

## Rethinking Multilateralism within the Fourth Industrial Revolution

### إعادة النظر في التعددية في إطار الثورة الصناعية الرابعة

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#### Abstract:

The purpose of this study is to examine the setting of the fourth industrial revolution and its implications on multilateralism, emphasizing the various ways in which governments have responded to this new, complicated environment. In doing so, this study reviews and discuss current research, seeks to sketch future possibilities for controlling developmental routes in light of global history, and focuses on the function of multilateralism in facilitating the catch-up of developing countries. This study is divided into six sections. Part I covers an introduction. Part II covers the definitions, aspects, and key concepts of the Fourth Industrial Revolution. Part III explores the ideas of network societies and multilateralism, as well as their significance, function, and context within the Fourth Industrial Revolution. In Part IV, illustrates many future possibilities, and the significance of governments' reactions to the complexity of the fourth industrial revolution is discussed. In Part V, discusses the function of multilateralism along with the problems, obstacles, and constraints brought about by the fourth industrial revolution. Part VI concludes with some last thoughts and discusses several topics for further study. It was challenging to assess the study's outputs and/or arrive at specific conclusions using qualitative research methodologies since the 4<sup>th</sup> IR and its ramifications are still unfolding and nothing is clear. The study came to the conclusion that multilateralism's structure and role within the 4<sup>th</sup> IR are crucial for balancing emerging power structures and their impact on developmental policies, especially in developing nations where a "no cooperation scenario" is not an option. On the other hand, multilateralism is also threatened by the emerging concept of "networking," which offers more flexible and agile societies.

#### Keywords:

Multilateralism, Regionalizm, Network Society, Fourth Industrial Revolution (4<sup>th</sup> IR).

## المستخلص:

الغرض من هذه الدراسة هو دراسة وضع الثورة الصناعية الرابعة وآثارها على التعددية، مع التركيز على الطرق المختلفة التي استجابت بها الحكومات لهذه البيئة الجديدة والمعقدة. ومن خلال القيام بذلك، تستعرض هذه الدراسة الأبحاث الحالية وتناقشها، وتسعى إلى رسم الاحتمالات المستقبلية للتحكم في مسارات التنمية في ضوء التاريخ العالمي، وتركز على وظيفة التعددية في تسهيل اللحاق بالبلدان النامية. وتنقسم هذه الدراسة إلى ستة أقسام. الجزء الأول يغطي مقدمة. ويغطي الجزء الثاني التعريفات والجوانب والمفاهيم الأساسية للثورة الصناعية الرابعة. ويستكشف الجزء الثالث أفكار المجتمعات الشبكية والتعددية، بالإضافة إلى أهميتها ووظيفتها وسياقها في إطار الثورة الصناعية الرابعة. ويوضح الجزء الرابع العديد من الاحتمالات المستقبلية، ويناقش أهمية ردود أفعال الحكومات تجاه تعقيدات الثورة الصناعية الرابعة. ويناقش الجزء الخامس وظيفة التعددية إلى جانب المشاكل والعقبات والقيود التي أحدثتها الثورة الصناعية الرابعة. ويختتم الجزء السادس ببعض الأفكار الأخيرة ويناقش عدة مواضيع لمزيد من الدراسة. لقد كان من الصعب تقييم مخرجات الدراسة و/أو التوصل إلى استنتاجات محددة باستخدام منهجيات البحث النوعي منذ الثورة الرابعة وما زالت تداعياتها تتكشف ولا يوجد شيء واضح. وتوصلت الدراسة إلى نتيجة مفادها أن هيكل التعددية ودورها ضمن الثورة الرابعة أمران حاسمان لتحقيق التوازن بين هياكل القوة الناشئة وتأثيرها على السياسات التنموية، خاصة في الدول النامية حيث لا يعد "سيناريو عدم التعاون" خيارًا. ومن ناحية أخرى، أصبحت التعددية مهددة أيضاً بفعل مفهوم "الشبكات" الناشئ، والذي يوفر مجتمعات أكثر مرونة ومرونة.

## الكلمات المفتاحية:

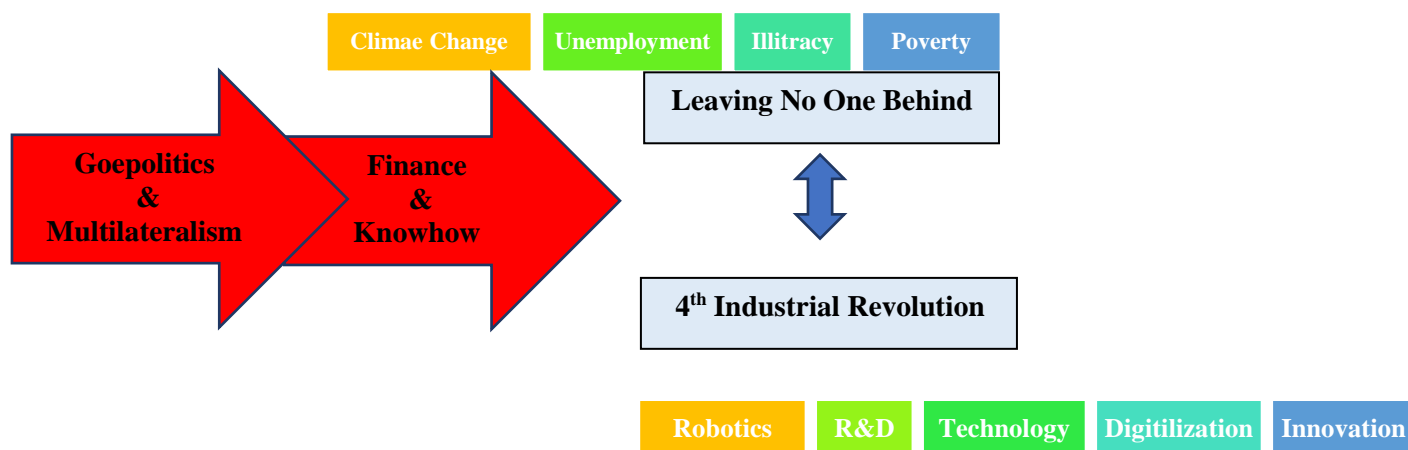
التعددية، الإقليمية، مجتمع الشبكة، الثورة الصناعية الرابعة (الثورة الصناعية الرابعة).

## I-Introduction:

The fourth industrial revolution (4<sup>th</sup> IR), also known as the "Digital Age", which is forming a human civilization that is characterized by dramatic changes in the role, structure, and composition of international organizations, economic conditions, culture, international economic and political powers, resource power as information, and innovation, which have replaced land, labour, and capital, not to mention changes in geopolitical powers. On the challenges front, the world is confronted with common issues such as climate change, the diminishing role of post-World War II organizations and the multilateral system, wars and civil conflicts, terrorism, an increasing number

of migrants and refugees, poverty rates, and epidemic diseases. As a result, there have been dramatic, ongoing, and rapid changes in the concepts and definitions of development and its affiliated aspects (Flor, Alexander G., 2009).

**Figure (1): Constituents of “Leaving No One Behind” and “4<sup>th</sup>IR:**



Source: Illustrated by the author

Within the current features of the where technology, R&D, information, and innovation, which have replaced traditional economic, political, and social inputs, the recent slogan of the global developmental philosophy "leaving No One Behind" introduced a new role for all players, primarily developed countries, international organizations, universities and research centers, civil society and community organizations, as well as the private sector. The purpose of this study is to discuss the definition of the fourth industrial revolution (digital age) and its implications on developmental aspects, activities, and challenges from the perspective of a developing country, as well as its reflections on each player's role.

*"The fourth industrial revolution will shape the future through its impacts on government and business. People have no control over either technology or the disruption that comes with the fourth industrial revolution". (Xu, Min, Jeanne,)*

As a result, a new definition of "leaving no one behind" is absolutely necessary within the fourth industrial revolution. The traditional definitions of social inclusion, gender equality, and poverty alleviation must be abandoned in favour of "emerging disruptive technologies" in order to allay fears of falling behind. (Engelke, Peter, 2018). As a result, even on a temporary basis, those who take action first will acquire both economic and geopolitical power. Consequently, immediate action must be taken by all states. Some actions have to be taken to achieve developmental leapfrog and acquire more power; others have to be taken to preserve their present abilities and advancements; still others have to be taken to safeguard the actors and reduce unfavorable effects. Both the global community and individual states need to act quickly to avoid entering the "too late zone." In order to respond to the constant, quick

changes imposed by the 4<sup>th</sup> IR, it is necessary to move forward with the construction of a new agile governance structure. An element of the national and international governance systems that needs to be quickly defined, updated, and clearly applied is represented by Figure 2.

**Figure (2): National and International Prerequisites, Pillars of Response Strategy to 4<sup>th</sup>IR**



Source: Illustrated by the author

## Methodology:

The paper discusses the problem that as Fourth Industrial Revolution, is introducing a new developmental paradigm that is aspects to affect all aspects of human life world-wide, creating huge challenges and opportunities, however, will affect countries differently. It is assumed that multilateralizm can provide a proper approach to reach balanced impact on the different parts of the world. Accordingly, in order to manage developmental paths, this study aims to discuss, following an inductive way, the context of the Fourth Industrial Revolution and attempt to draw future scenarios in light of global history, with a particular focus on the role of multilateralism in enabling developing countries to catch up. As a result, the study is broken up into six sections. Part II covers the definition, features, and key ideas of the Fourth Industrial Revolution after the introduction. Part III examines the idea of multilateralism and the significance of the 4<sup>th</sup>IR. Part IV presents various scenarios and talks about how important it is for states to respond to the 4<sup>th</sup> IR and all of its complexities. The problems, obstacles, and

constraints brought about by the 4<sup>th</sup> IR, which represents multilateralism, are covered in Part V. Part VI concludes with conclusive remarks and discusses some topics for further study in the future.

#### **Limitations:**

Since the effects of the fourth industrial revolution are still being felt and many questions remain unanswered, using qualitative research techniques to analyze this study's outputs and/or arrive at specific conclusions proved challenging.

## **II-Understanding the Fourth Industrial Revolution (4<sup>th</sup>IR)**

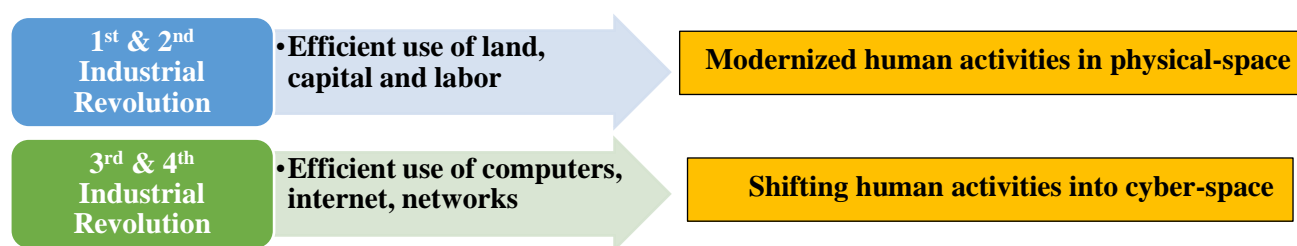
Mainly, the emergence of a new civilization does not necessarily signal the end of the pillars, components, and inputs of its preceding one or ones, even though it may bring about a paradigm shift or other developmental paradigm. The more we comprehend and assimilate this new paradigm and its reciprocal relationships, the more adept we will be at utilizing and controlling it. Regarding the fourth industrial revolution (4<sup>th</sup> IR), there is still disagreement over its definition, neither in terms of content and foundations. According to a review of the literature, professor Christensen first proposed the idea of "disruptive innovation" in 1995 while talking about how new technologies are affecting consumers' behavior and the market (Christensen Clayton M. & Joseph L. Bower, 1995). At the beginning of the 21st century (Schwab, K., 2017) as a dramatic/revolutionary change in the existing ubiquitous technologies; however, this concept did not provide a specific technical paradigm. However, the term "4<sup>th</sup>IR was" officially declared at Davos 2016. Since then, there are many attempts to define the 4<sup>th</sup>IR, however, Lee, Minhwa and his colleagues indicated that, the 4<sup>th</sup>IR cannot be accurately defined unless the introduced technical innovations are combined with organizational/ Institutional ones like the case of the second and third industrial revolutions (Lee, Minhwa and others, 2018). Even though, addressing a specific definition of the 4<sup>th</sup> IR is not easy, it is inextricably linked to technology. Its main function is to take machine learning and apply it to the different life sciences (Tsagkalidis, Christos, 2018).

We can say that there is consensus that, despite the lack of a clear definition, the fourth industrial revolution includes some specific elements, including smart factories, sensors, big data, cyber-physical systems, self-organization, new production, distribution, and procurement, 3D printing, artificial intelligence (AI), nanotechnology, automation, hyper-connectedness, and robotics, new planning theories, agile organizations, government corporate social responsibility, and new systems for the development of goods and services are all agreed upon as prerequisites. An "open business model" would be necessary for the 4<sup>th</sup> IR, according to J. Yun's (2017) He also provided a good definition of the 4<sup>th</sup>IR, which is "a creative connection between

technology and the market," keeping in mind that these connections are developing rapidly and uncontrollably as they happen on a voluntary unexpected base. Because of this, it is challenging to forecast its course or directions, placing additional burdens on governments and research organizations (Yun, J.J., 2017). Klaus Schwab (author of the famous book "the Fourth Industrial Revolution", WEF) defined the 4<sup>th</sup>IR as the "convergence of digital, biological, and physical innovations" indicating that this merger will have a strong reflection on the social, political, economic, and cultural aspects of today's world (Schwab, Klaus, 2018).

In summary, as illustrated in figure (3), the Fourth Industrial Revolution (4<sup>th</sup>IR) heralds a paradigm shift in which technological advancements will digitalize society, business, and everyday life, thereby reshaping everything (Lee, Minhwa, et al., 2018). This shift is distinct from terminology and its definition. The performance of governments, democratic levels and practices, decentralization, citizen participation in the formulation of public policy, the size and performance of production units, our perception of privacy and consumption patterns, education and skill development, job markets, work and leisure patterns, and social relationships are just a few examples of the many possible changes. It might therefore be referred to as "A New Age" or "A New Civilization." Therefore, in order to fully comprehend the 4<sup>th</sup> IR and its embedded revolutionary processes, a political-economic and sociological approach must be used. (Wajcman, J., 2017)

**Figure (3): Impact of the Four Industrial Revolutions of Humanity**



Source: Illustrated by the author

### **III-Discussing Multilateralism within the Fourth Industrial Revolution:**

The definition of "multilateralism" can be divided into two categories: (1) quantity-based definition, where multilateralism is based on the number of players as more than three states, as opposed to unilateralism, where states ignore international organizations and decide what is best for themselves, or bilateral organizations, which rely on only two players. (Keohane, 1990). (2) A quality-based definition of multilateralism where multilateralism is a tool for avoiding discriminatory unilateral and bilateral policies and agreements by constructing a universal multilateral system



that is applied fairly to all states regardless of their power in order to achieve equitable distribution of public goods. (Ruggie, 1992, 1993).

According to Wedgwood (2002), multilateralism could either prohibit or mandate a certain act. This clarifies that the international community cannot compel or oversee the mandate for multilateralism (Wedgwood, R., 2002). Rather, states have the authority to decide how much to apply multilateralism in place of unilateral and bilateral approaches, as well as to act as exceptionalism by forbidding multilateralism.

*"legitimacy would be a benefit of multilateralism. In a nutshell, while facing with some costs of coordination, states in need of legitimacy, burden sharing, information advantage or avoiding being politicized would use a multilateral course of action in its foreign policy enthusiastically". (Milner, Helen V. 2006)*

Strong nations with the upper hand in multilateral organizations can also take advantage of multilateralism by pressuring other nations to adopt particular actions or policies—a tactic Wedgwood refers to as "unilateralism under multilateral cover." Strong nations, like China and Russia, are only able to select a multilateral strategy when they find unilateral and bilateral measures—also referred to as the "outside option"—to be less appealing (Kastner, S. L., Pearson, M. M., & Rector, C., 2016 & Kropatcheva, E., 2016). Additionally, they adopt erratic positions based on what directly benefits them. Helen Milner (2006) examined why powerful states are drawn to multilateralism, which they see as a means of obtaining easy political and informational gains, as well as a means of defending aid-supported policies and winning public support by concealing the identity of the donor country in order to prevent public backlash. (Milner, Helen V 2006).

## Multilateralism and Multilateral Organizations

It's critical to distinguish between multilateral organizations and multilateralism. This is where the significance of game theory and the framing of coordination and negotiation games come into play. According to Martin, L. (1992), multilateralism is crucial when reaching consensus, coordination, and/or negotiation is challenging. As a result, multilateralism aids in the establishment of established guidelines that will control and steer the coordination talks. Martin holds that once a principle is agreed upon, multilateralism's function is fully fulfilled, and multilateral organizations are not required to oversee or enforce it (Martin L., 1992b). Thus, we can draw the conclusion that multilateralism as it is practiced today only benefits strong states, endangering the entire world. Not to be overlooked are the difficulties confronting the present international multilateral system as a result of external factors

*Is it "Leaving No One Behind" or "Creating a Shared Future in a Fractured World"? (Davos 2018)*

such as the emergence of nationalism and protectionism (i.e., the US withdrawal from numerous international multilateral agreements like the Paris Climate Agreement). The legitimacy of those acts was seriously threatened by that withdrawer. The emergence of revisionist states like China, Japan, and Russia on the outside has led to their decision to take on an international role and the establishment of a new multilateral international system based on standards distinct from those developed by Westernized states. (i.e. Breton Woods organization).

## **Network Society and Mentality**

One of the key characteristics of this era is networking, which has transcended all social, political, and geographic boundaries. This has changed public-government relations and necessitated the creation of a new system of balances. This allowed for broad access to information, the freedom to express oneself, the declaration of positions independent of governments and political parties with particular ideologies, new players, and new methods of exercising power. Diplomacy and international relations are not exceptions to that rule. According to Azmy Khalifa (2017), networking not only altered relations between states and communities but also brought forth new internal, regional, and global relationships. As a result, networks are classified as universal networking or universal network society, regional networking or regional network society, vertical and horizontal, and international/national level network society (Khalifa, Azmy, 2017). These networks have a substantial impact on developmental policies and strategies, which calls for careful research and consideration.

Given the definition of multilateralism and the growth of networking discussed previously, as well as the complexity of the Fourth Industrial Revolution, we must carefully consider the type of game theory that will rule international relations in the future. Which "coordination games," "collaboration games," "suasion games," or "assurance games" are they? And what fundamental factors determine that? What impact would the current polarizations have on the viability of multilateralism? We also need to consider the optimal blend of network societies and multilateralism that currently exists. Which conceptual framework has the potential to optimize the benefits of both platforms?

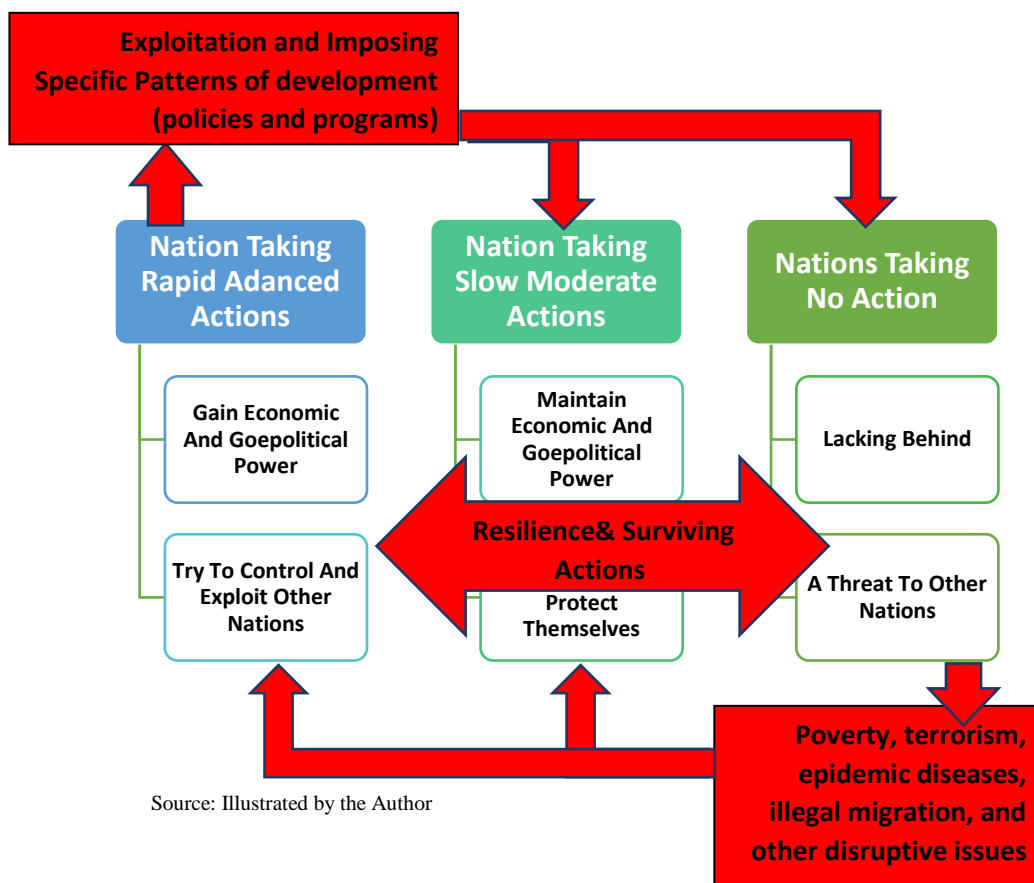
## **IV-States' Response to the 4<sup>th</sup>IR**

Two scenarios could be used to illustrate how different nations respond to the Fourth Industrial Revolution (the "4<sup>th</sup> IR") and the opportunities and challenges it presents: either states are free to choose whether to engage with the 4<sup>th</sup> IR and what extent and duration of their interventions, or they are required to take specific actions.



States' decisions will result in three levels of actions: rapid, moderate, and slow actions, in addition to no action states, as shown in figure (4) below. It is obvious that strong developed states with robust scientific bases, skilled labour forces, and advantageous economic and political positions will take the lead in actions that increase their economic and geopolitical clout. At the same time, the implications of under-developed states that do nothing and fall behind, producing more poverty, terrorism, hatred, civil conflicts, epidemic diseases, illegal migration, hunger, and other threats, which impede the developmental activities of developing states that are trapped in the middle, as they waste huge efforts and investments trying to protect themselves from threats generated by both developed and under-developed states.

**Figure (4): Implications of States Types of Responses to Fourth Industrial Revolution**



In conclusion, unilateralism is beneficial for developed nations, but only in the short term. Within the Fourth Industrial Revolution, multilateralism appears to be crucial for all developed, developing, and underdeveloped states, but what does multilateralism actually mean? It is crucial to have a discussion on this issue, especially in light of the current attacks on UN agencies, the emergence of new powers (like China and India), and the waning influence of established powers. (i.e, USA, EU and Russia)

the developmental implications of the Arab Spring, and the ever increasing political instability in Africa and the Middle East region.

## VI: Problems, Upheavals, and Restrictions of the New Revolution

Since the fourth Industrial Revolution represents the new course for development, the world may consider it a chance to reverse the profound misdirection associated with the current course of development rather than pursuing it further. Using machine learning to create better systems that assist in making wise decisions is the fundamental tenet of 4<sup>th</sup> IR, but this approach raises a number of doubts, anxieties, and grave concerns. A discussion of these problems from the perspective of the developing country is given below.

### 1. Connectivity Gap

A new developmental classification of nations and communities known as "Digital & None-Digital" is being brought about by the 4thIR (Digital Age). Therefore, bridging the gap in internet connectivity is necessary to usher in the Digital Age. According to the WEF, 2018 report, closing that gap is not a matter of technology. There are proven technical solutions available. New funding sources and a variety of financing models are required to assist nations in enhancing their internet infrastructure. In order to do that, money must be spent on network and device security, data integrity, and data confidentiality. Ignoring these factors will cause people to become less trusting of technology, which will reduce spending on digital services. Thus, multilateral cooperation in offering new finance models will assist developed nations in achieving cyber security as well as closing the connectivity gap (WEF, 2018). Herein lies the significance of multilateralism in addressing the new forms of finance that are required and how to guarantee that they take into account the roles of developing nations and multilateral financial and development institutions.

*“The key ingredient, as in all disarmament and arms control efforts, is political will”*

*(Nakamitsu, Izumi, 2019).*

## 2.Global Competition and Cyber-Security Gap

The 4<sup>th</sup> IR is being led by the industrial states that are currently developed. It might be interpreted as a means of exerting control and power over other states. Because technology has proven to be a source of power, they may be hesitant to offer technical and financial support to developing and underdeveloped states. Due to their influence on a country's security and wellbeing, three technologically interconnected elements which are innovation, talent, and resilience. These three elements are now the focus of global competition as the relationship between technology and power grows at all levels, including economic, social, military, and geopolitical power. (Engelke, Peter, 2018). States are also placing a high premium on "securing interactive data/data in motion" and "cyber security." That necessitates significant security system investments. In the event that communities lose faith in technology, economic returns will be negative. (Nakamitsu, Izumi, 2019). Using the current state of emerging military technologies as an example—technology that primarily uses human brain interaction to either enhance or control soldiers. We must highlight the risk that these technologies are not only being produced and used by government military. The question of how non-state owners of these technologies will use them, when they will do so, and for what purposes it will be is a serious one. The multilateralism could potentially help mitigating these threats. However, multilateralism may be very ineffective, if effective at all, in reaching and enforcing international agreements and norms on non-state actors, given the "growing proliferation" and dual-use technologies. (Davis, Nicholas, 2016)

*The unprecedented technological transformation taking place today — a period of exponential change labelled the Fourth Industrial Revolution — is not isolated from geopolitical affairs. Indeed, geopolitical competition, especially among the world's powers, is a major driver of technological disruption; in turn, this disruption is affecting the geopolitical landscape.*

*(Engelke, Peter, 2018)*

### 3. Business Vs Government

An environment that is open and free to experiment with new business concepts and models is necessary for the 4<sup>th</sup>IR. Governments must therefore guarantee this environment, The regulation will be postponed to the next stage. Innovative business models will find other open environments to access if a government decides to regulate first (Lee, Minhwa and others, 2018). This begs the question, "Are governments, especially those in developing nations, free to select or determine their attitude towards innovative business? Or they are restrained by the multilateral global system that is in place now, as evidenced by international agreements and indicators, ranking reports and methodologies, etc.? Furthermore, it is necessary to discuss two pertinent issues that have an impact on governments'

*"Nelson Mandela once said, "May your choices reflect your hopes, not your fears." As we face and build this new world, we too are faced with a choice. Will we fear what is yet to come and the change it will bring? Or will we hope – hope that we can create a better world, hope that we can embrace innovation, and hope that we can build a more agile future? We stand at a pivotal moment, a moment in which we can shape and steer our systems of governance and center them around opportunity and efficiency. So – let us choose hope, be innovators, dream big, and foster agility". Satyam, Arvind (2018)*

performance: (1) trust, which is decreasing in many states and is difficult for governments to rebuild. (2) Flexibility is a crucial component that helps investors and innovators to work flexibly and adapt their management approaches to fit into governmental institutions so they can function competently and nimbly. That calls for forward-thinking planners and policy makers as well as a contemporary style of leadership (Klugman, Iain, 2018).

In summary, every government must initiate social discourse and determine whether it will be an active participant in society or a passive recipient. This will have an impact on the country's social contract, strategic planning, R&D national plan, business sector, educational system, universities, and plans for human development as well as institutional and legal framework.

### 4. Humanitarian Leadership

In order to enable companies to realize both new potential and threats, leadership plays a critical role in transforming corporate culture and mindset (Tsagkalidis, Christos, 2018). But the kind of leadership that is required has to be described as "humankind" and flexible. Leaders must be aware of the need to reconsider both their own and other people's traditional roles.

*"All the things that are important today are the things you cannot download. It's all the things you have to upload the old-fashioned way: one human being to another." Thomas Friedman*

CEO of The Adecco Group (Davos, 2018) Alain Dehaze urged the term "artificial intelligence" to be replaced with "augmented intelligence," emphasizing the importance of human inputs. No matter how smart and intelligent machines get, human traits like intuition, critical and strategic thinking, and emotional intelligence cannot be ignored or replaced (Tsagkalidis, Christos, 2018). In this context, the idea of "putting people at the centre" and/or "human-centric leadership" is becoming more popular. This presents a challenge for leaders who want to lead into the future because they must adapt their own mindset, acquire new abilities, navigate and explore the challenging unknown future, and lead their people there.

## 5. New Business Models vs Society

There is no denying that new business models have advantages for businesses (i.e., increased production and quality, decreased costs, innovations, etc.); however, there are significant concerns about how these models will affect society as a whole, including rising inequality, the rapid decline of the middle class, the diversion of social powers, and the most dangerous thing is people's growing confusion about their morality and identity. (Lee, Minhwa and others, 2018).

The crucial topic of "how augmented reality (AR) and virtual reality (VR) affect human attitudes towards "sense of purpose"" was covered by Lindsay Portnoy (2018). Humans' attitude towards using technologies is a strong form of partnership that will be able to add meaningfully to humanity if all conditions are met and our minds are free to work only towards self-actualization (Portnoy, Lindsay, 2018). Because of this, it's critical to address the negative socioeconomic and economic effects of the Fourth Industrial Revolution in order to inspire people to improve the plant rather than concentrating on their personal problems.

## 6. Cultural, Social and Ethical Issues

As previously stated, the fourth industrial revolution is a new path for development that raises serious concerns about the norms, beliefs, characteristics, aspirations, skills, creativity, and passion of those who have innovated, prototyped, introduced, and tested such technology. How significant cultural, gender, and religious concerns would be taken into account (Lee, Minhwa and others, 2018).

*Trust:* Since the 4<sup>th</sup> IR can be understood as human-AI cooperation; trust is a fundamental component of this relationship. But before a clear plan is developed to reshape the decision-making processes to allow more space for individuals with sufficient insights who valued the 4<sup>th</sup>IR core rather than its speed of transformation, this trust will not be established. (Zamagni, Stefano, 2019). Lee, Minhwa, and associates draw attention to potential conflicts in which certain groups strive to conceal

or reject their core values while others advocate for their modification (Lee, Minhwa, and others, 2018). Thus, in order to demand and guarantee "Responsible Innovation and technologies" and assist in resolving the plant's existing issues rather than creating new ones, multilateralism, global collaboration, and transparency are crucial (Schlaile, M.P. & others, 2017). Furthermore, the primary goal of the 4<sup>th</sup>IR is to implement matching learning to create better systems that can assist us in making wise decisions. It is crucial to consider, though, how much the general public can trust this technology, its concepts, and its decisions (Tsagkalidis, Christos, 2018).

*Gender:* how to ensure that gender aspects are considered within the 4<sup>th</sup>IR. According to Izumi Nakamitsu (2019), the UN and the CCW are considering ensuring women's representation in related conferences, discussions, and research. (Nakamitsu, Izumi, 2019). However, this is absolutely not enough. What is more important is to have IA augmented with inherent women's intelligence, visions, dreams, feelings, attitudes, norms, fears and concerns?

*Ethical Use:* the emerging technology raises an important question "Do we need global ethical and legal frameworks to govern the design, programming, and use of new technologies? Using autonomous weapons as an example, several international organizations began to act in response to these concerns. The United Nations in particular did so because the Secretary General, who is backed by numerous states, is strongly opposed to outlawing these new, high-tech weapons or, at the very least, retaining strict human control over them. In addition, the Convention on Certain Conventional Weapons (CCW) in 2017 formally added lethal autonomous weapons within its scope of concern (Nakamitsu, Izumi, 2019). These discussions should extend to include the ethical role of the private companies producing such technologies. For example, the case of some employees of Google Company rejecting companies' involvement in developing advanced weapons for USA. Do companies have ethical code to follow in this respect? Do employees of high-tech companies have the right to take an ethical position? If they have this right, how to protect them? And what is the role of the multilateral organizations in this respect? Another example of unethical use of technology is cyber-attacks that might be used by individuals, organizations or governments, how to prevent this? Whose responsibility?

## **7.Human vs. Artificial Intelligence**

The biggest fear related to the 4<sup>th</sup>IR is "Will machines replace human?" The answer is yes, this might be a possible scenario, however, the world might avoid this if it understood the role of technological developments in helping humans to reimagining and reshape the future by giving more role to humanities and social sciences (Rodny, Gumede, Ylva, 2018). That raises a very important question, which is what is the true



purpose of education at a time when machines are getting smarter and smarter? Emerging technologies, particularly robots, are raising questions about “what it means to be human? As such technology is to be literally embedded within us and change us up to be our genetic makeup. Yes, radical human improvement will happen within a generation or less leading to severe inequality and social-class conflicts (Davis, Nicholas, 2016). In addition, as the relationships, interdependencies, and complexities among technologies are increasing and boundaries among different sciences are diminishing, the concept of shared technology introduces a new platform of shared education, services, knowledge, and R&D.

## 8. Education Redesign

According to the relevant applications of the 4<sup>th</sup>IR, the current educational system – even interdisciplinary forms- might not be sufficient, as a systematic and well-organized knowledge system. That will reflect on redesigning both the content and institutional framework of education and training (Lee, Minhwa and others, 2018). As changes in the labor market demand side will remain none-stoppable over the coming ten to fifteen years, the supply side must respond adequately. That raises the importance of keeping a close eye on and deep understanding of these changes and plans ahead for an agile responding education-training platform (Hinton, Sean, 2018) that considers all influencing element such as digital economy, biotechnology, and demographic specifications of communities. How that will be affecting ways of learning, living, and working, that should be deeply studies and considered.

*“By 2050, almost all of the additional 3.7 billion people on the planet will live in emerging economies, notably Asia and Africa. The population of developed economies, which make up the majority of current technology user bases, is expected to change minimally. Today, 2 of the 7 billion people on the planet are below the age of 25, and 90 percent of these young people live in emerging economies. Africa’s young population as a share of the global population is expected to rise from 18% today to 28% by 2040, while the shares of all other regions will decline”. Erica Kochi -Futures Lead, Office of Innovation, UNICEF) WEF, 2017*

## 9.STEM (Science, Technology, engineering and Math) Vs Humanities

Studying Humanities can provide a great help in this respect as it acquires students’ skills in critical thinking, debate, innovation and creativity in problem solving. That develops and enriches the practices and theories, methodologies and practices of social sciences, leading to better understanding of development and complexes related to human -human and human –robotics/technologies relations (Osman, Ruksana, 2018). It is happening already that the distinction between physical, biological, and digital worlds is diminishing and the clear line between what exists

physically verses virtually is also diminishing and expected to reshape the relationship between humans and technologies leading to a new world (Portnoy, Lindsay, 2018). That explains the importance of merging STEM (Science, Technology, engineering and math) with Art and digital design in high-tech games that are recently used as a simulation for testing humans' skills such as quick response, competing abilities, self-controlling, problem solving, manipulation, predictions, situation analysis, visualization...etc. (Osman, Ruksana, 2018). These changes put developing states in a worse situation as both STEM and social sciences are degrading, here comes the role of multilateralism in supporting developing states through providing new forms of finance and technical support that consider national specifications, culture, challenges and norms.

## 10. Redesigned Thinking Methodologies

The way we think, is a key issue in illustrating the way we respond to the 4<sup>th</sup>IR and its complex implications. The world must have a human-centered focus while developing and deploying the emerging technologies. Technology producers must be aware of its complex and long-term implication on societies rather than focusing on linear developmental relationships and/or results (Lee, Minhwa and others, 2018). Yes, it might increase productivity and help achieving rapid economic growth; however, the social implications behind these short-term achievements should be considered and well calculated.

*Think about yourself as a bundle of skills and capabilities, not a defined role or profession.*

*Jon Williams Joint Global Leader, People and Organization, PwC*

## 11. New Mind-set and New Culture

The 4<sup>th</sup>IR is defined as a new civilization that requires a new mindset and a new culture; therefore, it is important to ask, what are the inherited new norms and values of this civilization? As such new age/civilization is still under-formation. However, characterized by being rapid, complex and dynamic, communities cannot afford to wait until it is completely constructed, if applicable. That raises a question regarding the values, skills, resources and capabilities that each nation might embed within its future plans (Tsagkalidis, Christos, 2018). The importance of changing educational systems and contents is a clear example, as today, many individuals are learning how to code, while very soon, machines will be able to code themselves or to perform a sort of self-programming. (Tsagkalidis, Christos, 2018). John Fallon (CEO, Pearson PLC) during Davos (2018) indicated that the most needed learning skill is “*learning how to learn*” as to ensure the sustainability or survival of the individuals within the future job market (Tsagkalidis, Christos, 2018). Developing states are free to start this journey, while

developing states are cuffed by enhancing its positions the international indicators and reports.

## 12. Redefinition

In light of the aforementioned, education, learning, training, work, production, design, art, participation, public policy formation, development, etc. each of these terminologies will have a totally different definition within the 4<sup>th</sup> IR. Even the meaning of human and machine might need to be redefined in a sense. This redefinition requires huge, sincere, aware, conscious, mindful and collaborative efforts in order to reach accurate modern/ future definitions. That raises a dilemma regarding how governments, organizations and persons can prepare themselves for the coming developmental platforms that are not yet formed and/or defined, taking into consideration that the reshaped platforms are resulting from a very complex, sophisticated, ever changing and competing forces (Stevenson, Robert, 2013). That makes the role of national planning in the coming years is very crucial as to conduct social dialogue aiming at reaching accurate national definitions, dreams, vision and set plans that fits with that.

## 13. National Planning

The 4<sup>th</sup>IR introduces forces of change for the government, Examples of these forces are the rise of networked citizens who are using technology for more autonomy (i.e. blockchain and its impact on banks performance and governments' traditional sources of finance), and the use of renewable energies which used to be the role of government in providing public goods, same is about to happen in transportation, communication, water and sanitation). Exponential business organizations are more powerful than government in building strong relationships with civil society organizations under the umbrella of corporate social responsibility. Even the labor market will be reshaped through “labor virtual migration” that is a growing concept<sup>1</sup>. Accordingly, what is the definition of unemployment and how government can manage the labor market, taxes, fairness, discrimination and affirmative actions, social tensions, increase of loneliness, isolation, mental health, forcing standards of decent work and other work related issues (McKenzie, Fiona, 2017). Also the rise of “shared economy & online gig economy” makes it hard to have accurate national accounts mainly input-output tables. On the black side, the 4<sup>th</sup>IR detrimental effects on the economy and society, such as rising rates of unemployment, poverty, and inequality, will be borne primarily by governments. In light of this situation, governments are choosing to act quickly to seize opportunities and lessen dangers. However, how to move? David Lye (2017) introduced four scenarios for government action as follows:

(1) *Managing the Market* where government is to set control the markets, particularly those expected to be mostly affected by the 4<sup>th</sup> IR, through new rules and regulations to manage these markets in a way that target fairness and stability. European Union followed this scenario by introducing the “Digital Single Market”. However, this may lead to being an unattractive market for exponential business organizations which are expected to be a leading edge of emerging technologies. (2) *Taking Control Scenario* where states to take the lead in producing new technologies, such as in the case of China. But free states with less complex systems would be able to achieve leapfrog in innovation and production of new technologies while taking control states would try to survive and catch-up. (3) *Open - Business scenario* where states reform their monetary, financial policies and infrastructure to attract exponential business organizations, in addition to supporting existing and potential ones. This scenario fits small states. It is worth mentioning that Singapore and the UK are currently declared to be following this scenario. (4) *Hands –off Scenario*, where the government gives up power and authority to citizens, localities as well as community organizations. No single nation is taking this approach yet (Lye, David 2017).

In sum, the 4<sup>th</sup> IR is taking the world to new forms of markets where production priorities and techniques have been fundamentally changed focusing on intermediate and semi-finished products that can be custom-built where distribution depends on 3D printing rather than shipping and storing final products (Tsagkalidis, Christos, 2018) .The impact of these changes on planning and public administration theories and practices is magnificent. How planers and executives can perceive it? How would governmental traditional bodies would perform and respond to this? Do they have the required skills, infrastructures, financial, organizational and legal frameworks? Can governmental entities go “Smart and Intelligent” Operations? (Tsagkalidis, Christos, 2018) .

“In the new world, it is not the big fish which eats the small fish, it’s the fast fish which eats the slow fish” Klaus Schwab, Founder & Executive Chairman of the WEF (2-15)

## V-Conclusive Remarks:

Literature and daily news alike guarantee that a new world is dawning and that every state especially developing states that have a very late starting point because of intricate and profound developmental obstacles, must move as quickly as possible. Redefining all aspects of future development begins with an understanding of the 4th IR and its aspects of change. In doing so, national planning plays a critical role, not to mention the value of social discourse.

Regarding the function of multilateralism, states must also determine whether they require it for management and surveillance purposes or merely to reach consensus on a set of standards and principles. Taking into consideration the current performance of the UN multilateral organizations and that are itself is under assault. (For example, if the UN released an internal disarmament technology strategy, could it really impose it on strong states? instead of non-state actors? When reconsidering multilateralism, network societies are an emerging concept that should be taken into account.

For the benefit of all, cooperation between developed and developing nations and underdeveloped states is crucial. The price of developed states' lack of support for others will be paid in the form of increased terrorism, violence, poverty, epidemic diseases, civil wars, refugee crises, and so forth. During her WEF speech in 2017, Erika Kochi, the Futures Lead for UNICEF's Office of Innovation, said that "the education systems that are supposed to give them the skills they need to participate in the 4<sup>th</sup> IR are largely broken around the globe." We are aware of the consequences that arise from young people lacking agency or opportunity: they attempt to locate these opportunities, rebel against governments and possibly even corporations, and become more receptive to radical ideologies. *This is such a big problem that scares me every day. It goes without saying that no one sector of society can solve this alone*". Her words ringing an alarm bill that multilateralism and cooperation are compulsory.

### **Issues for Further Research and Discussions**

- Why was there no discussion about developing nations and the various difficulties they face in the literature?
- What part do developed states play in giving developing nations sufficient funding and assistance? Sufficient conversations are required?
- How could developing nations be liberated from international agreements and regulations and diverted by global agendas like the Sustainable Development Goals? Who is accountable?
- Did multilateral organizations prevent the production of mass distraction weapons? Is it anticipated to stop the misuse of disarmament weapons?
- The westernised pattern of development, which turned out to be a pull rather than a push factor, was adopted by the UN, WTO, World Bank, IMF, and other post-World War II organizations. This led to problems with the current developmental policies. Would the recently developed technologies make the same error and fail to take into account the requirements, opportunities, problems, and social and cultural diversity of the states as well as their needs, priorities, and specifications? How can that be avoided?



- Global challenges require multilateral solutions, while the most powerful states, who are mostly causing these challenges directly or indirectly, are declaring “Not Interested”? How to change this? What is the needed form of multilateralism to do so?
  - How multilateralism should be formed in order to reach consensus and impose international laws and regulations on non-state actors?
  - How do network societies and multilateral relationships balance within each country and throughout the universe?
- - How to ensure "Responsible Innovation and technologies" to help solving the plant's current problems rather than creating new ones through multilateralism, global collaboration, and transparency?
- What conceptual framework is required to optimize the benefits of network societies and multilateralism?
- Do we require international moral and legal frameworks to control how new technologies are designed and developed? And how does multilateralism fit into that?
- What are the required values? What is the role of the governmental institutions in this? And what qualities must these institutions possess in order to fulfil such a role?
- How to deal with the future generations, also known as "the lost generation," who will grow up traumatised by war, civil wars, extreme violence in camps for migrants, problems with identity, physical, psychological, and mental health, filthy living conditions, lack of education, etc.?
- Which game theory will dominate international relations? Which "coordination games," "collaboration games," "suasion games," or "assurance games" are they? And what fundamental factors determine that?
- Which are the best forms of finance that could help narrowing the connectivity gap?
- Do governments have freedom to choose between a free and regulated business environment?
- These modifications have had a phenomenal effect on public administration and planning theories and practices. How can executives and planners view it? How would conventional governmental bodies act and react to this? Do they possess the necessary infrastructure, financial, organizational, legal, and skill sets? Are governments able to operate in a "smart and intelligent" manner?



- Do businesses have a code of ethics they adhere to in this regard? Do workers at tech companies have the freedom to adopt moral stances? And how would you safeguard them if they did? In this regard, what function do the multilateral organizations serve? Cyber-attacks are another instance of an unethical use of technology that can be carried out by people, groups, or governments. How can this be avoided? Who is accountable?
- Given the increasing sophistication of machines, what is the real purpose of education? And what kinds of education are most effective?
- How important it would be to take into account issues related to gender, culture, and religion when developing, testing, prototyping, and introducing newly developed technologies.
- What is the kind of connection existing between people's sense of purpose when using emerging technologies and negative socioeconomic and economic outcomes?

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<sup>1</sup>According to Online Labour Index (OLI), created by Oxford Internet Institute, from May to September 2016 the OLI increased by about 9%, resulting in an annual growth rate of 25%