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The Sixth Industrial Revolution: INDUSTRY 6.0. The "Wise Anthropocentric Revolution"

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Abstract

Industry has benefited from qualitative advancements which have sometimes been so ingrained in a certain period and have had such an overwhelming impact that we have dubbed them "Revolutions". An Industrial Revolution is considered a major turning point in world history because it impacted almost every aspect of daily life across the world. Industrialization changed all sectors of the society and led to many inventions in history. The first three Industrial Revolutions as historically been developed are reviewed briefly. The last 20 years many difficult problems have come upon the world. During this short time three new Industrial Revolutions have emerged namely: INDUSTRY 3.5, INDUSTRY 4.0 and INDUSTRY 5.0.The problems of the world instead of been solved have been getting more in numbers and even more complicated. The COVID-19 pandemic has created a new difficult situation for the whole planet. The need to turn to anthropocentric solutions are presented and analyzed. A new Industrial Revolution is proposed. It is the Sixth Industrial Revolution, INDUSTRY 6.0. "It is named the Wise Anthropocentric Revolution". The first mathematical concepts are given and explained. The use of the Edge Intelligence is proposed as a tool to address problems of INDUSTRY 6.0. Future research directions are provided.

1. Introduction

Technological changes have been going on for thousands of years since life had appeared on this planet. They are called "Civilizations." They have been many "Civilizations" throughout the centuries around the whole world. The "Industrial Revolution" is a recent phenomenon, about four centuries old. This has made "modern human" a qualitatively different animal from our ancestors [1-3]. "Revolutions" are the great turning points of history. In political science, a "revolution" is a fundamental and relatively sudden change in political power and political organization [2]. In a more scientific form, a "revolution" is a tumultuous and transformative event or a series of specific events and actions that attempt to change a nation, a region or society, an industry and lately the business world's infrastructure [4]. However, a "Revolution" does not last for long periods of time. Nevertheless, from the ealry-1700s onwards, all kind of scientific revolutionary change has been referred to as "Industrial Revolution". However, some historians say this term is misleading, as the scientific change took place over a long period of time and so shouldn't be

called a "revolution". Indeed, this term does not fit very well on various situations such is the manufacturing, health, business, and science in general. In fact, revolutions vary in their motives and their aims. Granted, in the case of "Industrial" the term Revolution has extensively been used, many times not as appropriately as prudent and in some times misleading.

Today, most people believe that only four (4) industrial revolutions have taken place in recent human history. Originally called First, Second, Third and Fourth Industrial Revolutions. Unfortunately, this is not true. The Fourth Industrial Revolution, for some reasons that will be explained in the next section, received a new name: INDUSTRY 4.0. Then we have INDUSTRY 1.0, INDUSTRY 2.0, INDUSTRY 3.0, and INDUSTRY 4.0 respectively for the four I.R.s Since the name INDUSTRY 4.0 appeared on the scientific and business communities two more I.R.s have emerged: INDUSTRY 3.5 and INDUSTRY 5.0. Lately to the surprise of many people INDUSTRY 6.0 is starting to show its concepts and characteristics on the horizon. This new Industrial Revolution the Sixth I.R. with the old names or INDUSTRY 6.0 with the new numeric name. It will also have the specification name the "Wise Anthropocentric Revolution".

2. A critical short historical overview of all previous industrial revolutions

No one denies that all Industrial Revolutions, the AI field, and all scientific developments depend heavily on innovations. Innovations are welcome and desired. No scientist, engineer, academician, politician, entrepreneur, top manager, professional, association official, no economic theorist ever comes out openly against them. Those involved in and affected by new ideas in these institutions will also constantly affirm and re-affirm their readiness to innovate. However, they are not aware of the fact that any innovation has two sides of the same coin: constructive and destructive innovation. The Education and research communities totally disregards this very fundamental fact. Any innovation depends on who is producing it, and then by whom and for which purpose is used. For example, nuclear energy is a positive constructive innovation when used to produce clean energy for the good benefit of the society. However, when it is used in developing nuclear weapons that kills thousands of innocent people, this is a "destructive innovation". Similarly, the airplane is a wonderful wise and constructive innovation when is used for peaceful purposes. However, the military airplanes that carry destructive bombs that are killing innocent people, cannot be considered a useful and constructive innovation. Another example is all innovations been introduced to farming and agriculture practices. The benefits are many. But have we carefully studied all their negative effects to our health? I am afraid not. It is very important to keep this distinction between constructive and destructive innovations.

A paper by this author, [5] presents an extensive critical and scientific overview of all industrial revolutions been realized till today. In the introduction, we saw that despite most people are familiar with the four I.R., today there are two more been realized: INDUSTRY 3.5 and INDUSTRY 5.0.Both have not attracted the proper attention from the Society. In the introduction a short analysis of all of them is provided. However, a little information on each of the industrial revolutions, will provide us the necessity for proposing the Sixth Industrial Revolution: INDUSTRY 6.0: the "Wise Anthropocentric Revolution".

2.1 The first Industrial Revolution- INDUSTRY 1.0

The precise start and end of the First Industrial Revolution is still debated among historians, as is the pace of economic and social changes. Nevertheless, by most, the First Industrial Revolution began in the 18th century using steam power and mechanization of production. Eric Hobsbawm [9] held that the Industrial Revolution began in Britain in the 1780s and was not fully felt until the 1830s or 1840s, while T. S. Ashton [1] held that it occurred roughly between 1760 and 1830, while some others put it in the period from about 1740 to sometime between 1820 and 1840 [10].The First Industrial Revolution, was the transition to new manufacturing processes in Europe, and the United States. This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, the increasing use of steam power and waterpower, the development of machine tools and the rise of the mechanized factory system.

2.2 The second Industrial Revolution-INDUSTRY 2.0

However, an economic recession occurred from the late 1820s to the early 1840s when the adoption of the original innovations of the First Industrial Revolution. The Second Industrial Revolution, began in the 19th century through the discovery of electricity, gas, oil, and assembly line production using new technologies. Again, people disagree when it really started. Some put the starting in 1840 while some others in 1830.Henry Ford carried over these principles into automobile production and drastically altered it in the process. While before one station assembled an entire automobile, now the vehicles were produced in partial steps on the conveyor belt - significantly faster and at lower cost. This revolution resulted in the creation of the internal combustion engine that started to reach its full potential. Other important points of the second industrial revolution were the development of steel demand, chemical synthesis, and methods of communication such as the telegraph and the telephone.

2.3 The Third Industrial Revolution-INDUSTRY 3.0

However Another century passes, and we bear witness to the Third Industrial Revolution. The start of the Third Industrial Revolution is again debated. It certainly began after 1930 through partial automation using memory-programmable controls and computers. Since the introduction of these technologies, an entire production process can be automated without any human assistance. Known examples of this are robots that perform programmed sequences without human intervention. Another example is the automated landing of an airplane without the assistance of the pilot. The third industrial revolution brought semiconductors, mainframe computing, personal computing, and the Internet—the digital revolution. Things that used to be analog moved to digital technologies, like an old television you used to tune in with an antenna (analog) being replaced by an Internet-connected tablet that lets you stream movies (digital). The move from analog electronic and mechanical devices to pervasive digital technology dramatically disrupted industries, especially global communications, and energy. Electronics and information technology began to automate production and take supply chains global. The sharing economy is also explored as a crucial element of the Third Industrial Revolution. No one can say if INDUSTRY 3.0 has been ended. Some believe that even today there are innovations that are upgrading and revising original innovations that have been associated with the third industrial revolution.

2.4 INDUSTRY 3.5

Industry 3.5? Why not go directly to Industry 4.0? The problems and questions start to be raised when we move from INDUSTRY 3.0 to INDUSTRY 4.0 (see below) in Europe and USA. This transition has a lot of parameters and variables that needs serious attention. The paradigm of production and manufacturing system is shifting. The third revolution brought forth the rise of electronics, telecommunications and, of course, computers. In the same period the WWII was going on, the nuclear power, and the space race between the superpowers was on full scale. This is the reason that I personally put the beginning of the Third Industrial Revolution in the early 1930s. With the rapid development of the Internet and intelligent technologies, industrial applications integrating electronic networks, the cloud, and the use of intelligent devices are becoming increasingly prevalent. Leading companies of the West are all competing for dominance of all industrial value chains in the world. All these were leading to the Fourth I.R., INDUSTRY 4.0 (see below).

However, the countries of Asia and especially Taiwan could not keep up with this pace. To overcome these difficulties, they introduced INDUSTRY 3.5. Unlike the manufacturing system of INDUSTRY 3.0 in which mass production remains as the main strategy, INDUSTRY 4.0 is built upon the Cyber-Physical System (CPS), Systems of Systems (SoS). Countries not in the West, in which the infrastructures of industry were not well developed as the leading countries of the West. Not been able to take advantage of the upcoming INDUSTRY 4.0, they moved separately and developed INDUSTRY 3.5 in the early of 1980s [16-17].

This has become more evident with the collapse of the Soviet Union, also in Taiwan, China, Korea, India, and some other countries around the world. It was unrealistic to hope that the domestic industries of the Asian countries and some other ones not belonging on the West could leap up to developed countries especially US, Japan, England, Germany, France, or Italy. It became a crucial issue for these countries to develop a suitable strategy for their industries to fit in the West storm of manufacturing intelligence. The developed INDUSTRY 3.5 is a hybrid strategy that enables intelligent manufacturing with use of the big data analytics and digital decision-making processes of INDUSTRY 4.0 and the existing manufacturing system of INDUSTRY 3.0. The proposed strategic framework integrates leading technologies such as the Internet of Things (IoT), big data analytics, resource allocation, and optimization to develop an advanced intelligent manufacturing system framework. Although INDUSTRY 3.5 has been used extensively with this name by a research team of Taiwan's, [16-17] studies for the transition from INDUSTRY 3.0 to INDUSTRY 4.0 and related several issues, had been conducted much earlier, Flamm 1985 [18] and Kenichi 1985 [19]. However, INDUSTRY 3.5 has been rarely used by the West. Globalization of Industry through production sharing using all advanced technologies of both: INDUSTRY 3.0 and INDUSTRY 4.0. Thus INDUSTRY 3.5 is also referred: the GLOBALIZED INDUSTRY.

2.5 The Fourth Industrial Revolution-INDUSTRY 4.0

However If for the first three I.R.s the starting and ending of each one, was relatively an easy question, this problem for the Fourth Industrial Revolution becomes a puzzle. We can say that since 2000 we are implementing the Fourth Industrial Revolution. Some people believe that it started earlier due to the part digitization of industries. Nevertheless, this industrial revolution is characterized by the application of information and communication technologies mainly to industry but also to the rest of societies' activities. It builds on the developments of the Third

Industrial Revolution, especially in the digital revolution. Production systems that already have digital computer technology are expanded by a network connection and have a digital twin on the Internet.

The phenomenon of INDUSTRY 4.0 was first mentioned in 2011 in Germany as a proposal for the development of a new concept of German economic policy based on high-tech strategies [18], [21] and had given the name INDUSTRIE 4.0. However no other country could use a German name for the Fourth Industrial Revolution and named it INDUSTRY 4.0. So, for the first time we see a numerical number to be associated with one of the four Industrial Revolutions. The paradigm of production and manufacturing system is shifting, in which the increasing adoption of intelligent equipment and robotics, Internet of Things (IOT), and big data analytics have empowered manufacturing intelligence. Leading companies are battling for dominant positions in this newly created arena via providing novel value-proposition solutions and/or employing new technologies to enhance smart production. When these enablers come together, INDUSTRY 4.0 has the potential to deliver some incredible advances in factory environments. Examples include machines which can predict failures and trigger maintenance processes autonomously or self-organized logistics which react to unexpected changes in production.

Some very interesting lesson can be drawn from INDUSTRY 4.0. Perhaps the greatest learning from the 4.0 era was the understanding that technology alone does nothing. Machines depend on operators, programmers, and maintenance. Not everything can be automated. Furthermore, human cognitive power and analytical capabilities remain irreplaceable.

2.6 Fifth Industrial Revolution-INDUSTRY 5.0

However It seems that when we were finally understanding, implementing, and getting used to INDUSTRY 4.0, the term INDUSTRY 5.0 came about. When did this happen? Why so fast? We may even think: "we have not even finished adapting to INDUSTRY4.0! Does this mean that we must start from scratch all over again? So soon?" Shall we forget INDUSTRY 4.0? Sorry but we cannot, since INDUSTRY 4.0 and INDUSTRY 5.0 are mutually complementary, not mutually exclusive. INDUSTRY 4.0 starts to move towards INDUSTRY 5.0 when you begin to allow customers to customize what they want. The concept of INDUSTRY 5.0 is a relatively new one. People put its starting point in the middle of 2010s (e.g., 2015).

According to the EU [14-15], "European industry is a key driver in the economic and societal transitions that we are currently undergoing. In order, to remain the engine of prosperity, industry must lead the digital and green transitions. This approach provides a vision of industry that aims beyond efficiency and productivity as the sole goals and reinforces the role and the contribution of industry to society. It places the wellbeing of the worker at the center of the production process and uses new technologies to provide prosperity beyond jobs and growth while respecting the production limits of the planet. It complements the existing "INDUSTRY 4.0" approach by specifically putting research and innovation at the service of the transition to a sustainable, human-centric and resilient European industry". Thus, it is clear that some countries in the EU is pushing INDUSTRY 5.0while others are concentrated on INDUSTRY 4.0.

As much as INDUSTRY 4.0 has brought us great technological advances, INDUSTRY 5.0 shows us that technology, by itself, is not the answer to everything. With people at the center of processes, INDUSTRY 5.0 focuses on three increasingly important aspects: quality of life, inclusion, and

sustainability. But putting the "people" at the center of processes but using old methods and practices do not solve the staggering problems of the society. All three have significant implications for business strategy. However, INDUSTRY 5.0 is not limited to "industry" only. It applies to every sector and every organization of the society. This means that its applicability is significantly wider than INDUSTRY 4.0. Revising existing value chains and energy consumption practices can also make industries more resilient against external shocks, such as COVID-19 crisis. INDUSTRY 5.0's focus is on creating value beyond financial results. It seeks to improve the quality of life, not only of people involved in industrial processes but of society as a whole. Is this enough to confront the serious and challenging problems of the planet? Industry 5.0 takes the concept of personalization to the next level. This is the reason that INDUSTRY 5.0 is also the personalized Revolution.

Although there are several positive benefits thanks to the "Industrial Revolutions" there were also many negative elements, including: poor working conditions, poor living conditions, low wages, child labor, and pollution. One of the primary causes of the Industrial Revolution was the emergence of laissez-faire capitalism as an economic system. Laissez-faire capitalism is a highly individualistic ideology in which the government plays as little a role as possible in the economic decisions of a country. Historians often refer to the ideology of the Industrial Revolution as classical liberalism since it included the principles of laissez-faire capitalism while also still allowing basic individual rights. This political and economic climate created a situation in which wealthy factory and mine owners were able to exploit working-class people. As a result, this led to horrible working conditions for the people of an "Industrial Revolution". For example, child labor was a common feature of the Industrial Revolution with children as young as four working in dirty and dangerous conditions without protection from the government.

There were harsh and unsafe working conditions in the early factories. The machines posed a significant threat to workers' lives. Unskilled factory labourers were cheap and plentiful. They were made to work long hours, often in unsafe conditions. Such conditions endured into the 20th century. Ultimately, advancing industrialization created a middle class of skilled workers. Cities and industries grew more quickly than ever before, and economies grew along with them. Even more deadly was work performed in coal mines. Owners of mines and factories had considerable control over the lives of labourers who worked long hours for low pay. An average worker would work 14 hours a day, six days a week. Fearful of losing their jobs, workers would typically not complain about the horrible conditions and low pay.

3. Why a wise anthropocentric approach to global problems and challenges?

The last two paragraphs of the previous section say a lot for the global problems and challenges. It is amazing that five (5) out of the six (6) six I.R.s have been developed within Europe and its industries as their prime concern. Only INDUSTRY 3.5 has been developed by far Asian countries. It is obvious from above and by searching the issue, most material related to INDUSTRY 5.0, state that Europe is playing the central role in it. All six (6) industrial revolutions have significant events in human history and each one of the six (6), had a profound effect on most nations throughout the world, although many of them have not yet reached every part of the globe. The West has chosen to use the I.R.s to the benefit of their own interests and not for the good life of all countries.

Despite all the positive achievements and benefits to the world after all six (6) I.R.s, the planet is still faced with many and serious problems!

The planet Earth is sailing as a new "TITANIC", implementing all six (6) I.R., at full speed, and truly believing that it is unsinkable is heading to new "Promised Lands". People on board of the unsinkable ship are happy and dreaming of the exciting new lives that will soon have. Suddenly an iceberg without any early warning hit it and the "TITANIC" in a few hours went to the bottom of the Atlantic Ocean taking with it thousands of innocent people to death. Today planet earth is heading to a catastrophe. The sad point is that no one around the world sees it. The most important problems facing the world, including poverty, climate change, local and peripheral conflicts or wars, sustainability of economies, stability of industries and companies, pandemics and related health issues, national security and many others, have now expanded beyond the competencies of any single Organization or Country, "individual leader", charismatic industry managers and "others". Can anyone seriously believe that today's "economic orthodoxies" are going to bring the world back from the brink of chaos? Can "ANYONE" save the "TITANIC PLANET" from sinking, and thus destroying the whole world?

Recent polling suggests that most of all people around the world believe the planet's best years are in the past. A simple fact underlies this sentiment: "People" are unable to solve big and even small problems lately — even when solutions are known and within reach. A characteristic example is the way the world tried to understand, comprehend and confront the recent COVID-19 pandemic. Another example is the outbreak of the Russian-Ukraine war, which threaten the whole world with the resulted economic and energy crisis.

Moreover, the horrors of this war accompany the most nightmarish scenario of a global food crisis. The warnings had begun even before the Russian invasion of Ukraine, since the two belligerent countries are Europe's largest granaries, accounting for 25-30 % of global grain exports and nearly a third of global wheat exports. Needles, to say that no one can guarantee that nuclear weapons will not be used, and we ALL know well, how catastrophic such an event would be.

"Learning never exhausts the mind" according to Leonardo Di Vinci. Thus, a principal cause of our problem-solving paralysis is our inability to learn from our past history, to think wisely and act in a holistic, sincere, brave and humanized cooperation. We live, learn, and work across narrow, outdated boundaries that prevent us from comprehending the big picture. And this because we have forgotten the true meaning of the word anthropocentrism. Its root is mainly from the Greek word Anthropos (human-being).

Anthropocentrism, a philosophical viewpoint arguing that an Anthropos (human being) is the central or most significant entity in the whole world or even in our solar system. This is a basic belief embedded in many Western and far Asian religions and philosophies. Anthropocentrism regards humans as separate from and superior to nature and holds that human life has intrinsic value while other entities (including animals, plants, mineral resources, and so on) are resources that may justifiably be exploited for the benefit of humankind. In our research we will add one more significant ethical entity: WISDOM and WISE. thus we will refer to a wise human being or a wise anthropocentrism.

Today we have "economies" that need to grow, whether or not they make us thrive. We need "economies" that make us thrive, whether or not they grow. What if we started "economics" not with its long-established theories but with humanity's long-term goals? We then sought out new

"economic thinking" with wisdom and "cognitive thinking" that would enable us to achieve them! You never change things by fighting the existing reality. Albert Einstein has said "We cannot solve our problems with the same thinking we used when we created them". Or paraphrasing it: to solve a "problem", develop a new "economic model" based on ethics and human values that makes the existing model obsolete or partially useful. Or simpler "think outside the box".

Based on all above and researching the areas of AI, Intelligent Control, Cognitive learning, ethical engineering, wise learning, several studies have been published the last few years by this author [22-29].It seems that there a need to move to the Sixth Industrial Revolution=INDUSTRY 6.0 to be referred as the Wise Anthropocentric Revolution. You will be surprised, that if you search through the internet with the name INDUSTRY 6.0, you will find several articles analyzing and discussing it. However, we must work very hard to develop the needed theories and practices for INDUSTRY 6.0 in order to establish a safe and sustainable planet. We ought it to the future generations.

4. The sixth industrial revolution – INDUSTRY 6.0: the wise anthropocentric revolution.

The Some people may be surprised with the announcement of the Sixth Industrial Revolution (Please note that I keep the names with the proper respect to the amazing "Industrial Revolution" both on the verbal names as well the numeric ones). Since 1730 when the First Industrial Revolution was born, then we had anew revolution every one century (100 years)to arrive to the Fourth Industrial revolution which came around 60-70 years after the Third Industrial Revolution. With its new numeric value INDUSTRY 4.0 had appeared around 2000. Then in less than 20 years we are experiencing almost at the same time three new "Industrial Revolutions". Innovations were flourishing all over the world with the AI to dominate the INDUSTRIES 3.5, 4.0, 5.0 and 6.0. YES, I have included INDUSTRY 6.0 because it is already with us [30-33].I hope INDUSTRY 6.0. will be referred as to the Wise Anthropocentric Revolution. It will have at the center the human and its wellbeing. It will be based on some fundamental axioms and theorems.

Axiom 1: "every science, when separated from justice and the rest of virtue, becomes cunning, not wisdom"(Plato,c.428-c. 348 BC). In ancient Greek" "πᾶσά τε ἐπιστήμη χωριζομένη δικαιοσύνης καὶ τῆς ἄλλης ἀρετῆς πανουργία, οὐ σοφία φαίνεται" (Plato). AndinmodernGreek: "Κάθε επιστήμη, όταν χωρίζεται από τη δικαιοσύνη και την υπόλοιπη αρετή, γίνεται πανουργία κι όχι σοφία".

Axiom 2: "Human is the measure of all money, of things as they are, and of non-beings as they are not", (Protagoras, c. 490 – c.420 BC). In Greek: "Πάντων χρημάτων μέτρον έστιν άνθρωπος, των μεν όντων ως έστιν, των δε ουκ όντων ως ουκ εστίν", (Protagoras).

Axiom 3: "Wisdom, compassion, and courage are the three universally recognized moral qualities of men." (Confucius c.551 – c.479 BC)

Axiom 4: "It is absurd and disgraceful to live magnificently and luxuriously when so many are hungry." (Clement of Alexandria, c. 150 – c. 215 AD)

Axiom 5: "If everyone is moving forward together, then success takes care of itself". Henry FordI, 1863 – 1947)

Any innovation that complies with the above five (5) Axioms and many other ethical values that benefit the human being will be considered as part of INDUSTRY 6.0. It will be referred to as a

positive constructive innovation. All other innovations that do not confront with INDUSTRY 6.0 values and ethics are considered as destructive innovations and are targeted by INDUSTRY 6.0 to be eliminated.

THE MAIN CENTRAL «ELEMENT-FIGURE» OF INDUSTRY 6.0 IS THE «ANTHROPOS-HUMAN=ΑΝΘΡΩΠΟΣ»

Therefore, the "measure" of all things is the «ANTHROPOS-HUMAN=ΑΝΘΡΩΠΟΣ», of things that are, that they are, and of things that are not, that they are not; by the term "measure" we mean the criterion, by the term "money" the things, so that finally we maintain that the criterion for all things is the «ANTHROPOS-HUMAN=ΑΝΘΡΩΠΟΣ» : for things that are, that they are, for things that are not, that they are not. Consequently, we accept only what appears to each «ANTHROPOS-HUMAN=ΑΝΘΡΩΠΟΣ» individually, thus in a way introducing the theory of relativity.

Theorem 1. The "measure" of any innovation, M.INOV., is its total impact to any problem of the society or the whole world. If its Net "measure M.INOV. "is positive big, then it is call wise constructive innovation. Otherwise, it is called destructive innovation.

From theorem 1, it becomes clear that destructive innovations do not belong to INDUSTRY 6.0.Buzzwords like creativity and innovation are all over us. All these are lip services. WHY? Because we still attempt to solve problems of growing complexity and interconnectedness by focusing on the symptoms without working to understand the underlying causes of the problem. Wise people don't expect technologists or politicians or anyone else to solve world's most complicated societal problems single-handedly. But they do expect leaders in industry, government, and the social sector to act wisely and with an understanding of the big picture and a bias towards sustainable solutions regardless any political or personal cost. Comprehending the causes of a small or big problem solutions to them do not need only theories and methods of AI and Big Data. What is needed is "BIG IDEAs" some of which are simple and well known. Furthermore, the world needs leaders, managers, executives, and investors to think and act at the "system local level". Here is where comes handy the **Edge Intelligence which is the theme of this very exciting conference.**

5. Conclusions and Future research directions

In this paper challenging issues and questions related for ALL Industrial Revolutions have been reviewed. Originally the first four Industrial Revolutions have been considered and briefly reviewed. The Industrial Revolutions were also given Numeric affiliation. The evolution from INDUSTRY 1.0 to INDUSTRY 5.0 has been presented. Developing and new emerging countries after the collapse of big "country unions" not been able to follow the leading countries were forced to look to a middle I.R., Industry 3.5 which was a hybrid strategy that enables intelligent manufacturing with use of the big data analytics and digital decision-making processes of Industry 4.0 and the existing technologies of Industry 3.0. With all these rapid and unpredictable scientific innovations, the world turned to the individual and its needs and has created a fifth I.R., INDUSTRY 5.0, the personalized revolution. The time evolutions of IR 3.5, 4.0 and 5.0 were rapid all in parallel and in almost 20 years period. Nevertheless, the world's problems have not been solved on the contrary they have kept growing. The sudden need to move to the next Industrial Revolution, INDUSTRY 6.0 has been lightly addressed. The first concepts for INDUSTRY 6.0 have been outlined. However, INDUSTRY 6.0 exists only in white papers but that does not mean that

the concepts as been described here, namely as a "Wise Anthropocentric Revolution", will not be realized.

This paper has opened the conversation towards understanding the relationship between INDUSTRY6.0 and all other previous I.R. and its importance for business, society, and the whole world. Therefore, the future research topics are many and challenging. The most important research topic is that all innovations and activities must be governed by wisdom and be constructive. In addition, basic research must review all previous I.R.s and measure the net total impact of each innovation to humankind. The part of AI, the **Edge Intelligence** can and should play a central role on most research activities of INDUSTRY 6.0.

For example, taking into perspective the current events of the COVID-19 multi-phase pandemic, a robotic medical system could ensure that contact procedures that require expert anatomical handling can be performed without involving any risk of viral spread to the human practitioner. This can and should use methods of Edge Intelligence and not explore the whole spectrum of AI and Robotics. More specifically, taking robotic medics into perspective, a good starting point would be to collect data pertaining to the health stats of a local geographic region, complete with the doctor's observations and resultant remedy and consult. For most issues, a general consult would work flawlessly unless it is a critical complication, in which case, a robotic manipulator consisting of a precision robotic arm mounted on a heavy motor platform controlled by fully controlled thermistors triggered by the edge node device relaying a tele-calling data stream along with motor instructions from a cloud node would be ideal.

Today with the world been in a paralysis and scared to death the future challenges and research directions are in front of us. The academic, scientific, government leaders and the people of the whole planet are called to arms to create a new sustainable economic model for the meta COVID-19 period. Pursuing this effort cannot be left only to a few. INDUSTRY 6.0 will develop intelligent tools to deal with all destructive innovations on all scientific fields and will try to eliminate them. Thus, INDUSTRY 6.0 is the only "REVOLUTION" that will save the Planet.

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