

Algorithmic Management: A liability-free method to manage workers' performance?

Manejo algorítmico: ¿Un método libre de responsabilidad para gestionar el desempeño de los trabajadores?

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ABSTRACT: At the beginning of the XX century, the industrial sector was revolutionized by the implementation of the Scientific Management, a new managerial approach seeking for production efficiency to the detriment of the workers' autonomy based on meticulously planned activities and consistent performances monitoring. Through the century, this method has evolved with the implementation of new technologies such as the algorithms, robust codes able to increase productivity significantly by enabling companies from the industrial sector to the logistics to monitor, plan and control their workers' performances as strictly as possible. The gig economy is the economic sector, which most of it all is applying this new management approach, drastically changing the relations between workers and employers, modifying the very nature of the employment status. Fundamental rights and industrial relations are at stake when there is no more contact between humans and when workers are managed by apps empowered to control their working tasks and to dismiss them, which raises severe questions on the accountability of these decisions. Public institutions and trade unions are facing new challenges to protect those workers considered by companies as

“independent contractors” that attracted by secure payments, and stable schedules decide to become gig workers. Especially those that are *de facto* working as full-time employees without having their fundamental rights nor benefits recognized due to the unregulated nature of their contracts. This article aims to investigate the origin of this pressing social issue, its inherent characteristics, the risks connected with non-bias free algorithms’ use, and their lack of legal accountability. Moreover, starting from the underlying assumption that fundamental workers’ rights and performance management might work together toward a more efficient and liquid society, algorithmic management’s future evolution will be questioned regarding the ethical outcomes of its implementation.

KEYWORDS: Ethical algorithm’s design, independent-contractor clauses, fundamental workers’ rights, trade union, employment status redefinition.

RESUMEN: A principios del siglo XX, el sector industrial fue revolucionado por la implementación de la Gestión Científica, un nuevo enfoque de gestión que busca la eficiencia de la producción en detrimento de la autonomía de los trabajadores basada en actividades meticulosamente planificadas y un monitoreo constante del desempeño. A lo largo del siglo, este método ha evolucionado con la implementación de nuevas tecnologías como los algoritmos, códigos potentes capaces de aumentar significativamente la productividad al permitir a las empresas del sector industrial y de la logística, monitorear, planificar y controlar el desempeño de sus trabajadores tan estrictamente como sea posible. La nueva economía compartida o *shared-economy* es el sector que está aplicando este nuevo enfoque de gestión, cambiando drásticamente las relaciones entre trabajadores y empleadores, modificando la naturaleza misma de la situación laboral. Los derechos fundamentales y las relaciones laborales están en juego cuando no hay más contacto entre humanos y cuando los trabajadores son administrados por aplicaciones habilitadas no solo para controlar sus tareas laborales sino también para despedirlas, lo que plantea serias dudas sobre la responsabilidad de estas decisiones. Las instituciones públicas y los sindicatos se enfrentan a nuevos

desafíos para proteger a los trabajadores considerados por las empresas como “contratistas independientes” que se sienten atraídos por pagos seguros y horarios estables que deciden convertirse en trabajadores. Especialmente aquellos que trabajan de facto como empleados a tiempo completo sin que se reconozcan sus derechos fundamentales ni sus beneficios debido a la naturaleza no regulada de sus contratos. Este artículo tiene como objetivo investigar el origen de este apremiante problema social, sus características inherentes, los riesgos relacionados con el uso de algoritmos sin sesgos y su falta de responsabilidad legal. Además, partiendo de la suposición básica de que los derechos fundamentales de los trabajadores y la gestión del desempeño podrían trabajar conjuntamente para lograr una sociedad más eficiente y líquida, se cuestionará la evolución futura de la gestión algorítmica con respecto a los resultados éticos de su implementación.

PALABRAS CLAVE: diseño de algoritmos éticos, cláusulas de contratistas independientes, derechos fundamentales de los trabajadores, sindicalización, redefinición del estatus de empleo.

INTRODUCTION

“How to protect workers while simultaneously garnering and reaping the benefits of change and innovation?”

Robert Rubin, former U.S. Treasury secretary

The impact of computer technology on society is continuously increasing. New instruments are periodically introduced in the market, contributing to change social habits and, in particular, modifying how interactions between humans are carried out. This innovative influence has extended with an evident focus on increasing productivity in the industrial relations sector, revolutionizing the productive systems by changing the traditional workers' identity. New technological instruments such as algorithms have been introduced to boost

production capabilities and monitor worker performance according to efficiency criteria. Due to its high results in collecting, analyze, and make decisions based on standardized information, the use of algorithmic management has extended from the first industrial sector to logistics. The use of algorithms is raising new challenges to national legislators, trade unions, and labor, law scholars who are not always able to face this constant change are leaving workers without adequate protection, with the risks of exposing new job positions to modern forms of worker exploitation. In particular, wage determination, dismissal power, and accountability are topics under the lens due to their drastic change, opening several uncertain prospectives for the future employment conditions.

In the first chapter, this article will describe the historical passage from Taylorism to algorithmic management and introduce to the reader the sector that more than others exploit the algorithm's potential, namely the gig economy. The following will assess the risks and threats on workers' fundamental rights arose both at the collective and individual level. The Amazon case discussed in chapter three due to its relevance will expose how the logistics sector has implemented algorithmic forms of control and how a multinational firm may manage the industrial relations in a context of legal uncertainty. Lastly, in the final chapter, some questions are posed regarding the possible social next step originated from an incisive use of algorithmic management and on the roles that public institutions and trade unions might have in this transnational phenomenon.

1. FROM SCIENTIFIC MANAGEMENT TO ALGORITHMIC MANAGEMENT

a. Taylorism: the born of scientific management:

In 1911, Frederick Winslow Taylor wrote the book that would have forged the North American industrial sector, revolutionizing the factories' production-line organization. The book "Principle of Scientific Management" laid down a new series of principles for large-scale manufacturing industries.

The main four are:

- 1) Replace rule-of-thumb work methods with methods based on a scientific study of the tasks.
- 2) Scientifically select, train, and develop each employee rather than passively leaving them to train themselves.
- 3) Provide “Detailed instruction and supervision of each worker in the performance of that worker’s discrete task” (Montgomery, 1997, p. 250).
- 4) Divide work nearly equally between managers and workers, so that the managers will apply scientific management principles into work activities design, and the workers perform the given tasks without providing any original personal contribution to its realization.

Taylor, who left Harvard to work as an apprentice for the Enterprise Hydraulic Works in Philadelphia, quickly climbed all the available job positions to become “chief engineer of the works,” this role permitted him to realize how slow and inefficient the labor’s organization inside the American factories was. Practices like the soldiering where a problem, the workers were not working hard as they should or fast as they should, generating monetary losses for the company. These discoveries pushed Taylor to study the human’s contribution to the industrial process; he monitored and recorded every job stage, calculating how many movements a worker should do to complete a task in the fastest and more efficient way possible. To guarantee the production-line efficiency, he identified two different kinds of work, mental and manual, increasing the managerial control over each employee’s job. Since then, managers would have planned specific activities for the workers, assigning them specific and simple tasks and the way how to carry them out, according to detailed rules led by mathematical formulas to avoid any worker’s contribution.

Perhaps the most prominent single element in modern scientific management is the task idea [...] this task specifies not only what is to be done but how it is to be done and the exact time allowed for doing it. (Taylor, 1911)

The excellent results achieved through the implementation of the scientific management approach in several factories during the “20s positively impressed Henry Ford. He was so inspired by this new way to organize the industrial production to assimilate its principles and methodology, creating and implementing this standardized method of mass production and mass consumption in its factories. Nowadays the scientific management principles are still running the industrial sectors; the new instruments discovered by the technological development are used following Taylor’s principle. Robots, which are easier to monitor than men, have substituted human workers in many points of the production-line, assuring a more reliable and standardized execution of those actions programmed by technicians in line with the production’s efficiency objectives planned by managers.

Although this role exchange in the production line, Taylor’s method is still applied to human workers, their tasks are still meticulously planned to guarantee the highest level possible of efficiency and surveillance cameras where possible have been switched with mobile apps. Tablets, wearable devices, and other technologic instruments are continuously keeping under control every production-line step and providing to managers and prominent data engineers a constant flux of real-time information. These data analyzed and processed by algorithms constitute the operative core element of the new-born algorithm management.

b. Algorithmic Management

Algorithms are essential for the correct working of several instruments considered vital elements for many. From simple program as the G.P.S. navigator to complex like those who allow face recognition, manage monetary transactions, or even enable self-driving cars, these containers

of information are capable of elaborating data and of generating instructions to follow or tasks to accomplish. Computers and smartphones perform most of their actions using algorithms. The world leader internet's search engine, "Google," is nonetheless than an algorithm itself. One, however, is the subject of this article, a new type recently introduced, capable of self-learning and self-programming, abilities which are opening the way to a future where algorithms would not be anymore created by humans but by other algorithms. This last case, in particular, is of particular relevance considering the possible social implications, generated by what many consider bias-free decisional instruments.

According to their creators, algorithms are built to manage most of the commonly used objects or actions in our society, performing their tasks in the most efficient way possible. Companies are using these new instruments to manage an increasing number of processes, from production lines to customer data collection and monitoring or controlling the employees' behavior and performance.

An increasing number of companies are managing their entire employees' management system through the use of elaborated algorithms, applying what has been called by some academics of the Carnegie Mellon University Human-Computer Interaction Institute the "Algorithmic Management." Famous North-American retail shops like 7-Eleven or even online stores like Amazon are, in fact, now using these powerful instruments to calculate what has been called the worker's "true productivity." Greg Tanaka, the Founder & C.E.O. at Parcolata, a Silicon Valley algorithms creator company, recently said: "What is ironic is we are not automating the sales associates' jobs per se, but we are automating the manager's job, and [our algorithm] can do it better than them." (O'Connor, 2016). What Tanaka emphasized is the efficiency of its product, which should avoid inefficient work activities organization and mismanagement conducts. According to him, bias or human preferences between colleagues are void, limiting the manager's discretion. Also, considering that the estimating capability of demand analysis performed by algorithms is higher than a human being,

these can perform managerial tasks better than their human competitors, providing an improved service to customers and a more reliable working schedule to employees, guaranteeing to them secure stable rotas and the necessary flexibility requested by the contemporary labor market.

To “make transportation as reliable as running water” (Travis Kalanick, co-founder of Uber, 2016), the transportation network, Uber, uses a mobile app to manage its workers. Uber drivers, also called contractors, are around a million around the world and are managed by an algorithm. From their selection process to their evaluation, these drivers are selected and evaluated according to standardized parameters to ensure a foreseeable level of service provided to customers. It means, also deleting any need for face-to-face interaction between them and the company. Their “employment” is realized through the app as well as all their working activities. When they decide to work, due to the flexibility offered by the company, one click is enough to log in them into the app, the algorithm then will select for them the customers in the base of their distance, showing in the drivers’ app just a “trip request” without displaying any personal information regarding their customers nor their final destination. This request can be skipped up to three-time before being disconnected. To keep their “collaborators” under control and to monitor their performance, the company receives weekly reports, including average customer rating and confirmation rate, and the same results are also shared with the drivers. This service level assessment is quite a standard instrument also used by other gig economy companies such as Deliveroo. They use algorithms to compare the contractors’ performance estimating the medium average time necessary to complete a specific trip taking into account what the company has defined as “reasonable delay.” Another example of how to assess the workers’ performance using algorithmic management is given by Amazon, where according to real-time “pick rate,” the algorithm sends systematic instructions to workers guiding them in the most efficient path to pick the requested objects from the shelves.

The idea that technological breakthroughs will necessarily imply progress for most of the actors involved is at the base of the Techno-deterministic approach (De Stefano, 2018). Namely, the use of algorithms will consist of a step toward management and would create new opportunities for flexible work seekers and those enterprises projected in the future. New business types of organizations and users are supporting this approach enjoying the algorithm's potential. The gig economy, access economy, or shared economy are terms frequently used to identify new technology enthusiast subjects of the economic market, which based their business strategy on the use of Algorithmic Management through mobile apps. Algorithms are incredibly useful tools used to accomplish tasks efficiently and, more importantly. They can aid the user in accomplishing them most efficiently. Undoubtedly, their implementation is improving the lives of several workers in many ways. However, the use of their potential is in the hands of the developer and of the enterprise that required its creation, this if on one side is leading to economic efficiency on the other is arising severe threats to fundamental workers' rights because of the over-trusted algorithms' ability to control and manage human beings efficiently. Algorithmic management might push Taylor's classic work division between mental and manual work to the next step, where algorithms will perform the first work and human beings the latter, leading to intrusive and dystopic work practices. The effects of algorithms employment in our economy need particular attention because of the relation between human beings and apps. This must be managed wisely by national and international legislators to guarantee that worker's rights protection would not be considered as an obstacle that leads to economic losses for the company but a vital social paradigm to do not shatter.

c. Gig Economy

Hillary Clinton, in 2015, during her election campaign, introduced the expression "Gig Economy," focusing on the flexibility of its job positions. According to the Oxford Dictionary, its labor market is characterized by the prevalence of short-term contracts or freelance work instead of permanent

jobs. (O.U.P., 2019) She highlighted the existence of the gig workers and their labor issues, taking them out from the unknown black box. In the show business “gig” means the payment or cachet given to an artist for its performance. Usually, this is short, flexible, and temporary.

The gig economy was born to identify all those works, which characterized by these same characteristics. Very often, students or people who did not need a full-time job ideally suited to this kind of work. Gig workers are usually technology enthusiast that regularly use apps based on algorithms. Therefore, to them, their use is natural and considered secure. The company’s app provides them jobs or “gigs” to do in real-time, without the necessity of human contact, and if you are not fast enough to accept the job, you might lose it. They are not obliged to accept those works, but the app will record the refusals lowering down their assignment priority in case of low acceptance rates. Therefore low rate means for the worker that he will receive fewer job offers in the future; this particular feature highlights how the performance’s efficiency is the crucial aspect taken into account by the algorithm.

Consequently, the app decides the price of the job in advance and selects the workers and the customers in a vertical relation where every single aspect is already calculated and planned. This characteristic is crucial in the distinction between companies that are parts of the gig economy and those parts of the so-called sharing economy; their approaches and thus, their apps are also different. The latter is allowed for the parts, customers, and providers to arrange the work’s details autonomously. It is evident, therefore, that in this case, the algorithm leaves the freedom of choice to the users preserving a fundamental human relation. The notorious accommodation app Airbnb is a clear example of this other face of the algorithm’s base work reality.

Algorithms are revealing themselves as an incredible opportunity to boost the economic profits and to create new jobs thanks to their powerful elaborating data capacity. Also, the possibilities for their users are steadily increasing,

creating new types of business or working habits. Users can share their car, rent their house, or offer their competences to the best offerors without the direct intervention of a human agency. Nevertheless, even if algorithms are created with the best intentions, they may lead to unintended consequences. Considering the increasing number of gig workers, one-third of the U.S.A. workers (McCue, 2018) and around one million in Italy (Cottone, 2018) analyze their job positions, and especially the protection of their fundamental rights is essential. Spare time is what in the original idea of the gig economy creators was supposed to be exchanged for student's little works; however, the increasing notoriety of these job portals like Deliveroo, Uber(eats) or Foodora has attracted not only part-time job seekers but also regular unemployed people unable to find a full-time occupation. These are falling back on the accessible job possibilities offered by these companies. It is not required any particular skill but only the will (or necessity) to work and to possess a smartphone. These characteristics, jointly with the economic crisis, increase the number of full-time gig workers, changing the essence of the notion of "gig." Therefore mix between adverse economic conditions and the facility to become a gig worker has modified the nature of the gig economy. From part-time students, now a considerable part of gig workers is working daily and full time. However, they are still considered as "part-time collaborators," earning low basic income with a very basic or mostly none trade union representation.

2. ASSESSING THE PROTECTION OF WORKER'S FUNDAMENTAL RIGHTS

a. The lack of accountability

Algorithmic management might sound like the future, but it has uncanny echoes from the past (O'Connor, 2016), and it is arising from new social severe concerns. Some critics like Guy Standing, a British professor of Development Studies at the School of Oriental and African Studies, University of London, and co-founder of the Basic Income Earth Network, are stressing the social impact of the Algorithmic Management in the labor market. His foremost critic is against the creation of

a “precariat” class of workers by the Gig economy that does not share the same level of protection with the traditional workers. Some companies are accused of using the algorithms potential to opaquely over-control their “contractors,” to manage them with the smartphone in their pockets, to reduce or even to remove any kind of human relations in the job activities, in the end to dehumanizing them exploiting the current lack of specific legislation and the economic crisis.

Algorithms are used to monitor and to pay the workers only what the company wants to pay them according to indicators that recall those used by Taylor hundreds of years ago. An army of workers coming from the bottom of the labor market, attracted by promises like “being your boss,” by the increasing amount of available jobs and by the security of regular payments, is contracting themselves to companies that have considerable opportunities to greedy exploit them and very few legal limitations. The algorithmic management seems like a contemporary or futuristic phenomenon by is potentially dangerous as or even more than the past scientific management. The implementation of algorithms-based apps in the labor market is affecting how workers are managed and their ability to effectively communicate with the company, creating concerns about the increasing the lack of human contact in working relations. These workers are managed by an algorithm, not by human beings; the app is their only instrument to communicate with the company. On the other hand, the intentions of the app’s developers should reduce the risk of management misbehave or biases, increasing the risks of algorithmic discrimination and workers’ legal misrepresentation. A clear example of algorithms’ questionable judgment is given by the food riders selection process. Those, which have been reviewed too many times badly face the risk of being excluded from the most profitable jobs or directly from the access to the platform. To guarantee a high level of customer satisfaction is essential for business.

Nevertheless, what happens when the bad or negative reviews come from fussy customers, or because of medical reasons, it is not possible to complete a task according to what the algorithm has calculated as the acceptable range of efficiency? Customer's bias influences the worker's evaluation as analyzed by the algorithm, lowering down the performance score without any human supervisor double-check. Considering that the possibility to login into the apps for the workers is affected by the customer's judgment, this lack of double evaluation filtered by human interaction generates a severe threat for their employment opportunities, algorithmic limiting the possibility to work and leaving the workers without the possibility to protect their fundamental rights through a trade unions intervention.

Gig economy companies and governments are creating algorithms capable of collecting, store and analyze a massive amount of data, instruments fully capable of being the new managers of human workers, arising a serious question regarding the accountability of their actions in the decision-making process. To Marc Rotenberg, executive director of the Electronic Privacy Information Center, based in Washington D.C.:

The core problem with algorithmic-based decision-making is the lack of accountability. Machines have become black boxes, even though developers and operators do not fully understand how outputs are produced. The problem is further exacerbated by 'digital scientism' – an unwavering faith in the reliability of big data. 'Algorithmic transparency' should be established as a fundamental requirement for all AI-based decision-making. There is a more significant problem with the increase of algorithm-based outcomes beyond the risk of error or discrimination – the increasing opacity of decision-making and the growing lack of human accountability. We need to confront the reality that power and authority are moving from people to machines. That is why Algorithmic Transparency is one of the significant challenges of our era. (Rainie and Anderson, 2017)

Judith Donath of Harvard Berkman Klein Centre for Internet & Society has found in the design and it the information sharing of the app, two critical elements to counterbalance the power of the algorithms in the decision-making process, design and easily accessible information:

Data can be incomplete, or wrong, and algorithms can embed false assumptions. The danger is an increased reliance on algorithms because the decision-making process becomes oracular: opaque yet unarguable. The solution is designed. The process should not be a black box into which we feed data and outcome an answer, but a transparent process designed not just to produce a result, but to explain how it came up with that result. The systems should be able to produce precise, legible text, and graphics that help the users – readers, editors, doctors, patients, loan applicants, voters, and others. – understand how the decision was made. The systems should be interactive to examine how changing data, assumptions, and rules would change outcomes. The algorithm should not be a new authority; the goal should be to help people question authority. (Rainie and Anderson, 2017)

A challenge must be faced considering how fast algorithm-based systems' presence and relevance are growing in the labor sector—assessing the problem of data reliability and decision-making accountability, supporting the idea of an ethical algorithm's design. It is not possible to leave the design process entirely controlled by companies' engineers or self-programming algorithms when workers' fundamental rights are at stake. Therefore, governments should legislate on this critical issue, regulating algorithmic management implementation, defying the limits in the criteria used to elaborate data, increasing the transparency and the human accountability behind algorithms' decisions.

b. A flexibility dilemma: one person flexibility is another man insecurity

Algorithmic management is giving people the possibility to work in a fully flexible work environment and be “their boss.” The category of part-time workers, mainly composed of students, is usually enjoying this freedom. Due to the flexible and unregulated nature of their performances, companies consider them independent contractors without legal protection, minimum working hours, or strict working schedules respect. What can be considered acceptable under the lens of a temporary and voluntary part-time job becomes a social dilemma when full-time workers have applied the same level of protection, generating severe problems regarding the respects of their first labor and human rights.

Since the industrial revolution, many companies have focused their efforts to maximize the profit to the detriment of their employees. In 1911, the U.S.A. Congress investigated and summoned Taylor because of its managerial method. Trade unions all over the country backlashed against the widespread implementation of the scientific management method trying to stop it, claiming for a fairer, respectful, and less dehumanizing working environment. Like in the past, nowadays, workers have begun to strike and protest asking for labor rights and the availability from the companies to collective bargain their contractual terms. From the U.S.A. to Europe, they share the same worries generated by the lack of legal protection against gig economy companies’ abusive conduct because of the misclassification of their employment status. These new undefined type of temporary employees are working in what is called “flexible working conditions,” without having a local office to refer at in case of problems, without being officially employed by the company or working with zero hours type of contracts, often forced to accept clauses of self-employment. These practices are limiting or excluding them the access to a proper social security system, the right to freedom of association and collective bargaining, finding themselves in breach of competition and antitrust law’s regulations. (De Stefano, 2015)

Gig economy's companies are classifying workers as independent contractors, introducing "independent-contractor clauses" in their agreements with the workers, or even "enhanced independent contractor clauses" trying to deny any kind of employment relationship between the companies and the workers and also any future possible employment relationship. Everyday use of these clauses is to specify that the platform only "provides a venue for third-party Requesters and third-party Providers to enter into and complete transactions" in this way the company is excluding his involvement in the service provision by specifying that it is "not involved in the transactions between Requesters and Providers."

Also specifying that:

As a provider, it is required for performing services for a requester in the capacity of an independent contractor. Then not as an employee of the requester. This agreement does not create an association, joint venture, partnership or franchise, employer/employee relationship between Providers and Requesters, or Providers and Amazon Mechanical Turk. (Amazon Mechanical Turk Participation Agreement, 2014)

This classification of work relationships, even if it guarantees the flexibility of the gig economy labor system, is allowing the companies to do not bargain wages and keep the contractors in a state of uncertainty. The fee paid to them can change without any kind of negotiations, individual or collective, and being notified only through the app. UbersEats runners in London have seen their payments reduces from 20 pounds per hour to a piece-rate system without being involved in the decision-making process, so that their wage criteria drastically changed without any bargain or agreement. For these reasons, gig economy workers and trade unions are protesting and starting the legal process against many international firms.

Deliveroo runners demonstrated in August 2018 against their working conditions helped by the Independent Workers' Union of Great Britain, asserting to be over-controlled, to work as real employees but without having the

same level of protection or recognized rights, claiming hourly minimum wages, holiday pay and sick pay. They are asking for job security and for having their work position defined legally and in the base of the nature of their working relationship with the company, according to what the International Labour Organisation consider the principle of “primacy of fact”¹.

c. New challenges for workers representation

Gig economy workers’ characteristics are different and unique; their unclear or unrecognized classification and inclusion in the conventional labor work contracts is limiting their access to collective bargaining. In most of the countries where gig economy companies are operating, trade unions are implementing new strategies to engage and represent them (I.L.O., 2016). Also, gig workers are trying to organize themselves in new collective entities. The “boundlessness” of the work based on algorithm-based apps consists of workers dispersed all over the countries, facing high mobility and isolated due to the nature of their task. This constitutes a limit to trade union’s action; therefore, because of the indirect competition between workers and the nature of this on-demand transnational job, representing them is difficult without a precise legal regulation. Considering the different national legislations, phenomena such as “unequal bargaining power” and “economic dependence” create new, unique challenges to collective representation. These issues must be faced by existing Trade Unions to attract new affiliates among gig workers and re-recognize the freedom of association and the effective recognition of the right to collective bargaining amongst the panoply of human rights. (Johnston and Land-Kazlauskas, 2018)

The nature of gig workers requires new tools and forms of representation to win the challenges arising from the algorithmic management business approach. One solution might

1 In force in many European countries, it ensures that the determination of the existence on an employment relationship is to be guided by the facts relating to the actual performance of work and not based on how the parties described the relationship (I.L.O., 2015).

be the implementation of transnational sectoral bargaining and to focus the attention of legislators and politicians on these issues, as it happened in the past. In June 2017 the European Union adopted the “Resolution on a European Agenda for the collaborative economy” with the scope of “underlines the paramount importance of safeguarding workers’ rights in the collaborative services – first and foremost the right of workers to organize, the right of collective bargaining and action, in line with national law and practice [...]” (Alessi, ↑ Barbera, and ↑ Guaglianone, 2019). In that regulation, it is clear the will of the European Parliament to highlight the importance of enjoying collective bargaining right for the gig economy’s growing self-employed workforce labor.

It is crucial therefore to highlight as positive the spontaneous born of a variety of different organizational structures, which are giving voice and representation to worker’s interests such as worker centers and online forums, increasing their political and legal consciousness, giving them a place from where support and organize their efforts to improve their working conditions.

3. THE AMAZON CASE

The company, born in Seattle in 1994, is probably the enterprise that most of the others have embedded Taylorism management principles and has been able to apply for the first time the algorithmic management in the logistics system. As Henry Ford did before him, Jeff Bezos, founder of Amazon, does extensive use of algorithms, merging strict tasks and worker’s control with the use of highly technological instruments. Every single step on the logistics-chain, from inbound warehouses to outbound delivery services, is strictly monitored and planned by sophisticated algorithms, keeping records of every data monitored during the working process in a central database. Every step is composed of simple actions: picking, packing, delivery. All these actions are carefully monitored and standardized to achieve equal efficient performances globally. The control of workers’ behave is realized through sophisticated items. For example, scanners are provided to all the “pickers,”

and all of them have active microphones and cameras. As in the Fordist production line, every step of Amazon's logistics chain is oversimplified and detailed planned by engineers so that the worker is required only to follow simple instructions shown in their display without performing any discretionary action. All the tasks are measured, and the performance of each "picker" is compared with an ideal efficient reference to assess it. Every manager has the task to monitor and recall those workers that do not complete their tasks in the expected time provided by the app, and above them, higher ranks of managers control their performance in a pyramidal vertical structure that does not require nor accept bottom-up contributes. Algorithms in digitalized services factories are used instruments to command and control every workers' action limiting any kind of autonomy or freedom of action in a logic where the lust for monetary efficiency is self-evident. Next step to increase workers' performances, an electronic bracelet has already been patented and tested by Amazon. Soon it will be introduced to free the hand of pickers from their scanner, allowing them to complete their tasks smoothly and faster, increasing their personal and so the general efficiency of the picking process. In the panoptic Amazon's warehouses, algorithmic management is pushed to the limit to the extent that all the human workers (from those employees who perform a primary task such as pickers and managers) are controlled and managed by algorithms. This process of human-automation is not only limited to Amazon's employees, but it is extended to the courier companies through the app "Relay," enacting was has been described as a process of Uberatization of the logistic sector. (Cunnane, 2017)

Another critical aspect that Amazon is embedding from Fordism is the attempt to avoid any kind of collective bargaining. The problem mentioned above arose in the gig economy is enhanced by Amazon's corporate architecture. Each warehouse is managed by an independent firm limiting the application of national labor representation laws. One example is given by a recent German case.

In *Deutschland*, the law imposes to any factory with more than 2000 employees a series of workers representation bodies. However, the company is limiting the number of its full-time employees below that limit value to avoid any kind of collective bargaining or productive workers representation. Temporary employees are employed with an easily solvable contract to limit their right to strike within the warehouse. The areas where Amazon decides to open a new warehouse is also strategic. The company chooses regions underdeveloped or affected by the economic crisis. Workers can be national or foreigners, without any specialization or particular talent. What pool them is to find in Amazon the best and secure job possibility in their area because of the security granted by regular payslips and planned schedule. It is permitting them to plan their lives and secure a fixed income at the cost of reduced fundamental personal rights. In Italy, Amazon applies the collective contract, which provides workers with not so different protection from the one granted to their German colleagues. In the warehouse located in Piacenza, substantial shifts and the non-acceptance of negotiation with the local trade unions backlashed in 2017 during the Black Friday. On that occasion, a strike joined by several 50, and 10% of the employees obtained the Italian government's attention and can be considered the first step toward an increased worker's collective consciousness in the "bel paese." However, the outcome of this act of protest is uncertain, considering that the company has not changed its effective policy, and it has increased the hostility against the local trade unions. These cases are useful to understand, which might be the future perspective of many other companies in the logistics sector and how to face this new form of digital-Fordism. Currently, in Germany, as in other parts of the world, the exclusion of trade unions and the non-acceptance of negotiations have resulted in a legal case won by the *Bündnis 90/Die Grünen* or *Grüne* (German Green Party) on behalf of workers.

To win the challenges arose by Amazon as well as other gig economy companies the trans-nationalization of the conflict seems the best way to tackle the misuse of algorithmic management, informing the gig workers regarding their fundamental

rights and giving them an effective trade union representation. Meanwhile, collective legal actions at the national level appear to be the only viable solution to stop or reduce workers' rights restriction.

4. FUTURE PERSPECTIVE: TRIUMPH OF NEO-TAYLORISM OR HARMONISED INCLUSIVE SOCIETY?

“Regulation and collective governance of these processes will not be built in a day, but they are essential to ensure that the benefits of technological advancements improve our societies inclusively and as a whole” (De Stefano, 2018)

Algorithmic management is posing new challenges to society. When data and predictive modeling become paramount, its overall impact is presently incalculable because it is mostly hidden from public view. Barry Chudakov, founder and principal at Sertain Research and StreamFuzion Corp, U.S.A. said:

The main negative changes come down to a simple but now quite difficult question: How can we see and fully understand the implications of the algorithms programmed into everyday actions and decisions? The rub is this: Whose intelligence is it? [...] Our systems do not have, and we need to build in, what David Gelernter called ‘top sight,’ the ability to not only create technological solutions but also see and explore their consequences before we build business models, companies and markets on their strengths, and especially on their limitations. (Rainie and Anderson, 2017)

Designing human-oriented algorithms are, therefore, an answer to their lack of accountability. They must be written not only seeking economic efficiency but also guaranteeing the respect of fundamental rights. Experts in canvassing noted that algorithms are primarily written to optimize efficiency

and profitability without taking seriously into consideration the possible societal impacts of data modeling and analysis. They argue that humans are considered to be an “input” to the process and are not seen as real, thinking, feeling, and human beings. They say this is creating a flawed, logic-driven society and that as the process evolves – that is, as algorithms begin to write the algorithms – humans may get left out of the loop, letting “the robots decide.” (Rainie and Anderson, 2017) Jeremias Prassl, a law professor at Oxford University, said: “Algorithms are providing a degree of control and oversight that even the most hardened Taylorists could never have dreamt of” His words confirm that the techno-deterministic approach has not only focused solely on the quantity of the results but also on its quality; in fact, not only are performances controlled by algorithms but also employees’ dismissals. To challenge this approach is essential to foster the “Human-in-command” approach advocated by the European Economic and Social Committee’s Opinion on Artificial Intelligence, limiting the power of the algorithmic management on dismissal decisions by subjecting this process, affecting human beings lives, to human being review, the only one which is still legally accountable—eliminating thus the possibility for the companies to exclude their legal and personal liability for the limitations or violation of worker’s fundamentals rights.

Considering the Amazon case as the leading one of an industry-type of management applied to the logistics, the next step in the employment of algorithmic management is to apply it in the traditional service sector. Companies like Subway or McDonald are already using the principles of scientific management, and it would not take too long for them to switch to algorithmic management.

Since the scientific management of the algorithmic one, enterprises have focused their attention on production efficiency sacrificing fundamental worker’s rights, reducing their freedom of action, and monitoring each step of the production-chain, avoiding any “deviance.” Trade unions and national legislators enacted different strategies to affect the

equilibrium between performances and workers' protection with different results. In the U.S.A., traditionally, the role of trade unions has been reduced, limiting the collective bargains, meanwhile, in the north of Europe, several nations have enacted a different approach arbitrating this interest's clash. Supporting agreements between the parts and fostering a constructive dialogue between workers and enterprises, their governments are managing directly the problem rather than ignoring it. The legislator's capacity is, in the end, a key factor to limit aggressive forms of management in the gig economy sector as much as in others. Not only by limiting the use of an intrusive form of technologic surveillance but, more importantly, implementing new legal and contemporary conceptions of employment or modifying the already existing to guarantee to *de facto* employees their fundamental labor rights protection. Regulating the legal position of full-time gig workers on the base of the "primacy of fact" principle, it is therefore vital as expressed by the Italian scholar Ludovico Barassi, which hundred years ago based the existence of employment status on the relation of subordination between the employer and the employee, a link that is self-evident in the gig economy.

Algorithmic management is creating new employment opportunities, better and cheaper consumer services, transparency, and fairness in those sections of the labor market, usually characterized by inefficiency, opacity, and capricious human bosses. These new opportunities are flexible and following our contemporary liquid society. However, it is essential to pose some questions regarding its evolution: How will it affect the legal protection of the involved workers and what national governments will do to avoid the violation of fundamental rights? Will the employment/self-employment status be legally redefined? Will worker's rights be extended to a hypothetical new form of employment? Are we moving toward a "Taylorism on steroids" form of society, or will it evolve into a synergetic relationship between human beings and algorithms?

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