THIRD PART

MEXICO AND ITS PROBLEMS IN RELATION TO INDUSTRY 4.0

INDUSTRY 4.0 AND TRADE UNIONS

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SUMMARY: I. *Introduction.* II. *The effects in general.* III. *The effects on labor rights.* IV. *Conclusions* V. *Research sources.*

I. INTRODUCTION

The evolution of law has always been linked and sometimes determined by the evolution of societies and their economies; the need to have functional rules and norms, for a convenient coexistence in community would demand the existence of necessary agreements for its operation and progress. Although some legal schools claim the convenience of studying legal norms as part of a system where the law should only see itself, nowadays, being attentive to the context in which it is born and transformed is an essential need for any kind of approach to the legal; such as the doctrine, the sponsorship of interests, public policies, the forum, the judiciary, etc.

The history of Law reflects the integration of large legal families and their conformation into national legal systems that share regional and "family" traits, but in these times it also seems that important transformations are taking place where the traditional concepts that allowed to locate and characterize some particular legal systems are no longer functional for the few comparatists and the amateurs that study law beyond their countries. The change and the transformations seem to be the currency to be considered today when dealing with any institution or legal branch.

In fact, change is part of the Law. However, some branches seem to have a faster evolution than others for the simple reason that their object of

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study changes and is transformed in a dizzying way. This shows the regulatory framework as insufficient, exceeded or frankly obsolete, thus losing functionality or even its purpose of being. This seems to be the case of labor law , for which its main regulatory objective is labor as well as the actors involved in it. Both have been mutating very rapidly and in an accelerated manner in recent years leaving the labor legislation behind and in many cases inoperative and non-functional.

The "labor relationship" as a basic concept in the legal world of work has, as the classics have said, subjective elements which are the people involved: worker and boss or employer, and objective elements such as subordinate personal work, in addition to salary. This idea and initial concept, which legal evolution in the last hundred years, along with the doctrine, helped to define and refine basic concepts, needed to construct the autonomous normative and institutional building of labor law. However, in very few years that labor law went from emerging and consolidating itself as a basic structure in modern societies to the doubt of its relevance and even permanence. This is perhaps the crossroads where this novel branch of law is today, where traditional ideas and basic concepts help tell its story, but they no longer help to regulate and account for new forms of work and their organization.

The context in which Labor Law aims to be applied today has undergone very important changes. While one of the aspirations at the dawn of the 20th Century was that in this branch of law its fields of application were growing and expanding including increasingly in its bosom a larger number of people who were the object of protective benefits of labor regulations. Nowadays, this aspiration seems nostalgic when the tendency seems to go in the opposite direction.

We must remember that work in the industry would be one of the motivations so that labor standards would arise, and it would be in this "field" in which their development efforts would be focused on; but it would be precisely in this space where very important changes would take place in the forms of work and its organization. Seen from different disciplines such as sociology, business administration, anthropology, economics, among others, they have tried to tell the story of these changes in the industry and their evolution, while in legal matters the changes do not seem to have occurred with the same speed.

Today we are talking about Industry 4.0 as a way of characterizing a particular and different manner of organizing productive processes that impacts, not only the objective aspects but also the subjective ones of the

world of work, and to which Rifkin's omens about the end of work[1] seem to be fulfilled. In the background the confrontation between employment vs. technology seems to come forth once again, as it does in each industrial revolution and innovation in the productive process.[2] Now, there is the doubt that fuels the debate on whether we are facing a reissue of that discussion occurred in the preceding industrial revolutions, or if it is a stage with more catastrophic visions than the previous ones.

The truth is that, once again, in most countries the emergence of a new way of producing, like the one we are dealing with now, seems to show its limitations not only in the legal framework but also for unions, which are important actors in the labor relations models; this often makes these organizations to be seen as expendable and obsolete entities, an idea that since its conception has accompanied its detractors and opponents.[3] We must say Mexico does not escape all this.

Trying to clearly dimension the different manifestations and effects that Industry 4.0 is having on labor relations and its actors is part of the aspects that are still discussed in the doctrine. Nevertheless, it is necessary to push ahead in the analysis on the legal implications that this type of phenomena is presenting to us.

And it is precisely in this issue, of which impacts have been widely explored,[4] that this paper focuses on; trying, in an initial approach, to observe how these changes are impacting on the workers and specifically their trade union organizations, with special reference to the Mexican case of unions.

The way in which this work is intended to address the issue is to develop it in two parts: the first one, devoted to review the effects that are generally seen in labor law and particularly in terms of general principles of labor law and the so-called individual rights of workers; the second one is the study of impacts that Industry 4.0 would have on collective rights, specifically on

[1] Riifkin, J. *El fin del trabajo, Nuevas tecnologías contra puestos de trabajo: el nacimiento de una nueva era*, Paidos, Mexico, 1996.

[2] *Cfr.* Bergeron L., Furet F., Koselleck R. *La época de las revoluciones europeas 1780-1884*, Siglo XXI, Mexico 1976, p. 21.

[3] *Cfr.* Trejo Delarbre R. "Sindicatos desprevenidos ante los cambios de la economía", in: *Sindicalismo y democracia*. International Meeting, Collection N, Vol. IV, SNTE, Mexico 1992, p. 153

[4] *Cfr.* Global Challenge Insight Report, T*he Future of Jobs, employment, skills and workforce strategy for the fourth industrial revolution, www3.weforum.org/docs/WEF_Future-of-Jobs.pdf,* date of consultation: 9 May 2018.

unionisation, collective bargaining and strikes. One of the objectives of this work is to offer an analytical proposal from which the different aspects and implications Industry 4.0 could have in the unions can be addressed. Finally, a series of conclusions are presented in which the various challenges the topic faces are mentioned.

Although Industry 4.0 is a current issue, there is little literature that addresses it from a strictly legal point of view, at least in Mexico. This is due, among other reasons, to the fact that the specialized doctrine is busy and devoted only in accounting for the ways in which the Mexican labor model and its labor law are changing in recent years, where both legal and constitutional reforms seem to envision an important change in the evolution of the Mexican labor model.

In fact, in recent years, important stages in the evolution of Mexican labor legislation seem to be happening. It must be remembered that the social constitutionalism initiated in 1917, allowed to have an important support and foundation to later develop a regulatory codification in 1931, a constitutional reference and precision for the bureaucracy in 1962 and later: in 1970, a new update on substantive aspects of the labor relation as well as a modification in 1980 of the adjective topics. There is no doubt recent changes to labor standards have another connotation, for example the modification to Article 1 constitutional by which human rights are placed as the axis articulator of the entire Mexican legal system since 2011, and that is spreading to all branches of law including labor law. Likewise, the reform of the Federal Labor Law of 2012, by virtue of which various "flexibilizing" modifications and additions were made to labor relations, as well as the constitutional reform of 2017 in matters of labor justice, show how the Mexican labor model is in full evolution. But beyond the legal historiography that can be exposed, it is convenient to note the reasons behind the important changes in each of these historical moments. In each of them there is a certain motivation derived from the changes the productive processes were experiencing. It cannot be measured to what extent these reasons determined the additions and modifications to labor legislation, but there is no doubt that somehow they caused said changes. This statement, which could be the subject of a separate specific investigation, allows us to consider changes in the objective elements of labor relations as having some influence on labor standards. This idea may be important if we consider that Industry 4.0 is influencing the outline that labor legislation is presenting in recent years in the sectors in which its presence is most tangible. Here by labor legislation

we will have to understand and include, not only the heteronomous norms but also the autonomous ones.

It is necessary to remember that a good part of the legal doctrine, at least in labor matters, has been built from the analysis and description of the changes and evolution that occur in its normative body and in its different formal sources. That is why the analysis focuses basically on the description of the scope and effects that the normative changes are having, but there are also studies on legal prospective and legal "futurism" to a lesser extent. So the doctrine is nourished above all by the objective evolution of the legal system and not by those changes that are not yet positivized and this is precisely the framework within which the impact of Industry 4.0 in the world must be studied. Particularly in Mexico, where labor law and the specialized doctrine generally go in search of "catching" and including in its field of application and study phenomena,new situations which are not yet regulated.

These are some of the reasons why many of the comments made in this work are highly speculative, since they are based on inferences and abstract assumptions, or they go to sources from other areas of research. Indeed, the very little theoretical development of the subject has been given more in studies of other areas of the social sciences such as sociology, anthropology, statistics and not precisely in the legal area. We are aware of the limitations that a jurist has when trying to venture into areas of empirical research. However, it will be necessary in this or another stage of the investigation to illustrate some of the affirmations and concepts of this work with some concrete cases, to appreciate how unions are seeing the impacts of Industry 4.0.[5]

A convenient point, as part of the premises to address the issue, is that Industry 4.0 may well be seen as a stage in the evolution of production pro-

[5] On the occasion of the present investigation, we elaborated a survey that was conducted in a sample of several unions in Mexico, amongst which are Sindicato de Trabajadores de la UNAM, Sindicato de Telefonistas de la República Mexicana, Sindicato Único deTrabajadores de Nissan Mexicana, Sindicato de Trabajadores de la Industria Química, Petroquímica, Carboquímica y similares y conexos de la República Mexicana, among other thirty cases. The survey raised specific questions, which sought to know the position and strategies of the Mexican unions in relation to Industry 4.0. They were asked, among other things, their opinion on the 4.0 industry, their position on the processes of modernization in their company, the impacts on employment and the working conditions of those changes, what actions and strategies have been implemented, what position the unions should assume in front of these transformations, and so on.

Unfortunately, none of the unions to which the survey was sent responded; however, in the future it will be necessary to consider carrying out these field studies, in order to have more knowledge on the subject.

cesses, in terms of modernization and adaptation to the needs of markets in a country like Mexico. This stage that today appears as something novel and impactful in terms of the implications at different levels has a history of several years, and all its background has been studied profusely resulting in terms and expressions such as "restructuring" or "industrial restructuring"[6] in Mexico. Likewise, these changes, both present and past, have not occurred in a homogeneous manner throughout the national economy or industry, but they are rather processes that have been present at different speeds.

There are economic sectors with a broad development and modernization, while others seem to be left behind. At least, it is important to keep in mind this diverse and heterogeneous situation, since it is not an element or factor taken into account when performing a labor legal analysis, just like the norm as universal and abstract does not take into account the diversity of actors and spaces of the economy where its application is considered. For the purpose of this study, it is important to consider and take into account that this diversity can help understand which has been the attitude and position of the unions in front of those modernization processes, depending on the type of trade unionism existing in these different sectors of the economy. According to some studies, there are exemplary industries in Mexico in the implementation of technological advances in specific areas such as the automotive industry, aeronautics and electrical-electronics[7], or certain regions of the country where the state has already been actively working in the implementation of technological advances in coordination with local universities, this is the case of Nuevo León.[8] In most of these examples, there is an important loss of jobs, but it varies according to the sectors of the economy and the regions.

Some opinions of the Mexican Government indicate that, to be able to insert the country in this industry, it is necessary to have services and ICTs infrastructure (information and communication technologies). Both companies and populations have access to the Internet. It can also be noticed

[6] *Cfr.* De la Garza Toledo, E., "El Nuevo patrón de relaciones laborales en México", in: Barbosa F., De la Garza E. (Coords), *Modernización y sindicatos*, UNAM-IIE, Mexico 1993, p. 12.

[7] *Cfr.* Industrial Cluster: *https://clusterindustrial.com.mx/post/3498/mexico-referente-de-la-industria-4.0.* Date of consultation: 2 July 2018.

[8] *Cfr.* Reportero Industrial, "Nuevo León camino hacia una Economía 4.0", *http://www.reporteroindustrial.com/temas/Nuevo-Leon,-camino-hacia-una-Economia-40+123983.*

in a general way, that progress is being made towards the construction of a public strategy of the Federal Government in this matter.[9]

Regarding the access to the Internet, the coverage in Mexico has been exponential. For many people today, the world is divided between those who are connected to the network and those who are not, creating a duality that has various effects, some of them translated into inequity and injustice, which has already had an impact on the legal field, considering that access to the Internet is a right that must be cared, encouraged and recognized at the highest normative, even at constitutional levels. Thus, the construction of a "right to access" moves rapidly, not only because of its international recognition as a human right but also for its recognition in 2013 by the Mexican Constitution in Article 6 that says that the State will guarantee the right of access to information and communication technologies, as well as to broadcasting and telecommunications services, including broadband and internet.

In this way, in a world that is transformed in a vertiginous way, in its forms of producing and communicating, unions appear outdated and most of the time lack proposals for many workers that claim what they call their " new needs ", among which are precisely their" right to access ".[10]

We should notice the importance of the concept "Industry 4.0". This idea of Industry 4.0 seems to have been a concept created in Germany to refer to a modern industry with a high degree of automation and intensive

[9] For our country, the digitalization of industries is a very important step. An example is the map Ruta de Industria 4.0, promoted and promoted by the Ministry of Economy. This map analyzes the characteristics of the manufacturing sector in Mexico, strategies around the world, as well as the most important trends in this matter. On the other hand, it identifies the main actions that could be implemented, with emphasis on new technologies, education, digital economy, as well as strategic projects. "

"An exercise has been carried out to prioritize the technologies identified in said road map and public policies focused on technologies linked to digital platforms have been created; Big Data / data analysis and internet of things "

"For its part, the Ministry of Economy, through the Program for the Development of the Software Industry (PROSOFT) and innovation, promotes the adoption of technological tools considered in the 4.0 industry model, through the generation of innovation centers industrial (CII) in various entities in the country such as Aguascalientes, Baja California, Chihuahua, Mexico City, Colima, Jalisco, Nuevo Leon, Queretaro and Tamaulipas ". *https://www.gob.mx/se/articulos/se-lleva-a-cabo-el-evento-industria-4-0retos-para-mexico?idiom=es*. Date of consultation: July 2md, 2018.

[10] It should be noted that little by little this right appears as a vindication of the workers against their employers, giving rise to agreements with the workers concerned or their unions.

use of information technologies. Although there is a great diversity of definitions of the term, there is also some consensus in the sense that it is a concept aimed at emphasizing the genesis and development the industry has had throughout history, indicating that there has been at least three revolutions that have marked the organization of the productive processes in the industries.[11] The first was the industry that used steam to put machines in motion, the second one was the mass production of products, a third one in which electronics and technology would be the basis of its operation, while the fourth revolution is characterized by having an organization of productive processes fully computerized and an intensive and extensive use of the Internet, networks and systems, with a broad connection between systems, production processes and their components.

There are those who consider that an important and characteristic element of Industry 4.0 is the flexibility of the productive processes, as well as the individualization of these processes. Flexibility, because they are not rigid production processes, and its adaptation to new and varied needs would be normal; individualization related to flexibility in that the products would no longer be mass produced and may be subjected to very specific details and characteristics in their manufacture.[12]

On the other hand, in relation to the importance of Industry 4.0, the data seems to show an important growth of the IT industry, which is growing with a high impact on GDP.[13] Also the extensive use of technology in

[11] *Cfr.* Bergeron L., Furet F., Koselleck R. *La época de las revoluciones europeas 1780-1884*, Siglo XXI, Mexico 1976, pp. 8 ff.

[12] Some sites with business information point to a series of more concrete and specific characteristics of Industry 4.0, such as the following: "reconfigurability" as an adaptation to change, digitalization of processes, "smartization" as the learning of other experiences and response to unforeseen situations, cyber physical systems, big data, predictive analytics, "cloud computing" or offering of computer services with the use of the internet, collaborative robotics, augmented reality, artificial vision, additive manufacturing, amongst others; the concepts, terms and ideas, all of them are part of a reality in the new productive processes, against which the law usually seems absent. Cf. Huerta Rodríguez I. "Características y tecnologías de la Industria 4.0 4.0", *http://www.nube.villanett.com/2016/12/01/caracteristicas-industria-4-0/*, Date of consultation: July 3rd, 2018

[13] The use of information technologies in our country (Mexico) dates from the 1970s, however, several factors have created favorable conditions for the growth of the sector: the promotion of the formation of human capital oriented to information technologies: the adoption of small and medium enterprises of computer systems; the rapid growth of the use of electronic communications; and the geographic proximity with the main software consumer of the world (United States). These factors have allowed an accelerated growth of the information technology sector in Mexico. The annual growth average of information technology

production processes is relatively found in some sectors of the economy such as manufacturing and robotic automation processes.

According to information, new technologies implemented in productive processes in the Mexican industry goes up. As it can be read on the official website of the government, Mexico has become the third largest exporter of information technology and the second destination for investment in software; a large exporter of information technology services exceeded only by India and Philippines; in 2014, this industry contributed 4.1 percent of GDP.[14]

As it can be seen, the arrival of Industry 4.0 is a fact, although at different intensities in several countries and even at different speeds within the same country, all of this is having impacts at different levels such as economic, social, political, organizational, business management, etc. However, at this moment, it is interesting to focus on the effects it is having on labor matters.

II. The Effects In General

A first approach to understand the impacts that Industry 4.0 is having, is to ask whether these changes have any implication in the general principles of labor law. The question is pertinent since it could be considered that it is not only a matter of affectations in some specific labor concepts or institutions, but it would be affecting important foundations of labor normative building.

It should be remembered that general principles are basic and fundamental guidelines and ideas on the basis of which a whole legal system or branch of law in particular is founded, constructed and integrated. Particularly, in the case of labor law, its general principles are rooted in its history; they are proof of their aspirations and to a large extent reflect the intention to build a whole normative edifice that embodies a project of social justice. In this sense, the evolution of the industry and with it the production relations intended to be regulated, have come to hinder the concretion of said general principles since the conditions and the context in which we try to apply the labor law have changed.

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services was 6.5% of GDP between 2002 and 2006, while the total of the economy did so at 2.8% for the same period "*Cfr. https: //prosoft.economia.gob. mx / imagenesmaster / Estudios20prosoft / BREF_02.pdf.* Date of consultation: May 18th, 2018.

[14] See: *https://www.gob.mx/se/articulos/conoce-mas-sobre-la-industria-de-las-tecnologias-de-la-informacion-y-la-comunicacion-tics-en-mexico,* Date of consultation: May 4th, 2018

Among these principles and traits historically explained, at the moment we only refer to two of them, one that we could be considered to have a static connotation of labor law referring to the idea that it should permeate everything. On the other hand, it has a dynamic characteristic since it refers to how this legal discipline has to evolve throughout the time. In the first case, there is the idea of considering that work is a right and also a social duty. This "formula" that emerged in the international concert of the middle of the last century means, among other things, that man, as part of a society has rights and obligations implying that he is required to carry out a useful and honest life, but can also claim against that society the security of an existence that respects human dignity. In addition, society must provide men with the opportunity to develop their skills" or, as it can be read in the Charter of the Organization of American States, "... that man has the right to achieve their material well-being and their spiritual development ".[15] In this way, in search for those ideals, work plays a determining role as a means to achieve them. If a society cannot provide sufficient work to achieve those ideals, or is each time less able to do so, this principle will fade away at least in the way it was conceived during the 20th Century. Industry 4.0, in this case, would seem to be a factor that would be distancing labor law from being able to achieve these aspirations, which were part of its initial foundations, not only because of the quantitative reduction of work, but also because of its qualitative modification. Currently, this idea is only outlined, but would require to carry out a rethinking and revision of the labor law from its foundations in this case, in the near future.

Secondly, we have another of the fundamental features attributed to labor law, namely, its "expansive force."[16] Indeed, due to an aspirational vision of a large part of the great labor law specialists of the 20th Century, labor law was seen as an unfinished right, but one that contained the bases and institutions not only to revolutionize the system of sources of law recognized by private law until then, but to allow spreading and increasing the expansion of its recipients, as well as the quality and quantity of recognized rights. Not only were the rules for the interpretation and integration of Law as the principle that, in case of doubt, the most favourable norm should apply to the worker, but also institutions recognized in collective law such as collective bargaining by means of which the labor law showed its solidarity,

15 *Cfr.* De la Cueva M, *El nuevo derecho mexicano del trabajo*, Porrúa, 6th ed., Vol. I, Mexico 1980, p.107 ff.

16 *Cfr.* De la Cueva, *op. cit.* p. 92

classist and vindicating profile, being able through its workers organization to obtain more and better rights for workers from employers as time went by. Today, this nostalgic vision of the rules of work seems far distant. Furthermore, for Industry 4.0, it seems to be a space of frank denial because those rights and benefits that formed the compulsory core between worker and employer do not exist any more, or they are simply there in a different way. Therefore, talking about expansiveness in terms of rights and in terms of its field of application seems to be a contradiction.

The implications of Industry 4.0 go beyond questioning the foundational features and principles of labor law, since they transcend to question if they belong to their basic concepts. So we have that this industry has come to transform the different aspects that traditionally allow to identify, for example, a working relationship; in this case we have that the pattern appears today as a diffuse and plural concept, insofar as it is difficult to identify it even its location in time and space, elements that the substantive law, but above all the adjective law points as necessary conditions to move forward in claiming labor rights. In these situations and for many cases the worker has stopped being the person who was the object of benefits based on his presence and permanence in a work centre; In the same way, the link that traditionally tied an employer with a worker, such subordination in these types of industries assumes significantly different characteristics. Sometimes, the relationship between the parties is established and carried out through the use of information technologies, such as virtual spaces of convergence to give instructions, on the one hand, and receive results, on the other.

This virtual space of encounter escapes, for purposes of its conceptualization, from all the terms and abstractions that labor law historically would have used. However, one of the challenges to be faced in the years to come is try to build a legal category that allows us to recover the need to have an obligational link from labor law, as a premise for the application of the labor legal statute, regardless of all the other factors and objective elements that were necessary to verify its existence.

In this sense and daring to present here a first "sketch" of that necessary and urgent conceptual construction, we need to talk about the existence of a *cyberdination*,[17] as a first line of abstract construction, in which not only

[17] Cyberdination" is a compound word, derived on the one hand from "Cybernetic" in English, "cibernética" in Spanish, the latter term which, according to the Real Academia de la Lengua, indicates a relationship with computer networks and which, according to us, evokes the idea of virtual spaces where today they are way apart from communications in the world; and on the other hand the word "subordination", with which historically, at least in

would try to emphasize the "virtual space" in which services are present today, but also to say that the objective elements of labor relation could be, in the best of cases, only indications or presumptions of the existence of a subordinate work, but where the application of labor standards, current or future, would depend more on the verification of the existence of the tangible effects of the relationship between the parties. On the other hand, these tangible effects would be the need that a party states its requirement, need or offer of services and the other part shows the attention and satisfaction of those needs. The satisfaction of these matching needs in a virtual space would allow us to try to build a legal framework that translates into rights and obligations the State would have to recognize and enforce.

This situation and complex conceptual landscape is particularly important for the exercise of workers' collective rights, since the legal regime of the trade unions, from their formal birth, and their internal and external performance have been based on the demonstrable and tangible existence of workers, understood in their traditional meaning, and as they are recognized in the labor legislation. In such a way, when one or several of the elements of the worker concept are not present, the union lacks the basic and primary "cell" that gives reason to its legal existence. Industry 4.0 could be contributing to the unnecessary existence of the union as a defender and promoter of conditions and benefits for workers whose absence is greater.

Likewise, we must remember that in legal matters one of the obligations sources between individuals is the consent between them. In the concrete case of labor relations, the legal framework of "consent" has had an interesting evolution going from considering and recognizing that there is consent when it has been expressed in a determined legal act such as an employment contract; to recognize, in the last quarter of the last century, the existence of a tacit and implicit consent when there is evidence that the parties behave as if there was an employment contract. Today we could be in a third stage in the evolution of "consent" in labor matters, accepting that there may be other ways and means of expressing it, for example by electronic means.[18]This situation has a number of implications not only in

Mexico since 1970, the link that ties a worker to an employer with regard to work has been identified, and has served to give rights and obligations in labor matter.

[18] Some authors rightly point out that among the many things that have changed with the irruption of ICT and the internet is the way in which consent can be presented between the parties in a legal act: "In our country, the formal legal recognition of this digital environment occurred from the moment in which the Código Civil para el Distrito Federal en Materia Común was reformed and for the whole republic in federal matters, the Código de

the case of creditors and debtors in labor matters, but also in the defence of workers' rights by a union, since a contingent of workers is being fed in an accelerated manner, people whose "formalization" as a creditor of rights, did not happen and was not given by the traditional mechanisms to express their consent and that of their counterpart. In this way, what we could call "virtual consent", as a source of obligations, seems today an exotic idea against which the legal world tries to frame and rescue for itself, while for trade unions, they find it non-existent or distant.

III. The Effects on Labor Rights

The effects that industry 4.0 has been having in various fields can also be identified within the traditional fields in which labor law has been divided, regarding individual and collective matters.

1. *Effects on individual rights*

Most of the pieces for the construction of the basic concepts of "individual labor right" seem to be destined to change, allowing workers to enter or leave the job. Nowadays we are witnessing the growing emergence of labor relations with special characteristics that come to question the traditional characteristics on the basis of which labor law was built.[19]

For example, we have several impacts on access to employment since there have been important changes in the types of individual contracts. In fact, it must be remembered that at different times in the evolution of labor standards, access to employment was formalized through the signing of a work contract, in such a way that a contracting scheme was developed, giving rise to types of individual contracts. From their origins these new types of contracts got away from the basic rules of contracts in civil matters (au-

Comercio, the Código Federal de Procedimientos Civilies and even the Ley Federal de Protección al Consumidor of 29 May 2000. The principle introduced by this reform was that the consent can be expressed in the traditional way (verbal or written) and in a new form that is by electronic means ". Cf. Rostro J.L. *El derecho del trabajo en la era de internet*, JP, SA, Mexico 2013, p. 24

[19] Some of the characteristics of labor relations in this new context are that they are temporary, interoperable, there is ubiquity, cross-border, multidirectional, instantaneous, intangibility, electronic signatures are common, sometimes there is an electronic convergence, etc. Cfr. Rostro, J.L. Op. Cit. p. 34.

tonomy of the will of the parties for example), but there was a benefit allowing to have several contractual modalities that established as a priority the permanence of workers in their jobs. So in most Latin American countries, for example, the labor codes included several types of individual contracts, in which the main modality would be hiring for an indefinite period and only by exception some other modalities; but in all cases the guideline for the design of the contractual model was the time and duration of labor relations.

All this conception and regulation of the permanence of labor relations and the linking workers to companies allowed to develop such important theories in the specialized doctrine as stability in employment, which allowed the construction of an entire conceptual apparatus as well as legal institutions aimed at providing workers with rights and expectations of the continuity of the employment relationship and with it the permanence of the worker in a work centre, which were the foundations of the above mentioned rights. This situation is important for the trade union organization, since the unions built throughout the 20th Century, legal and political structures,contained precisely the ideal of a stable and permanent worker in work centres, while today Industry 4.0 shows how the hiring or dismissal of its workers is part of their "normality", thus taking away from the union one of the factors that allowed its existence.

Today we have different opinions that point out that apparently we are evolving towards a new concept of stability in employment, since this is more linked to the so-called "employability" of workers; that is the permanence of a worker in his job is closer to a certain idea of its "relevance" in the productive processes, where flexibility, for example in terms of individual contracting, is not necessarily seen as something negative.[20] The design of the union model had employment stability as a key element in the recruitment of supporters, followers and affiliates, because the union workers struggle had its core and recipients precisely in the permanent workers.

Likewise, based on the analysis of the permanence and duration regulations of labor relations in various work sectors, it seems that progress is being made towards a new vision of stability in employment; perhaps, no longer located in a specific work centre, but in a stability centred in the development of the worker in a certain field of the industry and in the whole

[20] *Cfr.* Padulla Martín *"¿Qué significa trabajo estable en el siglo XXI?, http://staffingamericalatina.com/que-significa-trabajo-estable-en-el-siglo-xxi/,* Date of consultation: 10 April 2018.

economy. These guarantees and rights are no longer tied to a specific company.

It should be noticed that since the eighties of the last century, this model of individual hiring has been "flexibilized" to expand the catalogue of contractual modalities, giving rise to figures that are little by little going further away from the general rule of hiring for an indefinite term. This situation is important because, the starting point for this was, and it is still today, that individual recruitment was basically on the bases of undetermined period which would allow workers could, given their long stay in the workplace, establish strategies for action and defence at long term. In fact, recent developments in the legal models of individual hiring in several countries are beginning to show changes as the traditional modalities of individual hiring seem to be increasingly insufficient to meet the companies' needs. Although at the time being there are no studies showing the extent to which the diversification in the individual contracting models has affected the unions, the truth is that the "attractiveness" for both parties, worker and union, decreases if it is a person with a fixed-term contract.

In Mexico, the 2012 reforms in terms of individual contracting can be seen as a sample of these changes. Indeed, it must be remembered that the old model that privileged hiring for an indefinite period with its limited exceptions of a definite term, gave rise to the expansion of the contractual catalogue, now allowing contracts to be subject to a trial period or an initial training period, apart from the possible contract for hours and seasonal hiring, also having recognized the figure of subcontracting or "outsourcing", all of this putting behind the old principle of stability in employment.

It is also important to notice the changes in the object of individual contracts. As we already know, one of the central issues that must be clearly and accurately stated in an individual contract are the tasks the worker will perform; For instance, we must remember that in Mexico the current Article 20 states that among the data a work contract should contain, are the tasks to be performed described as accurately as possible, as the law says. Throughout the years there have been many controversies to know if what had been ordered by the employer was or not expressly indicated in the employment contract. It is also important to mention, regarding this point that in the 2012 reform to the Federal Labor Law a possible solution was incorporated to establish in the new Article 56-bis that workers may perform duties or tasks related or complementary to their main work. So a great part of trade unions' performance focuses on defending that the tasks assigned to workers, either directly and explicitly in their individual contracts, or in-

directly in the tabulators, job catalogues, procedure manuals and any other document, cannot be modified or altered. It is so to the extent that labor legislation and jurisprudence have considered that a unilateral modification of the tasks agreed with a worker can be equal to an unjustified dismissal and the different consequences this entails. However, this historical way of approaching the definition of the tasks that a worker must carry out will change with Industry 4.0, it seems that workers whose tasks and functions are less rigid and who are more flexible are required, so that workers have a wider margin of adaptation to work processes.

On the other hand, related to workers fringe benefits, it must be remembered that a good part of them would be associated with an employment relationship , where the worker was the beneficiary. These benefits were designed from an employment relationship model in which the seniority and permanence of the employment relationship were important and protected not only by labor regulations, but by the same economic relationships; in this way some concepts associated with seniority made sense (such as premiums, bonuses, compensations, vacations, etc.). Likewise, the length of time of physical stay of workers in the workplace is still today an element that allows quantifying benefits for workers, that is the case of salary and overtime, for example. In Industry 4.0 things seem to move in another direction and with another logic where premises like these are destined to change. If indefinite permanence of workers as a basis of their labor relation or the continued presence in a determined place disappear or vary, the rights associated with this new relationship would also change, as shown by some case studies in some countries where issues such as training and specialization of workers take a particular and significant relevance, not only for companies, which seek a more skilled workforce, but for the workers themselves who can compete in better conditions in the new labor markets.[21] In that sense, the union struggle to achieve certain fringe benefits would assume a different character in Industry 4.0 when changing said benefits and aspirations and also with the arrival of new ones.

In other topics such as the working day and the duration of work, Industry 4.0 has a new way of approaching them. In this aspect, the strategy of trade unions had been historically centred in the reduction of working

[21] *Cfr.* Economía digital: su impacto sobre las condiciones de trabajo y empleo, , *https://universoabierto.org/2018/02/08/economia-digital-su-impacto-sobre-las-condiciones-de-trabajo-y-empleo/*. This work is relevant to the extent that it is a multidisciplinary analysis resulting from a research carried out in European companies in the technology sector, particularly in Spain, and it seeks to identify the transformations experienced by employment and work conditions. Date of consultation: 11 April 2018.

hours. In fact, many collective contracts or even legislations which were able to diminish the maximum limits of working hours represented a union triumph. In this sense, the construction of a working day concept and the protections and rights associated with it, would be irrelevant in Industry 4.0, where these concepts would be blurring to be transformed into a new and diverse conception of working hours and work place.

Other issues related to the above mentioned which are part of wide-ranging debates in other latitudes, such as Spain and France, and hardly addressed in Latin America, are those related to the right to disconnection[22] and the right to conciliation between family life and professional life.[23] In the case of Mexico, the inclusion of telework in the reform of the Federal Labor Law of 2012 within the chapter related to any kind of work done at worker's home, for example 'home office', (article 311) is presented as a first attempt to approach new ways of work at distance using new technologies which industry 4.0 takes advantage of. Once again, unions' participation is absent trying to understand and protect the new teleworkers through collective bargaining for example.

On the other hand, it is also interesting to notice the impacts taking place in the rules to finish the employment relationship. In fact, a good part of the studies on Industry 4.0 indicates that the extensive use of robots and computers will result in the elimination of jobs.[24]

2. *Effects on collective rights*

The effects of Industry 4.0 have not only been given in trade union matters from the evolution of individual rights, but also in other manifes-

[22] Based on the Law 2016-1088 of August 2016, in force in 2017 in France, the right of workers to "disconnect" from mobile devices in order to fully respect their rest time and vacations was recognized, under certain modalities.

[23] One of the countries in which the legislation has been advancing on this issue is Spain, where reforms of the last years (for example, Royal Decree Law 3/2012) have incorporated new rules, for example, regarding breastfeeding permission, reduction of working hours, holidays in case of maternity, etc.

[24] According to studies such as the one carried out by the World Economic Forum in early 2016 (Future of employment), it is estimated that between 2015 and 2020 automation and digitalization could lead to the loss of 7.1 million jobs, especially of administrative type, although it would also imply the creation of two million other jobs in areas such as computing, engineering and mathematics. Cfr. Manufacturing "El nuevo empleo de la revolución 4.0", *http://www.manufactura.mx/industria/2018/01/24/el-nueva-empleo-de-la-revolucion-40*, Date of consultation: July 4th, 2018

tations of labor relations. As in other areas of labor law, the impacts that Industry 4.0 is having in terms of collective rights are undeniable. It must be remembered that the organization of workers and the construction of a legal framework that protects it, arose also having a model of production relations in which certain factors took place, such as the concentration of a large number of workers at a given time and place that allowed to "centralize" the defence of their interests. Union membership was designed from exclusivity in the union's contractual commitments ,in the procedures of entry into the company (for example: the so-called exclusion clauses via), union patrimony was basically and predominantly fed on members quotas as well as on the company's contributions, based on the number of workers of the union. Likewise, the physical and geographical location of workers in a city, province or country determined a national legal framework appropriate to that condition.

Today, Industry 4.0 seems to go in the opposite direction to those premises from which the union concept was constructed. Today phenomena such as decentralization and delocalization have a superlative degree in this industry. In addition to the drastic reduction of the workforce, workers may be linked to a productive process but in different physical spaces, even remotely from each other, so the traditional tasks and role of the union get complicated. Now, in this interconnected world, in the so-called "new knowledge economy" there are characteristics such as the fact that "traditional workers" are displaced.

We must remember that the workers' union organization emerged with the aim of dignifying and improving the living conditions and particularly in the work of the workers, and that aspiration continues in spite of the evolution of the industry. Therefore, the existence and *raison d'être* of unions remain valid. Any place where there are people who lend their efforts to others in exchange for an income that allows them to survive; in that place, their organization and defence, as well as the rules for them are necessary.

The union concentrates its strength largely from the premise that workers, human beings, are necessary for the development of productive processes, and this is why, from the beginning of processes where the human factor is part of, either partially or totally, the union seems to empty itself on the interests it sponsors.

Collective rights, unionisation, collective bargaining and strike were designed with the premise of the existence of certain types of employment relationships and certain types of actors and parties and we must say all of this is changing. Obviously if the premises of the scheme built for both

organization, action and defence of the workers change it will have effects, depending on its extent. Some examples identified in North American and European experiences show how these "new workers" are moving on, looking for new ways of organization and defence,[25] doing it creatively but still incipiently; or that they can even be identified coexisting in old and new forms of representation and collective organization of workers.[26] Likewise, some experts have said that these new workers "... do not have elements of reference that will help them to join others in order to organize and act in defence of their interests", it means that they are people who suffer from a "lack of work identity",[27] and so the typical tasks of organization and union actions are difficult.

In addition to the above considerations, for Mexican history of unionism it is worth adding one related to its birth and evolution. Something that has been said several times is that a union is mostly part of the inheritance of a gestated political model in the first decades of the last century; it is a union model in which normal and traditional concerns about the defence of its members are undoubtedly present, but its role in terms of its "political significance"[28] is also present, especially since the Mexican Revolution, at the beginning of the 20th Century where the representations of the workers would play a role not only professionally, but also politically in the construction of Mexico, in the last century.

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[25] "If the concept of worker changes because of the change in the way of performing the productive performance typical of a time of digitalization, it seems clear that it is also necessary to reflect on the forms or tool of protection or self-defence of new workers, especially the development of the forms of organization of the same in the new digital platforms, the space and the new contents of the collective negotiation and the way to exercise the right to strike in the digital era. Movements such as Alt-Labor in the United States, Verdi's German experience as a freelancers' defence organization, or the creation of a website like Turkopticon for Amazon Mechanical Turk workers, can serve as an example of new forms of organization and defence of this new class of workers, although it is really complicated to do it for the individualism and the lack of a solid professional identity present in almost all of them ". See. Digital Economy, *op. cit.*

[26] *Cfr.* Vandaele K. "Will trade unions survive in the platform economy? Emerging patterns of platform workers' collective voice and representation in Europe, working paper 2018.05, European Trade Union Institute, ETUI, Brussels 2018, p. 18. Cf. Johnston H., Land-Kazlauskas C. "Organizing on-demand: representation, voice, and collective bargaining in the gig economy", Conditions of work and employment series no. 94, ILO, Geneva 2018, p. 7.

[27] *Cfr.* Rodríguez Luz, "Sindicalismo y revolución tecnológica", *https://www.infolibre.es/noticias/luces_rojas/2018/02/28/sindicalismo_revolucion_tecnologica_77634_112 1.html*, Date of consultation: May 18th, 2018."

[28] *Cfr.* Trejo Delarbre R. *op. cit*. p. 155.

This political role in many occasions would be the most relevant and of utmost importance in its performance. Undoubtedly, this is an element that plays an important role in an integral analysis of Mexican unionism and in particular its position and attitude towards phenomena such as Industry 4.0, since many times their strategies were determined, or at least influenced by its relation with the political power in general and particularly by the government in turn, more than in its performance as defenders of its members.

Industry 4.0 could well be seen as a stage in the economic and productive development of a country, which has different manifestations and modalities which would be diverse not necessarily homogeneous in the country depending on the different sectors of the economy, their degree of implementation of the different types of industries in certain sectors and also the position of the unions, if they exist. For example, some authors point out that in the period of the so-called "stabilizing development" that allowed inflationary stability, sustained growth and control of economic variables at the beginning of the second half of the last century, among some of the characteristics of labor relations we could find the State guardianship of workers, their organizational control, limited protection of employment and salary, and little intervention by the unions in technological aspects and in the organization of work.[29] For example, in the 1980s in Mexico we experienced an important technological change concentrated in industries of the manufacturing sector, especially the larger companies, basically exporters. In this panorama, the "high-technology electronic sector"[30] stands out. It should be remembered that in those years the need for "update" in the labor legislation was at the centre of the debate, the business sector pointed out the need to modify the labor legislation as a condition to modernize the national economy.[31] This sector had already claimed it several times before. So, since then, the changes that would have been proposed and adopted would be largely influenced by that model of labor relations prevailing in Mexico, so as a consequence, the position and attitude of the unions

[29] *Cfr.* De la Garza, *Reestructuración productiva y respuesta sindical en México*, UNAM.IIE, UNAM, Mexico, 1993, p. 74.

[30] *Cfr.* De la Garza, *op. cit.* p. 120.

[31] From the recognition of 'incompatibilities' between the old model of labor relations inherited from the Revolution and the demands of economic modernization launched by the last two administrations (it refers to the eighties), the debate on that occasion was oriented to clarify those aspects of current legislation - and the practice that falls on it. That they should undergo modifications aimed at overcoming them. " *Cfr.* Bensusán G. and García C. (Coord.) *Modernidad y legislación laboral*; Mexico, Ebert Stiftung Foundation-UAM, 1989, p. 10.

towards Industry 4.0 is, to a large extent, determined or at least influenced by that model.

Regarding collective bargaining, the effects of Industry 4.0 should be identified, at least, from two points of view. On the one hand, the negotiation aspects of collective agreements, which are the process and mechanisms of collective bargaining; on the other hand, the impacts on the merits of the contracting, that is the contents and themes of collective bargaining itself.

With regard to the aspects of form, it should be remembered that in the Mexican labor legislation, as it happens in other countries,a specific regulation on the negotiation process of a collective contract so as how to negotiate, where to negotiate, what principles and rules to respect in the development of a negotiation is not included. These are questions that have no answer in the current legal framework. This situation could change in the future because Mexico has ratified Convention 98 of the International Labour Organization (ILO). However, it should be noted that administrative labor authorities, both at the federal level (Ministry of Labor and Social Welfare) and at the domestic one (labor secretaries in each State of the Republic), have generic competences to intervene in the development of collective negotiations. These competences have more to do with the role of facilitators that must be assumed by "conciliatory" officials in these public offices; Their intervention in these cases is not necessarily bonding nor mandatory for the parties of the negotiation because it is not provided with this character in the administrative legislation that regulates it.

However, in practice we can find a wide diversity on the form and modalities assumed by this government intervention, from a discreet participation where only the parties are commanded to carry out their collective negotiation process, until real interventions pressing the parties to reach an agreement. This scenario constantly leads to wrong interpretations and misunderstandings since there is no broad and clear regulation on the role to be played by the authorities in collective bargaining. The above mentioned could be eliminated by incorporating a minimum legal framework on the subject into the labor legislation. In that sense, Industry 4.0 does not seem to influence a change, at least for now, in real or formal collective bargaining procedures.

Regarding the issues involved in collective bargaining, the Federal Labor Law in Mexico states in its Article 391 that a collective agreement may contain several topics, such as its field and scope of application, working days, rest days, and vacations, as well as training and joint committees the parties wish to integrate, etc. This thematic list is enunciative and allows

the parties to add other topics if they agree. Based on this, some collective agreements, over the years, and in very specific sectors of economic activity have been enriching topics addressed by collective agreements and in many cases significantly expanding the rights that the labor legislation establishes for workers. However, it should be noted that most of the set of obligations contained in a collective contract is intended and benefits the worker who is part of a labor relationship or a work contract understood and identified in a traditional way. That is, with a working day, a place of ascription, etc., so that when it comes to people or workers who do not meet the "normal" characteristics of a worker, the collective contract openly shows its limitations, and such is the case of Industry 4.0, where the collective contract, as a bilateral legal act and recognized as a formal source of labor law, seems inoperative. This has not prevented unions from trying to incorporate rights for workers who escape the traditional way in which they work through collective bargaining in exceptional cases.[32]

In the recent past and among other things, the flexibility of collective agreements has been determined by the strategy the union has assumed when it has faced these processes (reaching agreements or rejecting that possibility)[33]; in this case, although there could be a generalized perception of acceptance of the productive processes adjustments, based on the majority corporate union tradition in the country, we would have to see the casuistry. For example, some studies show how in the 1980's there was an important process of "flexibilization", with different degrees of intensity of collective contracts in sectors such as the automotive industry and the maquila export. In these cases the unions accepted, sometimes without any participation, changes in the execution of the workers' everyday labor relation (schedules, subcontracting, etc.). There were parastatal cases such as PEMEX and Aeromexico with limited or without any participation of the

[32] Some experts point out, when referring to the Spanish case, that one of the topics that would be destined to be transformed is that related to labor training (capacity building and training in Mexico) as an obligation at the employer's expense, and usually part of the subjects of the collective bargaining, as it is very likely that it will no longer be limited to providing technical knowledge and professional skills but would very likely expand to information and communication techniques. Cf. García Muñoz M, Salvador Pérez F. "El derecho a la formación laboral en nuevas tecnologías: una aproximación en el ordenamiento español", International and Comparative Review of Labor Relations and Employment Law, vol.6, no.1, January–March 2018. At *http://ejcls.adapt.it/index.php/rlde_adapt/issue/view/57:* Date of consultation: July 5th, 2018.

[33] *Cfr.* De la Garza, *op. cit.* p.123

unions in the definition and possible agreement on the implementation of productive processes changes.[34]

In any case, the themes and contents of collective agreements will have to be impacted by Industry 4.0 and possibly new issues such as workers' health due to the intensive use of new technologies will lead to new claims in the workplace, regardless of the impacts on social security. Throughout this process of change and conception of what a collective contract is and what it can or should contain, the participation of unions will be crucial and determinant, as the union becomes aware of its new role in production processes and the relationships stemming from them.[35]

Finally, it should be noted that in terms of strike, it is in full evolution, in a stage of implementation of Industry 4.0, so its analysis may be ambivalent. On the one hand, the conception of this important human right, expression of the collective action seems to disappear when having difficulties to be carried out in a traditional context of work source, while on the other hand, the very essence of the strike, as a legalized act of defence by the workers translated into the interruption of work, could have another meaning and other ways of manifesting in a context of high technology.

IV. Conclusions

Unionism and unions have been facing a crisis for some time,[36] not only because of the significant decline in the number of workers within unions and for their lack of influence in determining the rights and benefits of workers, but also because they are far distant from the foundation they are supposed

[34] *Cfr.* De la Garza E. "El nuevo patrón de relaciones laborales...", *op. cit*. p.19.

[35] For some authors collective bargaining in the context of industry 4.0 could help to articulate mechanisms that allow the implementation of new production processes, trying to achieve the least impact on workers. *Cfr*. Moreno Díaz J.M. "La negociación colectiva como medio fundamental de reconocimiento y defensa de las nuevas realidades derivadas de la industria 4.0", *Revista Internacional y Comparada de Relaciones Laborales y Derecho del Empleo*, vol. 6, no.1, January–March 2018, *file: / //C:/Users/Carlos%20Reynoso/Downloads/557-1159-1-PB.pdf;* Date of consultation: July 5th, 2018.

[36] Since 1989 one of the most outstanding Latin American workers such as Dr. Héctor Hugo Barbagelata spoke of technological change as one of the causes of the crisis of workers' organizations, which was translating into the inability of unions to "adjust to the new times and give new proposals for the solution of problems ". Cf. X Congreso Iberoamericano de Derecho del trabajo y de la Seguridad Social (Anales), Panel: The Future of Labor Law, Montevideo 1989, p. 28. Cf. Dávalos J. (Coord.), *El derecho del trabajo ante el siglo*, Conferencias magistrales en homenaje al Mtro. Mozart Víctor Russomano, UNAM, Mexico 1989.

to be in. The arrival of technology and in particular Industry 4.0 has come to denature the unions, since Industry 4.0 places unions far away and distant from the context, premises and concepts from which its role was built during the 20th Century in production relations systems in the world. Some experts say this could explain to some extent its delayed reaction before the phenomenon of work transformation.[37] Some other experts who explain the situation of contemporary labor movements refer to their current weakness to the fact that the changes brought in many economies in recent years privilege individualism in the employment relationship which goes to the detriment of their own collective and even natural dimension at other times.[38]

Faced with this situation, there are several challenges ahead. Now we note two of them. One is in the conceptual field, as it was already noted in this work, many of the basic concepts labor law was born with and consolidated during the 20th Century were among others the employer, work, subordination, work contract, collective bargaining agreement, internal labor regulations, strike. These were at the same time concepts and foundations on which the union of workers would build their development, and today in a context of radical changes, as is the case of Industry 4.0, these concepts will have to be revised, revisited and eventually modified or replaced by new ways of thinking about the organization and defence of workers. Indeed, the responses which unions have generally offered in this context show lack of new and creative conceptual proposals from which defence strategies could be articulated.

Another challenge has to do with the principles that justified and gave birth to the labor law itself, highlighting among them the protective principle. It should be remembered that in the 19th and early 20th Centuries labor legislation found one of its most important justifications for birth and consolidation, since its institutions and concepts appeared as an act of rebellion against the omnipresent private right in which human and social aspects were not part of its construction and interpretation. In this context, labor law was a way to incorporate inequities and inequalities into legal

[37] *Cfr.* Raso Delgue J. " América Latina: el impacto de las tecnologías en el empleo y las reformas laborales", *Revista Internacional y Comparada de Relaciones laborales y Derecho del Empleo*, Vol. 6, no. 1, January-March 2018, p. 13. *http://ejcls.adapt.it/index.php/rlde_adapt/issue/view/57* Date of consultation: July 5th, 2018.

[38] *Cfr.* Alburquerque R. "El sindicalismo contemporáneo ante la globalización y la revolución tecnológica"; *https://rafaelalburquerque.com/2017/02/14/el-sindicalismo-contemporaneo-ante-la-globalizacion-y-la-revolucion-tecnologica/ and the technological revolution*, Date of consultation: July 5th, 2018.

norms, as part of a political and even philosophical project that nowadays seems to be forgotten.

For some sectors, the eventual elimination of jobs that Industry 4.0 irremediably seems to bring goes hand in hand with the creation of new positions but with other characteristics and needs: technical, electronics, robotics, Internet, etc. Therefore, the role of the union would have to be revitalized and renewed having to meet the new needs and demands of a new generation of workers, in such a way that the actions of the trade unions do not disappear but will be transformed into new ways of defending their union members. It implies a deep reflection within syndicalism about its present and future role. This leads to the idea that unions in the new context of Industry 4.0 will have a renewed agenda, with issues linked for example to safety and hygiene at work, vocational training, working hours, salary, etc.

In the need to reinvent themselves, unions will have to look for new strategies to struggle. There are already those who talk about a "virtual trade unionism" to refer to strategies of organization and protest with the use of new information technologies.[39]

But the emergence of new technologies and their impacts transcend the workplace and go beyond to areas such as education, this will lead to the need of designing public educational policies that address workers and professionals training for whom their participation in the productive processes would also be different and efficient.

More widely, among the proposals that could be made to various actors, it is an example that the Mexican State, starting with the Federal Government, in coordination with the Governments of the States of the Republic, should include iIndustry 4.0 in the design and implementation of a future labor policy as part of new things to come in the labor market and in the national industry in the short and medium term. In spite of efforts made in

[39] New ways of defending workers have been appearing in recent years, for example, "raiders for rights" in some European cities, where they are distributors of goods that have even begun to be organized in a virtual way with the use of platforms to claim more and better protections and rights.

On the other hand it should be noted that at international level there are already some demonstrations that show how some trade union organizations are analyzing and discussing their position in the face of the changes implied by Industry 4.0, a great part of them claiming the need for trade unions to be taken in account, at company level, at regional level, at public policies level, etc. by making decisions about the implementation of these changes in production processes. An example of this are the agreements and action strategy adopted at the World Conference of the Industriall Global Union on Industry 4.0. Recently, http://www.industriall-union.org/es/la-industriall-establece-estrategias-para-industria-40.

that sense, they do not seem to be enough due to the implications that this topic will probably have in the years to come. Likewise, it is urgent to take this issue as part of the reflections and challenges that trade unionism will have to face in the near future. It is also important that the academy goes deeper into the multidisciplinary studies that can shed light on the impact of Industry 4.0 in Mexico providing more comprehensive information on the subject, not only to expand their knowledge but also to offer elements to support public policies.

As it can be seen, the challenges posed by Industry 4.0 are great for the whole society, but in particular for actors of the world of work such as trade unions, who urgently need to move forward reflecting over strategies that allow them to understand and creatively face these challenges as their subsistence lies in this.

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