either partially or completely opaque", which produces a "(...) action linked to a reflexive voice, as computer- mediation symbolically renders events, objects, and processes that become visible, knowable, and shareable in a new way" (Zuboff, 2015, p. 76).

(2008, 2011a, 2012).

6 Not by chance, the 20th century was marked by the massive industrial viability of the automobile, but also of the airplane and rockets, whose accelerated developments are a consequence of the wars of 1914-1918 and 1939-1945 and their consequences, such as the Cold War.

According to Zuboff (2015, p. 76), there are two simultaneous processes at this stage: automation and computerization of work; for the latter, "(...) "extends organizational codification resulting in a comprehensive 'textualization' of the work environment – what I called 'the electronic text'". With it, incited to further dispute over job knowledge, for learning in real time and mediated by computers has become something increasingly common and *endogenous* to work processes (Zuboff, 2015, p. 76). The emergence of new technical mediations with the internet and its tools (applications, platforms, pages, portals, blogs, channels, search engines, etc.) as the basis and common place for the flow of actions and communication in the workplace, allowed the information collection, storage and processing - inherent in capitalist management - went beyond the formal limits of labor relations and reached levels of social control that go to the heart of workers' private lives:

Some of these are more formal: continuous improvement methodologies, enterprise integration, employee monitoring, ICT systems that enable the global coordination of distributed manufacturing operations, professional activities, teams, customers, supply chains, inter-firm projects, mobile and temporary workforces, and marketing approaches to diverse configurations of consumers. Some are less formal: the unceasing flow of email, online search, smartphone activities, apps, texts, video meetings, social media interactions, and so forth. (...) The key point here is that when it comes to the market sphere, the electronic text is already organized by the logic of accumulation in which it is embedded and the conflicts inherent to that logic (Zuboff, 2015, p. 76-77).

Zuboff's (2015) findings show how the application of ICTs in work automation allows - and requires, in a kind of feedback from the organization's own apparatus and its methods - the elaboration of a capitalist management of the symbolic universe of work in companies, through which to build enforcers of certain behavioral requirements for work environments, required by these new arrangements that claim to be lean (lean and flexible) and more recently, smart (smart).

Just as the Toyota production system overcame, without eliminating its founding bases, Fordism (just as it did, moreover, with Taylorism) (Pinto, 2007), the so-called smart factory, propagated as part of the German recipe of the Industry 4.0. It is a factory organized on the principles of lean manufacturing, but aggregating other physical and managerial elements, based on the massive use of information technology (above all by the intensification of the forms of connectivity in the machinery system) and, as pointed out by Zuboff (2015), methods of permanent (and invasive) collection of human data by digital mediation of work processes, opening the doors to a level of control that materializes the panopticon's nightmare and makes it possible to monitor and punish - paraphrasing Foucault (1995) - in real time.

Within this context, Srnicek (2017, p. 34-35) points out that it is possible to perceive an increasing number of companies and factories interested in integrating platforms in the field of traditional manufacturing, with the purpose of collecting data, storing and analyzing them, being that one of the attempts of these organizations to achieve this purpose is known as the "industrial internet of things" or, simply, "internet of things". Basically, according to the same scholar, the idea is that each component in the companies' production process becomes able, through the use of the internet, to connect with machines under the guidance of workers and managers. The "industrial internet of things" promises to make the production process even more efficient by reducing costs and downtime.

In the area of automation, companies are using machinery with embedded computer processing and managed by interactions through a continuous connection to the world wide web. A part of these artifacts has devices that capture a myriad of information (of time and displacements in space, temperature, pressure, ways in which they are handled, etc.), both about themselves and other equipment in the surroundings, as well as the workers who operate them. This information is processed by software embedded in this equipment and located in certain points of the production process, allowing autonomous decisions (read: machinery) and even a certain level of learning (machine learning), thus evidencing the

dissemination techniques Artificial Intelligence (AI) in workspaces. Finally, this colossal amount of data generated in the interaction between workers and machines, which are themselves hijacked, is stored on large servers from which they are mined and processed, producing accurate and real-time information that allows capitalist management a translucent and almost ubiquitous reading of each task, in all series of activities over hundreds or even thousands of jobs in a plant (and, in the end, in more than one plant in a production chain). This is called big data.

Like other types of platforms, so-called industrial platforms rely on data extraction as a competitive tool in the market, considering faster, more flexible and cheaper services (Srnicek, 2017).

An example of what we mean in this article by smart factory, or what Srnicek (2017) calls industrial platforms, - even though it is still being developed - is the Mercedes-Benz truck factory in São Bernardo do Campo, Brazil. This old plant, opened in 1956, has been receiving high investments since 2015 from the Daimler Group in the areas mentioned above, which will reach R \$ 2.4 billion by 2022.

In 2018, it has already inaugurated a new truck assembly line with more than 300 automatic guided vehicles (AGVs) (Projeto, 2009), autonomous intelligent vehicle (AIVs, equipped with AI), collaborative robots (with sensors that allow them to act alongside humans without safety cages), electronic screwdrivers and even exoskeletons and augmented reality glasses. All of this is connected in a network, generating data that is stored in a data lake, managed by a platform that monitors not only this plant, but intends to do the same (connecting it) with the other plants of the group, in Brazil and in the world. The quality of work is monitored by detecting production failures, correlations between production and sales are drawn (giving greater agility and flexibility to the production mix), among other possibilities. According to reports from the company, a simple application for smartphone delivers a user interface that allows you to track these details in real - time production and from anywhere in the world with an internet connection (Curcio, 2019; Mercedes- Benz, 2018, 2019a, 2019b).

Given the current scenario of digital capitalism, Sadowski (2019 , p. 5) reminds us that: “different industries necessarily accumulate different kinds of data to fit their own motivations and goals”, considering that the data - their extraction, accumulation and circulation - are a central element of the political economy of the 21st century. In this sense, data can be understood, according to the referred scholar, as a form of capital that generates value, taking into account that the types of data collected and how they are used are fundamental aspects in this context.

Communication in capitalist labor management

In each of these moments, together with the managerial strategies for organizing hierarchies, posts, tasks, physical and virtual spaces, and working instruments, communication played an essential role. In the same way as cooperative work and techniques (artifacts; methodologies; bodily, verbal and written languages), communication, as social praxis generated and mediated by human work in history, has the purpose of consolidating and perfecting the relations of human beings between themselves and with nature, always assuming the objectives, purposes and limits given by the historical and cultural context of each society. Subordinated to modes of production based on the private exploitation of the work of others, like the capitalist, communication, like other social praxis, has its virtuosity perverted by the imperative need to control and expand the productivity of labor - for, however, as already mentioned rather, generating as a result the concentration of this growing wealth in possession of a dominant class, leaving the rest to submit to guarantee, at least, simple survival. In this sense, Roseli Figaro (2008, p. 30) points out this contradictory aspect of communication at work as follows: “in the globalized capitalist society, communication goes beyond the scope of the generic relations of the social being in relation to work, to constitute itself as an element of the productive process of wealth and capital accumulation”.

The methods and artifacts of prospecting, metrification, redefinition, standardization, control and

intensification of work in companies bring in their core uses of communication through a technocratic bias, associating it to power relations, to the principles of strategic management - or management, in language of capital experts -, these communication activities being integrated with a management that also intends to rationalize the symbolic universe in working environments. It is a theoretical and practical posture that, although it reinforces the social role of communication, does so by allying it with the dominance of a mercantile ideology that is representative of a productivist society like the current one (Sodré, 2012).

Sodré (2019) warns that financial capitalism and communication go together in contemporary times. Currently, communication and information can be considered relevant to capitalism either as a material basis or as an ideological basis:

Fictionalizing or virtualizing the real in terms of the historical modernity of capital, the pair, communication/information, therefore contributes to “naturalizing” the financial market as a foundation for the acceleration of economic development and also as a source of the capitalist ideology of human welfare in the current penetrative stage of the structural law of value (capital) in all existential spaces of the individuals. It thus represents an aspect of the class struggle in which neoliberal modernization causes the dismantling of the social welfare State and the traditional organization of productive forces in favor of job insecurity, with the aim of increasing the profits of fictitious capital (Sodré, 2019, p. 40).

The use of communication in the functions of articulation and traction of production in the capitalist business sphere dates, at least, from the advent of the industrial organization of production. Boutet (2008), in his investigations on the interrelationships between the activities of language and work, based on a theoretical-methodological approach called “verbal way at work”, points out that the communicative manifestations of workers were the focus of attention by capital managers already in the 19th century.

Analyzing more than 300 *réglements d'ateliers* (workshop regulations), produced between 1798 and 1936 in France, Boutet (2008) shows that different modalities of verbal activity by workers - such as whistling, talking, shouting, insulting or singing - were censored and prevented in the work environment. Two types of prohibitions on workers' communicative expression are identified and categorized by the linguist in the material surveyed: those of a *productive nature* and *those of a moral nature* (Boutet, 2008, p. 28). The prohibitions of the first group add the language practices considered to prevent a job well done and of good quality - in this case, silence is a fundamental condition for the success of the production. The second group, of a moral nature, includes prohibitions on any verbal expression considered to be a behavior that violates norms of civility and good customs.

The Boutet (2008) research is interesting, among other things, for instigating reflection on the different valuations of the use of communication in industrial environments at different times in capitalism. If this use was previously rejected on the charge of being considered an obstacle to productivity, nowadays the mobilization of communication is something that is valued and exploited economically in these environments. In both cases, however, points out Boutet (2008), the desire to rationalize language and communication at work persists⁷.

At the end of the 20th century, with worldwide dissemination of toyotism and its western version, lean manufacturing, communication was also used by capital owners and their managers as part of the methods of rationalizing work, as can be seen by the widespread use of prescriptions carefully studied and disseminated in enterprise environments. These prescriptions are a set of compound statements,

7 In Brazil, for example, the genesis of prescriptions for communication at work in business organizational contexts goes back to the dissemination, by entities such as the Institute of Rational Labor Organization (IDORT), in the first half of the 20th century, of the precepts of “scientific organization of work”, from the Taylorist-Fordist system (and from the “human relations” school). Precepts that were propagated, inside and outside companies, as guidelines for the formation of a workforce suitable for industrialization and the advance of capitalism in the country (Rebechi, 2014).

arranged and disseminated in fields of symbolic exchanges, driven by the power struggles and the power relationships to which they are subject, under determined historical and social conditions. They are enunciated materialized in speeches that reveal recommendations and orientations considered mandatory for the conformation of a certain way of thinking and ordering social relations (Rebechi, 2014).

The prescribed use of communication in the management of labor relations in companies, therefore, is not a phenomenon originated with the appearance of a new type of work organization. Its role in the rationalized management of the symbolic of work situations (Olivesi, 2006) has been enhanced since the last two decades of the twentieth century, with the appearance of other aspects of the updated configuration of work.

It is possible to identify the mobilization of communication prescriptions constituted in relation to the principles of toyotista management, which, together with the principles of flexibility and reduction, emphasize ideals of “valuing the worker as a person”, encouraging “accessibility to information” in the environment of work, of “individualization of the worker” in the treatment given by managers and of “employee involvement in the company’s culture” (Rebechi, 2009, p.103). These communication prescriptions also incorporated a vocabulary that started to guide a new image and meaning of work activities and of the workers themselves in companies that claim to be lean and flexible: the term employee is replaced by partner, associate, collaborator, consultant; there is no longer talk of qualifications, but of skills; and expressions such as versatility and multifunctionality have become naturalized.

If there were concepts that have always been part of human work activity and that occasionally constituted principles of forms of work management - such as dialogue, participation, intelligence, respect, humanism, autonomy, etc. -, now these same concepts embody both the companies’ discourse and the communication prescriptions in the work processes. Therefore, there is a readjustment in the use of a vocabulary linked to the ideological context of companies. It is an ideological game of using the word, translated by Voloshinov (1973, p. 70) in the following terms: “(...) we never say or hear words, we say and hear what its true or false, good or bad, important or unimportant, pleasant or unpleasant, and so on. Words are always filled with content and meaning drawn from behavior or ideology”.

This ideological use of communication is something that is clearly present in the speech of government officials, business entities and even academics, about the “fourth industrial revolution” (Schwab, 2016), with an emphasis on the German recipe *Plattform Industrie 4.0* (Plattform, 2019) and the American Advanced Manufacturing, followed by the *Made in China 2025* (Pardi et al., 2018). There is an attempt by these public and private agents to create a hegemonic discourse, a kind of mood and mood, about the inevitability of the various segments and social sectors to be involved in this wave of digital transformation. Schwab (2016, p. 17), founder and executive of the World Economic Forum, states in his book that:

(...) the world lacks a consistent, positive and common narrative that outlines the opportunities and challenges of the fourth industrial revolution, a narrative that is essential if we are to empower a diverse set of individuals and communities and avoid a popular backlash against the fundamental changes underway.

In the wake of this discourse, prescriptions and guidelines related to work emerge that have been created and disseminated by companies and their representative entities, seeking to highlight the advantages and positivities of the dictates of Industry 4.0, always aligned with the idea of a “digital-informational hegemony” - paraphrasing Antunes (2018). It is mandatory for companies and workers to adapt to the so-called digital culture and the technological resources that make it up, such as AI and the internet of things, under penalty of succumbing or delaying the progress that these technologies make. supposedly will bring (as, for example, the increase of the global income for the increase of the productivity, based on a production composed by intelligent devices in cooperation with the workers). The

old liberation of workers is promised for more pleasurable and creative activities, as long as they start, of course, to think and act like digital natives.

If until now the present analysis has been limited to the interior of the factories (or offices) called intelligent⁸, it should be noted that in addition to these spaces, other modalities of labor exploitation have been expanding, whose artifactual and methodological basis also includes ICTs and algorithmic management, equally supported by communication prescriptions that proclaim flexibility, versatility, autonomy, engagement, entrepreneurship and vigilant consumption as the ideas of a new era. These are modalities of private consumption of the fruits of the work of others that shy away from the wage relationship by establishing contracts with workers as if they were autonomous service providers, or even entrepreneurs of themselves.

These types of exploitation make use of algorithms on digital platforms located on the internet, emerging from this movement the so-called platform companies, whose economic (and advertising) leadership are *Airbnb* and *Uber* (Slee, 2015). Taking *Uber*, its executives (and other enthusiasts) argue that the company does not offer passenger transport services, but connection services between passengers and a heterogeneous and oscillating crowd of simple vehicle owners, who, for some reason, at some point they discover that they can share their possessions and skills, becoming occasional autonomous drivers. On their part, just register in an application (according to minimalist rules and vary according to clauses of local public authorities) for which they can provide their services through *Uber*, which, for their collaboration, collects from each payment made to its partners, percentages that often exceed 20%. The risks of accidents, violence and illness (which can, at a minimum, discontinue the source of income for these drivers), as well as the responsibility for the supply and all physical and tax maintenance of vehicles, are borne by the partners. And something must be splashed, of course, on the passengers themselves, since, according to *Uber*, they are not hiring (and therefore cannot be backed by) a transport company; they are paying for a ride.

This business model, profitable aggressively and gently called sharing economy rejects completely the need for employment relationships and still requires the worker to assume, as an *entrepreneur*, all risks. *Uber* disregards even the assessment of the quality and safety of the service that, through its platform, is provided. In fact, it does something more interesting: it transfers this task of monitoring and controlling the worker-driver to the consumer-passenger, through the assessment tool in your application. In other words, the parent company of the business (which in a few years became a mega-corporation) leaves the scene and leaves, face to face, two individuals, giving one of them, to the passenger-consumer, the task (which must be carried out free of charge) and the power (with the underlying responsibility) to determine (albeit devoid of any criteria other than common sense, and exempt from any need for justification) the quality and, in the end, the continuity of the service provision by the worker-driver (Slee, 2015).

Recent research, coordinated by the English labor sociologist Ursula Huws and other researchers, indicated that work management practices by digital platforms are already being taken up by traditional companies in Europe, especially in the services area. One of these practices is the classification that customers make to evaluate the work activities performed, being considered a means of disciplining workers (The Platformisation, 2019).

These diverse cases demonstrate how ICTs have contributed to deepen the control and exploitation of work, opening the gap between conception and execution of work, simplifying and disqualifying the *savoir faire* developed by the class-that-lives-from-work, (Antunes, 1995, 2013), exploring human

8 Whose machinery hijacks data on the operations that human beings carry out on it, transforming it into "intelligent" information (read: of interest to capitalist accumulation). In fact, when it comes to the term artificial intelligence, seen as an autopoietic, creative and auxiliary consciousness of the human being, here is a questionable fact according to Casilli (2018), for whom such computational capacities have been viable only through the hijacking of human data, as already mentioned, at the same pace as severe unilateral purposes of the software and hardware engendered by the interests of its holders.

subjectivity as much as possible and providing psychological and physical damage to workers (Alves, 2011; Linhart, 2007). In view of this, this organizational logic of work linked to the digital world leads us, in some way, to the interpretation of Braga (2009, p. 65), who, years ago, already described the paradoxical “(...) misery of work authentic information with the prosperity of the idealized information work” .

Final considerations

Business organizations, in general, have shown themselves to be relevant agents of the productive restructuring of capital linked to the current organizational logic of work that mixes technological transformations - in the scope of information and communication - and aspects of precarious work. Flexible companies, in this sense, act in different ways, either as digital platforms or platform companies, as smart factories or even as organizations that do not necessarily incorporate advanced technological procedures in their production processes, but that already they have taken on certain aspects of digitalization of their work management, even if only in a symbolic way. And all of them admit a series of prescriptions in the context of the world of work that are constitutive of narratives and basic discourses of digital capitalism itself.

Therefore, sought or is in this article to historical materialist ballast to the elements and concepts constitutively you the ideology that underlies the logic of flexible working, to demonstrate how represent the reality and act on it, in two ways. On the one hand, they manifest the advent of principles and practices (technologies) for organizing and exploiting human labor in capitalism. On the other hand, such elements constitute a symbolic (ideological) universe in which communication prescriptions are used to perform reality, shaping worldviews and engendering behaviors suited to the interests of a given social class. In terms of method, a bibliographic review was used, with emphasis on the areas of Sociology and Communication. It is hoped, with this work, to contribute to the field of critical studies on the new forms of labor exploitation in current capitalism.

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