

## THE FOURTH INDUSTRIAL REVOLUTION (INDUSTRY 4.0) THE LESS THE WORK, THE NEWER THE POSTS AND A CYCLIC NECESSITY: THE PROTECTION OF WAGE- EARNING AND NON-WAGE-EARNING WORKERS

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SUMMARY: I. *Introduction*. II. *Industry 4.0's transcendence*. III. *The disappearance, diminution or transformation of employment?* IV. *New forms or types of non-standard work*. V. *Subordination, independent labor and semi-independent labor: the courts' role*. VI. *Towards a labor status for wage-earning and non-wage-earning workers*. VII. *The State's active role*. VIII. *Research sources*.

### I. INTRODUCTION

There are four great vectors that have started to influence the future of labor: 1) demographic vectors; 2) climate change; 3) globalization; and 4) technological advances. Each one of them is intimately related to the other. Regarding technological advances, the development of Industry 4.0 represents many challenges for different sectors within the world of work, and a necessary update of workers' skills;<sup>1</sup> among others. Some of these challenges are professional formation, the organization of work; the limits between employment and self-employment<sup>2</sup> labor inspection; a new corporate organization; the role of small and medium enterprises; automation and digitalization; the

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<sup>1</sup> OIT, *El diálogo social y el futuro del trabajo. Informe de la Conferencia OIT-AICESIS*, Athens, Greece, 23–24 November 2017, pp. 3-4.

<sup>2</sup> IT, *La iniciativa del centenario relativa al futuro del trabajo, Memoria del Director General, International Labour Conference*, 104th Meeting, Geneva, 2015.

creation, destruction and transformation of work, the weakening of the labor relations; legal clarity in collaborative economy or platform economy.

We can observe many aspects to be studied in Industry 4.0, because of this, through the present study, within the scope of the Fourth Industrial Revolution (II) we intend to show some aspects relative to the possible creation, or disappearance of work caused by the use of technologies and robotics (III), to point out the new forms of non-standard work (IV), commenting on doubts generated in courts (V), exposing the need to reconfigure labor law, so that it does not start from a univocal vision of the labor contract, making it necessary to reflect on the rights of wage earners and non-wage-earning workers (VI) and the role the State has to play in the matter (VII).

## II. INDUSTRY 4.0'S TRANSCENDENCE

The weight of technology can be understood in two senses. In one sense, it extinguishes or blurs the labor relation, mainly in collaborative platforms, leaving the application of labor law in the background. On the other side, the use of technology and robotics has the diminution of labor as its consequence, which happens because of the substitution of workers with machines. In such a way, we face a society with less subordinate employment and less employment of labor.

Labor law, in contrast with other legal disciplines, suffers, in the strict sense of the word, from permanent transformations that have generated a constant identity crisis, especially in the last decades. In labor matters, the stages of prohibition, tolerance, regulation, flexibility and flexicurity<sup>3</sup> have not been but the manifestation of labor law's adaptations made as a response to the great transformations known as the "four industrial revolutions".

The Industrial Revolution, in the middle of the 18th Century, is known by the key role the steam machine played in production, which allowed the birth of employers and a mass of workers who did not have any special norms to regulate their contractual relations at their service. The employers intended to keep or use the existing legal frame; and the workers started

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<sup>3</sup> Sánchez-Castañeda, Alfredo, "La nueva legislación laboral mexicana: ¿Flexibilidad del legislador y seguridad del juzgador?" en SEGOB, *Reforma laboral, derecho del trabajo y justicia social en México*, SEGOB, 2013, pp. 61-84.

a battle through a series of factual institutions, such as the union and the strike, that with time's passing would become law institutions.

Afterwards, a second Industrial Revolution would arrive, boosted by the use of electricity, chain and mass production. Workshops, occupations and handcrafted labor, would be seen as a precedent of the methods of pre-capitalist production.<sup>4</sup> The advances made in technological matters on information would allow access to a third Industrial Revolution, also called the Scientific-Technological Revolution or the Intelligence Revolution. This implies the fusion of technologies of communication, the use of the Internet and renewable technologies.<sup>5</sup>

Currently, national economies are accessing the Fourth Industrial Revolution or Industry 4.0. In this setting, new technologies, 3D printers, Internet of Things (IoT), cloud services, Big Data, artificial intelligence, and social media change the way work is performed. This will have the creation of new employment positions or the disappearance of the existing ones as a consequence.

IoT allows products of daily use at home or at the workplace to become intelligent, a situation which, because of not requiring the control of human intelligence for its functioning, consequently causes the possibility of foregoing the human being and, through this, generating consequences at the employment levels. For example, *Siri* is a phone application that works as a personal assistant.<sup>6</sup> We can also mention *Net Labs*, a multi-services enterprise which produces security systems enabled with Wi-Fi, which are self-learning and programmable for homes or buildings.<sup>7</sup>

As for Big Data, it implies analysing large amounts of data to anticipate mistakes, behaviours, time and cost reduction, and timely covering of demands – paradoxically produced from the anticipation of behaviours or a predisposition of the human being to a determined product and stemming from the analysis of personal and/or collective information. On the same line, on the cloud, we can digitally store a great amount of information that can be processed through Big Data analysis.

Before, computers gave answers (not necessarily smart answers), and they executed detailed and repetitive instructions; but they did not have

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<sup>4</sup> Marx, Karl y Hobsbawm, Eric J., *Formaciones económicas precapitalistas*, Mexico, Siglo XXI, 2004, p. 119.

<sup>5</sup> Fifkin, Jeremy, *La tercera revolución industrial*, España, Barcelona, Paidós, 2011.

<sup>6</sup> Apple, “Siri hace más cosas que nunca. Incluso antes de que se lo pidas”, <https://www.apple.com/mx/ios/siri/>.

<sup>7</sup> Nest Official Site, Create a Connected House, <https://nest.com/es/>.

the capacity to comprehend concepts. Now, we have reached a moment in which computers generate artificial intelligence.

Artificial Intelligence (AI) will change the world of work (transportation, health, science, finances and the army). After a survey made to scientists, they considered that AI will surpass humans in many activities in the following years, such as: translation (in 2024), junior high essays (2026), writing a sales book (2049) and working as a medical surgeon (2053). The aforementioned survey points out that there are 50 per cent chances of AI exceeding humans in every activity in 45 years, and to automate every human job in 120 years. Less time, according to Asian researchers.<sup>8</sup>

On the part of social media, it represents a new way, not only of communication and information, but they are spaces which allow the sale and purchase of merchandises, and also the emergence of new activities and employment, i.e., youtubers or influencers.

The Fourth Industrial Revolution, through start-ups in collaborative economy or on-demand economy, allows the existence of new forms of transportation services (Uber, Cabify) or accommodation (AirBnB). The use of social media facilitates selling merchandise or services (Facebook). Technology has also allowed to displace direct sales in an establishment by online sales (Amazon).

There are new forms of employment that use new technologies, avoiding any type of social or legal responsibilities, through the lack of existence of a labor contract, social benefits (health insurance, work illnesses, retirement plans), and even without, apparently, an employer. Uber is one of the major transportation companies, without owning any vehicles. The same can be said about Airbnb, one of the biggest accommodation companies without owning a single real property. They also question the State's regulation and tax power by blurring country borders.<sup>9</sup>

Without a doubt, the Fourth Industrial Revolution has affected the costs of production, production times (24/7) and the way production is undertaking:

Through the Internet of Things, production is made more efficient. IoT allows connection and conversation through a network (the Internet) of diverse physical devices that execute tasks that were previously performed by human

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<sup>8</sup> Grace, Katja, *et al.*, "When will AI exceed human performance? Evidence from AI experts", *arXiv.org > cs > arXiv:1705.08807*, 3 May 2018, <https://arxiv.org/pdf/1705.08807.pdf>

<sup>9</sup> Degryse, Christophe, *Impacts sociaux de la digitalisation de l'économie*, Working paper 2016.02, Institut syndical européen, Bruxelles, 2016, p. 36.

beings, and in that sense, aid them and allow optimizing times. There are many demonstrations of IoT: houses, buildings or even smart cities. It can be applied in the industry, commerce or in health.<sup>10</sup>

With 3D printers, it is possible to produce, with one only instrument, a product that used to require the use of many machines and human participation. Similarly, 3D printers have allowed us to transit from mass production to mass personalization. That way, for example, the new Adidas factory in Germany, has a 3D printer that quickly produces soles of shoes that can adapt to a determined person's feet.<sup>11</sup>

Robotics, in the same way, increasingly allows us to substitute or displace human beings from the factory. In the present, there are factories that practically do not require the presence of labor, be it in the food industry<sup>12</sup> or the one of smartphone components, which has allowed production to triple.<sup>13</sup>

In fact, the robotization of production has generated a new relocation of production. If some decades ago, factories left industrialized countries because of the high cost of the work force and transferred to countries with cheaper costs; now they are returning to industrialized countries, because they no longer require using labor. That is the case of the Adidas factory in Germany, which left Asian countries to produce in Germany again, but without any human beings, only with robots.<sup>14</sup>

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<sup>10</sup> Ashton, Kevin. "That 'Internet of Things' Thing", *RFID Journal*, June 2nd, 2009, <http://www.rfidjournal.com/articles/view?4986>

<sup>11</sup> Palco23, "Adidas pone en marcha su fábrica de robots en Alemania", *Palco23*, May 24th, 2016, <https://www.palco23.com/equipamiento/adidas-pone-en-marcha-su-fabrica-de-robots-en-alemania.html>.

<sup>12</sup> Avicultura, "Una fábrica que pienso que funciona sin personal", *Avicultura*, January 11th, 2013, <http://www.avicultura.com/2013/01/11/una-fabrica-de-pienso-que-funciona-sin-personal/>.

<sup>13</sup> Zahumenszky, Carlos, "Una fábrica cambia 90% del personal por robots y triplica la producción", *Gizmodo. Univision*, July 31st, 2015, <https://es.gizmodo.com/una-fabrica-cambia-90-del-personal-por-robots-y-triplica-1721368748>.

<sup>14</sup> Chu, Kathy y Emmerentze Jervel, Ellen, "Adidas construirá en Alemania su fábrica más robotizada", *Expansión*, June 13th 2016. <http://www.expansion.com/empresas/distribucion/2016/06/13/575f0047e2704ec8788b4597.html>

### III. THE DISAPPEARANCE, DIMINUTION OR TRANSFORMATION OF EMPLOYMENT?

Will repetitive physical jobs disappear by being performed by robots and therefore originate unemployment? Will unskilled people be substituted by robots? Must we get used to a robotized world with human supervision tasks? Will the new forms of production generate new employment positions out of new needs? These are some of the questions that do not have a clear answer. About them, we can point out some repercussions of technology on employment:<sup>15</sup>

- 1) The loss of employment: Replacement of workers by robots.
- 2) The generation of new jobs.
- 3) A permanent change in employment.
- 4) A constant change in the worker's labor status, from independent to subordinate and vice versa.
- 5) New labor illnesses.
- 6) The need for permanent professional training.
- 7) Changing working conditions because of automation.
- 8) A questioning of subordinate labor as the classical model of labor relations.
- 9) Jobs that imply human-robot interaction.
- 10) The increase of workers' productivity, thanks to their qualifications for new technologies.
- 11) Less employment opportunities for people without any professional training or digital skills.
- 12) Social conflict: The reduction of human jobs can imply unemployment.
- 13) The relocalization of companies by reducing the workforce needed to produce a good.
- 14) The reduction of labor force cost to zero, because of the automation of production.
- 15) Personalized production, i.e., transiting from mass production to mass personalization.

In labor matters, unemployment and employment in precarious conditions are concerning. The replacement of a worker with a robot improves

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<sup>15</sup> Avent, Ryan, *La riqueza de los humanos. El trabajo en el siglo XXI*, S, Ariel, 2018, p. 384.

a company's productivity. The robot, in fact, can have the capacity to not only boost the production of a company in terms of quality and quantity, but also the capacity to substitute more than one worker. The role that robots can perform in a company can make very few workers to exist; or it can disappear all manual labor that used to require an operator.

A panorama like the one pointed out will cause unemployment, without any certainty on what scale it will. Even though, without a doubt, another factor that will be produced is the creation of new jobs, linked to the use of technologies or based on them.

In case of the loss of jobs, there are many studies on the subject, or predictions to be more accurate, because it is hard to know what is going to happen accurately. Even though the attraction to technology in younger generations is a proven fact, the it's access has a limitation, which is an economic one, not only the wish or desire to have technology.

Some studies have considered that, for example, in the USA, 47 per cent of employment is compromised. For the European Union, it is calculated that between 45 and 60 percent of jobs are in risk of disappearing.<sup>16</sup> In the first stage, most workers in transportation, logistics, office work, administrative support workers and labor in production occupations are likely to be computerized.<sup>17</sup>

The use of robotics will also imply, by 2020, the loss of 5.1 million jobs in the 15 most developed nations in the world, according to the World Economic Forum's report.<sup>18</sup> Particularly in the USA, there have been professions pointed out that could suffer the effects of technology;<sup>19</sup> most of them are labor activities performed all over the world, and because of that, the effects of technology on labor can be on a global scale.

- 1) Truck drivers. Today, there are 3.5 million truck drivers. If, in the next year, we experience the increase of autonomous cars and trucks,

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<sup>16</sup> Bowles, Jeremy, "The computerisation of European jobs", Bruegel, July 24th, 2014, <http://bruegel.org/2014/07/the-computerisation-of-european-jobs/>.

<sup>17</sup> Frey, Carl Benedikt y Osborne, Michel A., "The Future of Employment: How susceptible are jobs to computerisation?" Oxford Martin School News, University of Oxford, September 17th, 2013, <https://www.oxfordmartin.ox.ac.uk/news/14-09-13-Jobs>.

<sup>18</sup> World Economic Forum, *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, Switzerland, 2016, pp. 13 ff.

<sup>19</sup> Rhpaenews, "7 profesiones que están destinadas a desaparecer", *Rhpaenews*, August 23rd, 2017, <https://www.rhpaenews.com/7-profesiones-estan-destinadas-a-desaparecer/>.

an important number of drivers is going to need to find another professional activity.

- 2) In the construction industry there are robots that allow the diminution of professional risks and that are more productive than humans, having consequently a possible reduction in the employment of masons/builders. This way, for example, SAM100 (Semi-Automated Mason), is a robot that undertakes repetitive and extenuating tasks, like bricklaying. In fact, for many years, machines have been the fundamental support for the increase of productivity in the construction industry, be it with cranes, staplers, painting robots, *etc.*
- 3) Legal support personnel: According to Deloitte, in the USA, 39 percent of employment in the legal sector will be automated by 2020. From simple information searches, we will transit to the use of artificial intelligence for the search of legal information or even the resolution of cases.
- 4) Doctors and medical personnel. Medical appointments, and patients' assistance and care are two activities where automation will be present. Possibly, for example, the exoskeletons will make the presence of a nurse unnecessary. The use of artificial intelligence and technologies is gradually becoming a common instrument for the patient's clinical analysis.
- 5) Accountants, the task of calculating income and outcome, payments and charges to make, or even tax declarations are activities performed all over the world through the use of technology. The increase in robotic accounting has been constant in the past years. In Mexico, for example, tax declarations of tax payments can be made through an IT system provided by the tax office, which could lead to forego accountants.
- 6) Report writers. It is known how, in China, there is a news agency that uses a robot for the drafting of news notes.<sup>20</sup> Recently, the use of a robot to paint a painting has been highlighted. It is one of the first "works of art" made by a robot.<sup>21</sup>

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<sup>20</sup> El Universal, "En China 'contratan' a robot para dar noticias", *El Universal*, Mexico, 31 May 2018, <http://www.eluniversal.com.mx/ciencia-y-salud/ciencia/en-china-contratan-robot-para-dar-las-noticias>.

<sup>21</sup> Fanjul, Sergio C., "¿Puede una máquina pintar como Picasso?, La inteligencia artificial ha logrado realizar poemas, pinturas o composiciones musicales, pero ¿en qué lugar queda la creatividad, la originalidad artística y las emociones? La inteligencia artificial ha logrado realizar poemas, pinturas o composiciones musicales, pero ¿en qué lugar queda

- 7) Salespersons. Electronic commerce, as a new modality for the sale of products and services, has without a doubt, affected the physical salesperson; this work also becomes disposable.
- 8) The diminution of the manufacturing industry. Through time, the use of machines, and now robots, has made the use of labor force to reduce in the manufacturing industry.

In 1995, General Motors employed almost 600 thousand people. Nowadays, in a much bigger economy, Google barely employs 50 thousand, Ebay employs 20 thousand and Facebook only 6 thousand. Apple, Microsoft and Amazon, together barely reach 100 thousand employees globally, nothing to do with Ford's and General Electric's glorious years.<sup>22</sup>

We are directed towards a diminution of unqualified and repetitive work, and to an increase in employment and wages of labor that requires higher skills.<sup>23</sup> The type of labor susceptible to robotization or automation is all of it, to a certain extent, from services to production. The more exposed services are: transportation, sales, administrative work, *etc.* (see table 1 and 2)

TABLE 1  
PROFESSIONS AND RISKS OF AUTOMATION

<i>Profession</i>	<i>Level of risk</i>	<i>Possibility (%)</i>
Social workers	Low	0,0031
Occupational therapists	Low	0,0035
Dentists	Low	0,0044
Information systems analysts	Low	0,0065
Medical services directors	Low	0,0073

la creatividad, la originalidad artística y las emociones?", *El País*, Spain, April 19th 2017. [https://elpais.com/elpais/2017/03/27/talento\\_digital/1490615561\\_931227.html](https://elpais.com/elpais/2017/03/27/talento_digital/1490615561_931227.html).

<sup>22</sup> Rhpaenews, "Desciende la mano de obra humana en la industria manufacturera", *Rhpaenews*, March 2nd, 2017, <https://www.rhpaenews.com/desciende-la-mano-de-obra-humana-en-la-industria-manufacturera/>.

<sup>23</sup> CCOO Industria, *La digitalización y la Industria 4.0. Impacto industrial y laboral*, Secretaría de Estrategias Industriales. CCOO Industria, Madrid, September 2017, p. 50, <http://www.industria.ccoo.es/4290fc51a3697f785ba14fce86528e10000060.pdf>.

<i>Profession</i>	<i>Level of risk</i>	<i>Possibility (%)</i>
Junior high school / Secondary level teachers	Low	0,0078
Mechanical Engineers	Low	0,011
Chemical Engineers	Low	0,017
Fashion Designers	Low	0,021
Interior Designers	Low	0,022
Economists	Medium	0,43
Historians	Medium	0,44
Medical devices technicians	Medium	0,45
IT programmers	Medium	0,48
Agronomic engineers	Medium	0,49
Lift operators	Medium	0.50
Mining machines operators	Medium	0.54
Massage therapists	Medium	0,54
Commercial pilots	Medium	0,55
Audio and video technicians	Medium	0,55
Accountants and auditors	High	0.94
Waiters	High	0,94
Office workers	High	0.96
Dental lab technicians	High	0.97
Credit analysts	High	0.98
Cashiers	High	0.98
Librarians	High	0.99
Photographers	High	0.99
Watchmakers	High	0.99
Phone salespeople	High	0.99

Source: Elaboration from Djamil Tony, Kahale Carrillo, from Frey, C. y Osborne, M., *The Future of Employment: How susceptible are Jobs to computerization?* University of Oxford, 2013.

TABLE 2.  
 JOBS IN THE DIGITAL ECONOMY

<i>Jobs with a higher risk of automation/digitalization</i>	<i>Jobs with a lower risk of automation/digitalization</i>	<i>New employment</i>
Office work and administrative tasks	Education, arts and mass media	Data analysts, data miners and data architects
Sales and commerce	Legal services	App and software developers
Transportation and logistics	Human resources management	Specialists in networks and artificial intelligence
Manufacturing and industries	Some aspects of financial services	Designers and products from new smart machines, robots and 3D printers
Construction	Information workers, engineers and scientists	Specialists in digital marketing and electronic commerce
Some aspects of financial services		Slaves to galleys or digital galleys (workers entering data or filters) and other “mechanical Turks” that work in digital platforms. Drivers in Uber, casual or “rare” employment (repairs, home improvement, animal care, domestic services, etc.) in a collaborative economy.
Some types of services (translation, tax consulting, etc.)	Some types of services (social workers, hairdressers, beauty and care, etc.)	

Source: Christophe Degryse (ETUI 2016), sur la base de Frey & Osborne, Ford, Valsamis, Irani, Head, Babinet. *Cf.* CCOO Industria, *La digitalización y la Industria 4.0. Impacto industrial y laboral*, Secretaría de Estrategias Industriales. CCOO Industria, Madrid, September, 2017, p. 50.

Among some of the new occupations, we can find:<sup>24</sup>

- a) Robotics technicians
- b) Mechatronic technicians, superior 3D animation technicians
- c) IoT platform programmers
- d) IT technicians
- e) Cybersecurity experts
- f) Nanotechnology

In Latin America, it is estimated that 50 per cent of the employment that exists today will be occupied by machines. Labor in the region should be highly qualified and less mundane, so it is required to encourage cognitive and non-cognitive skills. However, in the region, amongst young people who are 15 years old, more than 60 per cent of them do not reach minimum standards in mathematics, meanwhile OCDE average is 23 percent. Regarding psycho-emotional aspects, young people in the region have problems related to perseverance, concentration and attention (PISA Report, 2015).<sup>25</sup>

Insisting, since the loss of employment all over the world because of digitalization has been pointed out, it has also been affirmed that employment is also to be created. We do not have to necessarily think of a catastrophic scenario; even if it is true that robots will change the future of work, this does not necessarily imply that jobs will disappear *en masse*. Some tasks will be completely automated in practical terms, but such automation will allow workers to focus on new activities. In some countries, like Germany, as many jobs will be created as those that will disappear, although it is true that the German case cannot be extrapolated to the rest of the world.<sup>26</sup>

A group of emerging labor activities will gain a significant importance in the next years, while another group of work profiles will become more redundant each time. According to the World Economic Forum a study of 15 million workers total forecasts a diminution of 0.98 million jobs and an increase of 1.74 million jobs. Extrapolating these trends to the global work-

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<sup>24</sup> Djamil, Tony, Carrillo, Kahale, “La formación (Spanish and Italian) en la Industria 4.0”, labor Law Issues, Vol. 2, No. 2, 2016, p. 51, <https://laborlaw.unibo.it/article/view-File/6495/6282>

<sup>25</sup> Rhpaenews, “Los trabajos del futuro en América Latina”, *Rhpa News*, June 8th, 2017. <https://www.rhpaenews.com/los-trabajos-del-en-america-latina/>.

<sup>26</sup> Degryse, Christophe, Impacts sociaux de la digitalisation de l'économie, op. cit., nota 11, p. 26.

force (non-rural) employed by major companies, a loss of employment is estimated until 2022. An estimated 75 million jobs can be displaced by the trends mentioned before, while 133 million new additional posts can arise at the same time.<sup>27</sup>

Considering the sample of 15 million workers, its reduction of 0,98 million jobs and the creation of 1,74 million jobs, when we extrapolate these tendencies for the global (non-rural) labor force, employed by large companies we can estimate the loss of employment until 2022. A possible estimation indicates that 75 million jobs can be displaced following the mentioned tendencies, meanwhile 133 million additional jobs can arise at the same time; although such perspective is centred on major transnational corporations and not on small and medium enterprises. This positive perspective on employment requires changes in the labor force and almost half of the people in the survey hope to have modified its geographical base of operations. Also, 50 percent of companies hope that automation leads to a certain reduction of its full-time work force, in function of their current employees' work profiles.<sup>28</sup>

Also, for 2022, 38 percent of surveyed businesses hope to extend their workforce to new roles, improving productivity and more than a quarter of them hope that automation leads to the creation of new positions in their company. Also, companies are willing to widen the use of external contractors that perform specialized work in tasks, and many of the surveyed highlighted their intention to involve workers in a more flexible way, using remote personnel further than physical offices, and the decentralization of operations. Surveyed companies hope for a greater creation of jobs in roles that are based on projects, independent and temporary jobs, that points out structural transformations of the labor market in terms of contractual agreements, labor relations and occupational profiles. In summary, even though job losses in general are predicted, they will be compensated with the increase in employment; there will be a significant change in quality, location, format and permanence in new roles.<sup>29</sup>

In the spectrum of roles that are expected to experience an increasing demand until 2022, we can find data analysts, scientists, software and app developers, e-commerce and social media specialists; the technology on which they are based on is drastically improving. The prevalence is also

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<sup>27</sup> World Economic Forum, *The Future of Jobs Report 2018*, Switzerland, 2018, p. 9.

<sup>28</sup> *Idem.*

<sup>29</sup> *Idem.*

expected for roles that take advantage of distinctive “human” capacities, such as Service Workers, Sales and Marketing Professionals, Training and Development, People and Culture and Specialist in Organizational Development, as well as Innovation Managers. It will be the same for completely new specialists, related to the comprehension and exploitation of the last emerging technologies: AI and auto-learning specialists, *Big Data* specialists, experts on process automation, information security analysts, user experience designers, human–machine interface builders, robotics engineers and *blockchain* specialists.<sup>30</sup>

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<sup>30</sup> *Idem.*

TABLE 3. EXAMPLES OF STABLE ACTIVITIES, NEW AND REDUNDANT IN ALL THE INDUSTRIES

<i>Stable Activities</i>	<i>New Activities</i>	<i>Redundant Activities</i>
Director managers and executive directors General and operational managers * Software and app developers and analysts* Data analysts and scientists* Sales and marketing professionals* Sales, wholesale, manufacturing and technical/scientific product representatives Human Resources Financial and investment advisors Database and web professionals Supply chain and logistics specialists Risk management specialists Information security analysts* Organization and Management analysts Electric-technology analysts Organizational development specialists * Chemical processing plant operators High school and university teachers Compliance officials Energy and oil engineers Robotics specialists and engineers Oil and natural gas refinement plant operators	Data analysts and scientists * AI and auto-learning specialists General and operational managers* Big Data specialists Digital transformation specialists Sales and marketing professionals * New technologies specialists Organizational development specialists * Software and app developers and analysts * IT services Automation process specialists Innovation professionals Information security analysts* E-commerce and social media specialists User experience and Human-Machine interaction designers Training and development specialists Robotics specialists and engineers Culture and people specialists Information and service to the public employees * Service and solution designers Strategy and global market specialists	Data entry employees Accountability, bookkeeping Executive and administrative secretaries Assembly and factory workers Information and service to the public employees * Administration and commercial services managers Accountants and auditors Material imprinting and inventory General and operational managers * Postal Service workers Financial analysts Entrance tickets cashiers and salesmen Machinery mechanics and repairmen Telemarketers Electronic and telecommunications installers and repairmen Bank cashiers and related workers Cars, bans and motorcycle drivers Sales and purchases agents, and brokers <i>Telemarketers</i> Door-to-door salesmen, street vendors, news vendors and related workers Statistics, finance and insurance workers Lawyers

Source: *Future of Jobs Survey 2018*, World Economic Forum.

Note: The activities marked with an \*, appear in more than one column. This reflects the fact that these could have a stable or decreasing demand in an industry but could be demanded in another.

In Mexico's case, the following emerging activities have been detected: General and executive directors, software and app developers and analysts, sales and marketing professionals; general and operational managers, sales, wholesale and manufacturing representatives; technical and scientific products, human resources specialists, financial and investment advisors. Also, there appears to be a series of emerging skills: analytical thinking and innovation; creativity, originality and initiative; active learning and learning strategies; technology design and programming; reasoning, problem resolution and creating ideas; complex problems resolution; leadership and social influencing; critical thinking and analysis; resilience, stress tolerance and flexibility; and emotional intelligence.<sup>31</sup>

#### IV. NEW FORMS OR TYPES OF NON-STANDARD WORK

The European Foundation for the Improvement of Living and Working Conditions has analysed the “new forms or work”, which are being developed in Europe and radically transform traditional relations between the employer and the worker. The Foundation has pointed out nine forms of work that have implications on working conditions and the labor market.<sup>32</sup>

- 1) Shared time jobs. One worker is bound, along with a group of employers, to satisfy the needs of many companies in the field of human resources, which translates into permanent employment for the worker.
- 2) Job sharing: An employer hires two or more workers to share tasks, linked to one specific work position; this way combining two or more part time jobs into one full time job.
- 3) Interim management or supervision. Highly qualified experts are hired for a specific project or solving a concrete problem, this way incorporating external managing qualifications into the work organization.
- 4) Occasional jobs. An employer is not obligated to provide regular work to an employee, so he has a margin of flexibility that allows him to make the employee work according to his needs.

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<sup>31</sup> *Ibid.* pp. 88-89.

<sup>32</sup> Eurofound, *New forms of employment, Luxembourg*, Publications Office of the European Union. *Cfr.* Degryse, Christophe, Impacts sociaux de la digitalisation de l'économie, *op. cit.*, note 11, 26 p.

- 5) Mobile labor based on information and communication technologies, workers can work anywhere and at any time, with the aid of modern technologies.
- 6) Work based on vouchers, where the labor relation is based on the payment of services through vouchers bought to an accredited organism, that covers salary and social security;
- 7) Work distributed in various activities. An independent worker works for a great number of clients, performing specific tasks for each one of them:
- 8) Cooperative work. An online platform connects workers and employers, often in very important tasks which are divided and assigned among various workers organized in a virtual cloud;
- 9) Collaborative work. Independent workers and microenterprises cooperate in a certain way to overcome limitations in professional size and isolation.

The ILO, for its part, leaving aside precarious labor and informality, has also detected the presence of non-standard forms of employment.<sup>33</sup>

- 1) Temporary employment. Work and contracts for a determined time, including task-based projects, seasonal work and “casual” work.
- 2) Partial time. Tasks with a working schedule that do not complete one working day in a natural day (partial-time work, on-call work).
- 3) Agency work. Outsourced labor through an agency or employee institution, different from the company or place where the worker carries out her/his job.
- 4) Dependent auto-employment. Hidden, fraudulent, or undercover labor relations.

The Fourth Industrial Revolution, as it has been pointed out, is not going to end with employment, but it is true that it is redefining it; consequently there are three matters we need to pay important attention to:<sup>34</sup>

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<sup>33</sup> ILO, Non-standard employment around the world: Understanding challenges, shaping prospects, International Labour Office, Geneva, ILO, 2016.

<sup>34</sup> OIT, “Los cambios tecnológicos y el trabajo en el futuro: Cómo lograr que la tecnología beneficie a todos”, La iniciativa del centenario relativa al futuro del trabajo. Informative Note, OIT, 2016 (This note is based on Irmgard Nübler ‘s contributions). [https://www.ilo.org/global/topics/future-of-work/WCMS\\_543154/lang-es/index.htm](https://www.ilo.org/global/topics/future-of-work/WCMS_543154/lang-es/index.htm) .

- 1) First, technological change will transform nature and the quality of existent and future labor positions. The suppression of good jobs and creation of bad ones is worrisome, even if this means increasing the quantity.
- 2) Second, job suppression and creation implies that workers and companies, as communities, will have to go through generally difficult and expensive changes and adjustments.
- 3) Third, technological changes will generate major incomes in productivity, where, again, the impact in the work environment in each country and around the world, will depend on the way such income is distributed among economies and social groups.

As we can observe, it is not the disappearance of jobs that must concern us, but the creation of bad quality and lowly paid jobs, bad adjustments made by national economies negatively affecting people who have a job, as well as the possible increase in inequality despite an increase in productivity.

#### V. SUBORDINATION, INDEPENDENT LABOR AND SEMI-INDEPENDENT LABOR: THE COURTS' ROLE

Collaborative economy has generated a debate, in labor matters, about the legal nature of the contractual relationship between a collaborative platform and people who use it as an instrument for work. It is deep-rooted as a classical worker-employer subordination relationship.<sup>35</sup> Most platforms involved consider their workers as independent workers. In fact, practically every digital platform in the collaborative economy responsibilities consider all of their workers as independent workers. This way, there are no labor responsibilities nor social security.

The courts' reaction has been tipsy and contradictory. There are resolutions in England, USA and France that can illustrate the courts' decisions that have had contradictory answers, even in the same country:

- 1) In the UK, in James Farrar's and Yassen Aslam's case against Uber, the company was sanctioned to pay for their salary and vacations, according to what was ordered by the Employment Appeal Court.

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<sup>35</sup> Vega Ruiz, María Luz, "El futuro del derecho del trabajo: ¿Revolución industrial y tecnología o crisis del Estado Social", *IUSLabor*, 1/2017.



## VI. TOWARDS A LABOR STATUS FOR WAGE-EARNING AND NON-WAGE-EARNING WORKERS

Changes in work are not going to happen in the future; we are experiencing them daily in different dimensions and proportions. Questions are: Which is the answer that labor law must offer, if labor law will continue to be the adequate instrument to regulate new labor relations? Or is it going to be able to regulate a segment, not of new labor relations, but of old and residual ones? Those two questions can be answered in three ways. One is considering the history of labor law, a second one parts from premeditated delaborization from labor law, and a third one has to do with redesigning labor regulations.

In the first place, we must not ignore that labor law appeared as a factual figure before becoming law. It was the old commercial and civil law which regulated relations between workers and employers. labor law, we can say, always appears as a factual figure, that law, sometimes unwillingly, has had to recognize.

In second place, we are not discussing the difficulty of analysing new labor relationships, because of the adversity of clearly distinguishing the existing work subordination link. Even so, it is also a fact that in some occasions that the disappearance of subordination is pointed out radically in the new ways of carrying out jobs; without closing the possibility that maybe it is not that way. It looks as if pointing out the inexistence of labor relations has as a purpose to exclude labor law definitely, without leaving open the possibility of an existence, at least partial or tenuous, of labor subordination

In third place, without disregarding the new ways in which employment is carried out and the new types of work, it would be a mistake to think that labor law will be completely displaced. However, we can no longer think about it in the transparent way it appeared originally, from labor subordination. The former implies parting from new paradigms and remembering the origins of labor institutions that, as we have commented, appeared in a first moment as factual institutions and then as law institutions.

At some time it was thought that chain labor and exploitation of workers had moulded labor law definitely. It has also been believed that the replacement of industrial labor, which involves a heavy use of work force, with labor made by a robot, along with the shift of capital-labor relation, in that dynamic, could only mean the disappearance of subordination and labor law with its protective function. This false idea has been deeply disseminated. In reality, labor transformations have been confused with legal

transformations. Man delivers each time less labor force, but the exchange of an activity for a continuous remuneration persists, and that is a legal act that requires clarity in the contracting parties' obligations and rights.<sup>37</sup>

We insist: it is true that labor flexibility has translated to labor ultra-flexibility, characterized by non-contractual forms of employment; or in other words, working without a labor contract, salary norms, labor duration regulation, workplace determination, the right to professional training, collective contracting nor the right to form unions.<sup>38</sup> The State's absence in this phenomena is such that the establishment of rules is not even considered private law's perspective, in great measure because the State's legal regulations have been overwhelmed or surprised by the new forms of employment.

Unions from many parts of the world have presented their concerns stemming from the "platform economy". For instance, in *Frankfurt am Main*, Germany, the first *International workshop for union strategies in the platform economy* was celebrated on 13 and 14 April 2016, establishing as key points:<sup>39</sup>

- 1) Online labor platforms online comply with applicable laws, including labor situation analysis.
- 2) Platform operators must work in both local and national level, alongside workers, researchers, clients, union organizations and politicians, to assure that platform work complies with regulations, including labor legislation; this is done with the purpose of analysing that those laws better those offered by the company and to assure transparency in the platform labor world.
- 3) Many online labor platform administrators deny being employers and demand workers to be considered as "independent contractors" or "auto-employees", instead of regular employees. Workers in platforms that are currently contemplated as contractors must take into ac-

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<sup>37</sup> Lyon-Caen, Gérard, *Le droit du travail. Une technique réversible*, Francia, Paris, Dalloz, 1995, p. 2.

<sup>38</sup> Degryse, Christophe, *Impacts sociaux de la digitalisation de l'économie*, *op. cit.*, note 11, p. 26.

<sup>39</sup> With the presence of international organizations : the Austrian labor Camera, the Austrian Federation of Unions (OGB), the Danish Commercial and Official Workers' Union (HK) IG Metall from Germany, Teamsters Local 117 International Fraternity, the International Employee Union, alongside legal and technical experts from Asia, Europe and North America. Information contained in : CCOO Industria, *La digitalización y la Industria 4.0. Impacto industrial y laboral*, *op. cit.*, note 25.

count that the transition to the status of worker could imply a loss of liberty, especially the liberty to choose tasks and work times.

- 4) Through technology, some platforms will execute more control than many traditional companies with traditional workers, even with indirect control. The more control a platform establishes over workers, the more likely it is to be legally considered as an employer and because of that, being responsible for paying associated costs.
- 5) It is important to reaffirm the central importance of workers' rights to organize, contained in the main international, universal, fundamental Human Rights declarations, in general terms and specifically in terms of labor.
- 6) All work that is carried out in online work platforms should be paid, at least, with the minimum wage (after expenses, before taxes), of the legal scope, independently of the workers' legal situation or access to other work opportunities
- 7) Platform workers must have access to social security protection —be it public or private, in each country— including unemployment protection, handicap, health and sickness insurance, pensions, maternity protection and compensation in case of occupational sickness or work accidents.
- 8) Platform operators must work with clients, researchers, workers' organizations, workers and other actors, to develop clear and responsible methods when solving disputes between clients and workers; and between workers, when needed.

Without a doubt, there must be a series of rights and obligations to safeguard human dignity. Legal rules that implicate a violation of people's health or decent existences cannot be created. Work in the future and conditions in which they are to be performed, cannot ignore the previous two elements: the right to health that every person that carries out a paid activity has; and the right to a decent existence that results from performing work. In that sense, the State's obligation consists, in reality, to carry out a fundamental rights policy, offering everyone a possibility of exercising their rights.

A modern labor law must stay away from the typecasting of labor relations in a single scheme. Maybe the fact that labor doctrine has wanted to observe labor relations only when there is a link of subordination paradoxically caused that each time more legal relations, between a natural person providing a service and another one receiving that service, escape labor law little by little or disguise themselves as external to labor law.

The 21st Century's labor law does not have to be limited to one only scheme of contractual relations. It must be recognized that a univocal vision centred in subordination,<sup>40</sup> obstructs any possibility of defining the labor contract.<sup>41</sup> Labor law must allow us to stem from a plurality of contracts that determine, depending each case, a set of special regulations according to labor law characteristics or to whatever activity it concerns. We must not think that labor law is looking to disappear through establishing a plurality of subjective rights depending on each contract, but to reinforce itself with a regulation that does not necessarily have to be unique; by looking for its homogeneity, it ends up excluding workers. This is exactly one of the mistakes we make by trying to conceptualize labor law as something uniform, when what we find since the end of the 20th Century is the heterogeneity of contractual relations between a natural person and another natural or juridical person.

Diversity does not destroy nor diminish labor law; on the contrary, it ends up rebuilding it and increasing its field of action. When there is a classic labor subordination, labor law has its field of action, of course, when we find ourselves in a relation of labor dependence. When there is a labor relation with grades of autonomy and subordination, it must be pointed out clearly in which cases it is relevant to talk about a *tertium genus*<sup>42</sup> and in

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<sup>40</sup> Supiot, Alain, "Les nouveaux visages de la subordination", *Droit Social*, N.2, February 1st, 2000, France, Paris, p.139.

<sup>41</sup> Emmanuelle, Barbara, *Proposition pour une nouvelle définition du contrat de travail*, Semaine Sociale Lamy, no. 1767, April 2017.

<sup>42</sup> On the matter, it is key to point out Thomas Pasquier's comments and sources from his article « Sens et limites de la qualification de contrat de travail », *Revue de Droit du Travail*, 2017 : « La question préalable qui pouvait se poser était celle de l'opportunité de la création d'un troisième genre entre subordination et indépendance. À cette question, l'on répondra assez nettement par la négative. À cela, deux raisons majeures. Au-delà de l'argument d'insécurité juridique tiré de la démultiplication des catégories juridiques soulevé par l'IGAS, c'est sur le plan de la politique juridique que la création d'une nouvelle catégorie doit être contestée: créer une catégorie intermédiaire entre subordination et indépendance aura pour effet de créer un appel d'air vers la nouvelle catégorie et de participer de l'externalisation juridique de nombreux salariés. À l'heure où le salariat et le droit du travail traversent une zone de turbulences sévères, il n'est sans doute pas opportun de charger encore plus certainement la barque sur laquelle ils naviguent. À cet argument d'inopportunité, il faut ajouter celui de l'inutilité. Pour le comprendre, il convient de rappeler, à grands traits, la teneur des expériences étrangères. Le caractère principal des catégories envisagées, telles que la parasubordinazione italienne ou le TRADE espagnol, est le lien d'exclusivité entre le travailleur et son cocontractant et le caractère personnel de la prestation de travail. L'idée est donc d'offrir à des prestataires qui sont juridiquement indépendants, mais dans une situation de dépendance économique à l'égard de leur prestataire du fait, notamment, du lien d'exclusivité qui

which cases we find ourselves with disguised outsourcing; thus recovering the notion of economic subordination, cultured by doctrine for years.<sup>43</sup> In the clarification of the labor relation, to know if workers are independent or subordinate in the collaborative economy, ILO's Recommendation 198 about the extension of the employment relationship is key in this subject.<sup>44</sup>

When flatly the contractual relation is developed in an apparent independence of autonomy, labor law must think about a non-wage earning

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les unit à leur fournisseur et du caractère personnel de la prestation, une forme de protection. Mais est-ce bien utile dans le système français ? Comme on l'a vu précédemment, la notion de service organisé – ou encore l'interprétation faite par la 2<sup>e</sup> chambre civile dans l'arrêt Formacod de l'absence d'indépendance véritable – a précisément permis d'intégrer dans le champ du droit du travail les travailleurs en situation de « dépendance existentielle ». Dès lors, si l'ambition d'une nouvelle catégorie se réduit à faire autrement, voire plus mal, ce que la jurisprudence fait déjà par le biais de la qualification de contrat de travail, autant ne rien faire. Cela d'autant plus que, comme le remarque justement un auteur, la question n'est pas vraiment celle d'une alternative entre des travailleurs salariés, des travailleurs autonomes et des travailleurs indépendants, mais celle d'« une dynamique intrinsèque à l'auto-emploi qui le fait muter soit en direction d'une organisation partenariale ou entrepreneuriale, soit en travail intégré à une telle organisation ». En somme, l'alternative, tant sur le plan juridique qu'organisationnel, n'est pas celle d'un triptyque mais celle d'un diptyque entre le salariat intégré dans l'entreprise d'autrui et l'indépendance maîtresse de l'organisation de travail. Est-ce à dire qu'aucune protection n'est nécessaire ? Sans doute pas si l'on envisage que, de plus en plus, les organisations – même indépendantes juridiquement – sont directement intégrées ou coordonnées par une autre organisation – souvent de dimension internationale. » Sur le troisième genre, v. A. Perulli, Travail économiquement dépendant/parasubordination. Les aspects juridiques, sociaux et économiques, Rapport pour la Commission européenne, 2003; v. égal. T. Pasquier, L'économie du contrat de travail, préc., p. 295 s.; J. Barthélémy, "Essai sur la parasubordination", Sem. soc. Lamy 2003, n o 1134, p. 6; du même auteur, "Le professionnel libéral et les 35 heures", Dr. soc. 2000, p. 485; "Le professionnel parasubordonné", JCP E 1996, I. 606; A. Supiot, "Les nouveaux visages de la subordination", Dr. soc. 2000, p. 139; E. Peskine, "Entre subordination et indépendance : en quête d'une troisième voie", RDT 2008, p. 371; Rapport sur Le travail économiquement dépendant de P.-H. Antonmattéi et J.-C. Sciberras, 2008; Travailleurs Indépendants Économiquement Dépendants, Mesures statistiques, enjeux et opportunités, Projet mis en place dans le cadre du programme Relations industrielles et dialogue social de la Direction générale emploi, affaires sociales et inclusion de la Commission européenne, 2014; Rapport de l'IGAS, Les plateformes collaboratives, l'emploi et la protection sociale, November 2016.

<sup>43</sup> Francesco Ferrari and Mario de la Cueva have for many years already made reference to economic subordination: Ferrari, Francisco de, *Derecho del Trabajo*, Argentina, Buenos Aires, Ediciones Depalma, 2o Ed. 1969, p. 104 y De la Cueva, Mario, *Derecho Mexicano del Trabajo*, T. I, México, Porrúa, 1967.

<sup>44</sup> Recommendation on the Labor Relationship, 2006 (number 198). [http://www.ilo.org/dyn/normlex/es/f?p=NORMLEXPUB:12100:0::NO::P12100\\_ILO\\_CODE:R198](http://www.ilo.org/dyn/normlex/es/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:R198).

labor law, because independent workers, as *entrepreneurs*, live off their work.<sup>45</sup> Even when legal and economic independence is clear, the parts' obligations and rights must be safeguarded, with the limits that private law contains, where civil and political rights (freedom of assembly, expression, non-discrimination, *etc.*) and those of social and economic nature, particularly the right to health, decent existence and survival, coexist in decent conditions.<sup>46</sup>

Redefining fundamental rights of all people who perform a job, without regarding the existence or not of labor subordination,<sup>47</sup> implies necessarily re-thinking the classical notion of labor law, to give place, among other rights to:

- 1) The right to a minimum wage
- 2) The right to social protection, fundamentally in case of work accidents or occupational illnesses. Also, unemployment handicap, health and illness protection, pensions and maternity protection.
- 3) The right of assembly
- 4) The right to collective bargaining
- 5) The right to a permanent training

Independently of finding ourselves in front of subordinate, semi-subordinate or independent labor, every person has the right to training that allows him or her to access a job, to be informed on existing jobs and professional training during the job; and in case of losing it, to obtain means of subsistence from society (social help or an unemployment insurance) and also support needed for creating employment and/or a company, through what is known as the right to a professional activity,<sup>48</sup> always in co-respon-

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<sup>45</sup> Lyon-Caen, Gérard, *Le droit du travail non salarié*, Paris, 2000, 208p. In his book, Lyon-Caen points out that non-wage-earning work is characterized, at the same time, by the property of the instruments of work and by charging working risks to the economic activity. There are also many grades in which the non-wage-earning worker is close to the wage-earning worker, there are even cases in which they touch.

<sup>46</sup> Supiot, Alain, "Vers un nouveau statut social attaché à la personne du travailleur ?", *Droit Ouvrier*, no. 897, 2015, p. 559.

<sup>47</sup> ILO, *Informe de la Reunión de expertos sobre las formas atípicas de empleo*, Geneva, 16–19 February 2015. Protección de los trabajadores en un mundo del trabajo en transformación 78 ILC.104/VI.

<sup>48</sup> For example, in France, the Law of August 8th, 2016 introduces the notion of «activity of personal account» which allows workers to accumulate rights to assure their smooth transition from one labor regime to another.

sibility schemes, because in a context like Mexico's, political cronyism has pushed the government towards social handout and assistance policies.

## VII. THE STATE'S ACTIVE ROLE

Before a situation of possible modern exploitation, maybe undercover or disguised by new Industry 4.0 technologies, the State, as it did in the 19th Century, must avoid this exploitation through a regulation that allows the respect of every person's rights, without regard to the nature of his or her labor relation. Such regulation must originate under the new features of the labor relation and under the new contractual modalities that arise; a regulation that can well be protected by civil, political, economic or social fundamental rights.

The State faces an engagement to articulate public policies in terms of Industry 4.0; it necessarily requires to know the situation of its labor market (in Mexico's case, high informality rate, professional training problems, juvenile unemployment, the lack of school-company interaction, among others) to regulate and coordinate technological, digital and productive change. This is to be done encouraging quality employment; new employment niches, fair distribution and expansion of labor; balanced participation and distribution of earnings; necessary labor security and health in Industry 4.0; the treatment of workers' personal data, among others.

Similarly, facing the lack of labor contract adaptations and the subordination of new modalities of employment, the State must reflect on them and re-think the situation of workers than cannot be framed in a labor contract or in a labor relation, but still their situation requires a certain type of protection,<sup>49</sup> through a right to a professional activity or a labor law for non-wage earners. For some authors, the difficulties that labor law faces are not possible to overcome; in fact, they face it against the possibility of pinpointing an old dream: the creation of a labor law in a wider sense that guarantees fundamental values, such as dignity and decency in work.<sup>50</sup>

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<sup>49</sup> Pasquier, Thomas, "Sens et limites de la qualification de contrat de travail", *Revue de Droit du Travail*, 2017, pp.102 ff.

<sup>50</sup> *Ibid.* p. 109.

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