

THE FOURTH INDUSTRIAL REVOLUTION (4TH IR): A THEORETICAL CRITIQUE OF THE DISCOURSE.

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ABSTRACT

Fourth Industrial Revolution (4th IR) is today's buzzword around the world. In almost every space, be it in intellectual seminars, corridor conversations, corporate boardrooms, at conferences, in parliaments; no discussion ends without a mention of this word. It has been championed by Klaus Schwab, who during his presentation at the 2015 World Economic Forum (WEF) argued that the 4th IR will fundamentally alter the world, and thus warrants strategic responses to both optimise the opportunities it presents as well as guarding against its likely undesirable consequences for humanity. This article advances a theoretical critique of this discourse as popularised by Schwab and his adherents. This critique rests on theoretical frameworks that were used to explicate past major historical transitions, specifically transition from feudalism to industrial capitalism. Exposing serious theoretical shortfalls within the 4th IR discourse, I conclude that the claims made about it and its likely impact on societies are less convincing as they fail to provide a comprehensive account of the nature of changes i.e. whether they signify a social system that is radically different from the pre-existing one or simply innovations within the present system, and the factors behind them (a technologically determinist account that characterise the discourse is clearly inadequate). I propose that for a better account and grasp of the evident technological innovations witnessed today and wrongfully termed the forth industrial revolution, which should inform strategic responses thereto; an in-depth qualitative analysis located within the context of long wave theories of change is necessary. Such analysis would enable us to address, as I argue in this article, a range of important and relevant questions such as: whether or not there are any continuities or complete break with the pre-existing social order?, and the underlying set of factors and not just a single factor influencing change.

Keywords: Fourth Industrial Revolution; Discourse; Theoretical; Critique; and Transitions.

INTRODUCTION

Change is an ever-present reality in all human societies and has therefore been a historical fact which has, for centuries, intrigued sociological scholars into developing varying theoretical propositions as they sought to make sense of this phenomenon, its diverse forms, its trajectories, and effects. As Crook, Pakulski and Waters (1992, 1) correctly observed, “long-run social change is at once the most fascinating and the most elusive of topics for general theorising in sociology. The emergence of the modern era provided a nascent sociology with both its reason for theory and its topic to be theorized”. Thus, the questions once posed by Stuart Hall (1992) in an introductory section of their edited book, *Formations of Modernity*, still remain pertinent to this day. These are: “when, how and why did modern societies first emerge? Why did they assume the forms and structures which they did? What were the key processes which shaped their development? (Hall 1992, 1). These questions posed by Hall clearly speaks to curiosity about the periodization of change and the underlying forces that shape/d change and its outcomes in terms of the resultant social order. These, I believe, are some of the critical questions that any theorist who seeks to make sense of major historical changes occurring within society, cannot avoid.

An industrial revolution is one of the major epochal changes that first occurred in the seventeenth and eighteenth century England, which has in the history of sociology, provoked similar questions giving rise to theoretical developments aimed at generating a better and comprehensive understanding this phenomenon in longwave terms i.e. changes that last over a century or so. Since then, there has been claims that similar epochal changes have taken place in the form of what were described as the second and the third industrial revolutions. Today, it is also claimed that the world is undergoing a fourth industrial revolution (4IR).

Of interest to this article is to examine the discourse that forms the basis for the claims made about the 4IR phenomenon. What triggered my interest in this discourse is the claim made by the proponent of the 4IR, Klaus Schwab that it would fundamentally alter the world we live in today in ways never seen before. Such claim suggests to me that the so-called 4IR represents a radical epochal change in human history. While not denying the reality of the evident technological innovations as in robotics, artificial intelligence and digitalisation led by USA, Europe, Japan, China and similar nations; the claims made about the nature of changes underway, still warrant theoretical interrogation at a similar level of intensity that characterised debates in the 1950s between Maurice Dobb and Paul Sweezy amongst others, when they

grappled with the phenomenal changes during transition from feudalism to capitalism in Western Europe. The necessity for such theoretical interrogation is that it would enable a better grasp of the nature of the changes themselves, the forces that underlie them, and their consequential impact. That is, do the observed changes constitute what could justifiably be described as radically epochal or simply internal changes at the level of technological innovation and organisational or business reconfiguration. For Karl Marx, under capitalism, the latter would represent internal revolutionising of the capitalist production methods and relations for the purpose of profits maximisation? My interest and indeed my query about the 4IR discourse is informed by the belief that more often than not, analyses of epochal historical changes generate major disagreements which, on further and open engagement, tend to ultimately yield broader consensus in terms of understanding the nature of the phenomenon underway. As Crook, Pabulski and Waters (1992, 1) observed in their review of the discourse on modernity (modernisation) and post-modernity (post-modernisation), while there was a widely shared view that radical social change was underway, it however did not imply a wider consensus amongst the observers on whether or not the change witnessed was "... a simple extension, or development, or modernity..." or whether it marked an entry into "... a genuinely new historical configuration".

In engaging the 4 IR discourse, this article begins with an outline of the discourse itself. This is then juxtaposed with the previous analysis of the transition from feudalism to industrial capitalism both in England and later in Western Europe. This culminates in my argument that casts doubt about the claims made with regard to nature of technological changes we are witnessing today and their likely impact on human society. My argument is reinforced by inconsistencies in terms of periodization and uncertainties and lack of consensus amongst proponents of 4 IR discourse on exactly where we are in history.

THE FOURTH INDUSTRIAL REVOLUTION (4th IR) DISCOURSE

The fourth industrial revolution (4 IR) discourse, first set in motion and popularized by Klaus Schwab, during his presentation at the 2015 World Economic Forum (WEF), has some distinct features. One common feature within the 4IR discourse is that almost everyone who writes and comments on it, tends to list out its key defining features as being phenomenal technological innovations. The discourse tends to list out technologies and innovations that define the so-called 4th IR, and indeed the preceding industrial revolutions and their sequential development

(Schwab 2015; Prisecaru 2016; Guoping, Yun and Aizhi 2017; and Morrar, Arman, and Mousa 2017). The first industrial revolution, it is argued, was characterized by water/hydraulic and steam-based power machines that were used for production and in the economy, while the second one's major technological achievement was electric power source that made it possible to engage in mass production of goods through division of labour. The third one, on the other hand, is said to be characterized by the use of electronic and information technologies that made automated production possible (Schwab 2015, 1). The fourth one, Schwab argues, is distinct from those that came prior to it and is defined by digital technologies that fuse the physical, digital and biological. Hence it is distinct from earlier ones in terms of its speed, scope, and systems impact (Schwab 2015, 1; see also Morrar, Arman, and Mousa 2017, 13)

Another preoccupation within the 4 IR discourse is with what comes out as a point of emphasis being the likely positive impacts its technologies could have on society. Specifically, the major emphasis is on the positive effects that the 4IR technologies would and are having on economic level i.e. it could result in improved global income levels and quality of life. According to Schwab (2015), the 4IR technologies have had and still have overwhelming impact on industry through high paced innovations. This view is shared by amongst others Guoping, Yun and Aizhi (2017, 627) according to whom "... internet, new energy, new materials, and biotechnology are increasing industrial capacity and markets in a fast pace". The new technological innovations, it is argued, usher in intelligent production processes, improved efficiency and increased revenues achieved through the integration of production, marketing and customer services, which in turn help to ensure that production-oriented industries become service-centered with the ability to respond to and meet diverse customer needs and preferences (Guoping, Yun and Aizhi 2017, 630; also refer to Morrar, Arman, and Mousa 2017, 14).

This point is also echoed by Schwab (2015) who argues that the new 4IR technologies, including smart phones and computers, help to support new technology-enabled platforms with both supply and demand aspects. On the supply-side, the new technologies are said to be creating new ways of serving the needs of industries by disrupting existing value chains, while on the demand-side, shifts are said to be effected marked by high transparency, enhanced consumer engagement and new patterns of consumer behavior. This ultimately, is said to be of great benefit to consumers that manifest through improved access to digital platforms (i.e. software applications such as Alibaba) that make available new products and services (Schwab 2015, 3-4; and Guoping, Yun and Aizhi 2017, 630-32).

Other positive outcomes of the new technologies associated with the 4IR are said to include reduction in industrial waste through reduced dependence on fossil sources of energy, “rapid learning and communication thus opening opportunities for enlarging knowledge and best practices” enabled by internet, and replacement of manual work in manufacturing with automated processes and high skilled jobs enabled by artificially intelligent technologies, as well as creation of new jobs and improved labour productivity as a result of increased capital injection (Schwab, 2015; Priscearu 2016, 58 – 60; and Guoping, Yun and Aizhi 2017, 630-632).

Priscearu (2016, 60-61) however cautions that the positive effects of 4IR technological innovations could easily be offset if deliberate efforts and decisions are not made to prioritize the adoption of technologies with potential to have beneficial impact on humanity and economy i.e. those that would help in achieving the global goals of reduced poverty, inequalities, protection of the planet, and ensuring prosperity for all. This concern is expressed by Guoping, Yun and Aizhi (2017, 632), who argues that rapid innovations such as robots and algorithms, tend “to substitute capital for labour”, with the resultant situation whereby the beneficiaries “... are the providers of intellectual or physical capital: the innovators, the investors, and the shareholders”. The new innovations, it is argued, could deepen social inequalities through disruption of labour markets as manual labour gets automated and digitalization results in great demand for high-end skills (Schwab 2015; Priscearu 2016, 59-60; Guoping, Yun and Aizhi 2017, 632).

This expressed fears about the likely, if not real, negative impact of technological innovations, is however by no means new. In his 1995 book, simply titled *The End of Work*, Jeremy Rifkin, writing about the 3rd IR, reported on large-scale unemployment and job losses as a result of the adoption of information and communication technologies as well as automated technologies. This is better presented in his introductory remarks, herewith cite at full length: “Global unemployment has now reached its highest level since the great depression of the 1930s. More than 800 million human beings are now unemployed or underemployed in the world. That figure is likely to rise sharply between now and the turn of the century as millions of new entrants into the workforce find themselves without jobs, many victims of a technology revolution that is fast replacing human beings with machines in virtually every sector and industry of the global economy. After years of wishful forecasts and false starts, the new

computer and communication technologies are finally making their long-anticipated impact on the workplace and the economy, throwing the world community into the grip of a third great industrial revolution. Already, millions of workers have been permanently eliminated from the economic process, and whole job categories have shrunk, been restructured, or disappeared. The Information Age has arrived. In the years ahead, new, more sophisticated software technologies are going to bring civilization ever closer to near-workerless world...” (Rifkin 1995: xv).

Digitalisation and robotics, it is further argued, could have a negative impact on tax revenues and tax labour income due disruptions on the labour market which in the long run would undermine sustainability of fiscal policy. The impact of digitalization on retail sales, Prisecaru (2016, 60) argues, could also result in price instability and increased inflation.

Also characteristic of the 4IR discourse is attempts at periodising various industrialisations and their attendant technological innovations represented in the cited tables below by Prisecaru (2016) Table 1 and Cooper (2009) Table 2 respectively. (NB. In Table 2, I have deleted the last column that was used depict periodization of academic revolutions and how they coincide with some industrial revolutions as this is not immediately relevant to this article. I also inserted within Table 2, a third column for the purpose of illustrating my interpretation of transitional periods and period lengths between various industrialisations).

Table 1. Periodization of Industrial Revolutions (Source: Prisecaru 2016)

Period of each Industrial Revolution (my emphasis)	Transition period	Energy Resources	Main Technical Achievement	Main Developed Industries	Transport Means
I. 1760-1900	1860 - 1900	Coal	Steam Engine	Textile, Steel	Train
II. 1900 - 1960	1940 - 1960	Oil, Electricity	Internal Combustion Engine	Metallurgy, Auto, Machine Building	Train and Car
III. 1960 - 2000	1980 - 2000	Nuclear Energy, Natural	Computers and Robots	Auto, Chemistry	Car and Plane
IV 2000 ...	2000 - 2010	Green Energies	Internet, 3D Printer,	High Tech industries	Electric car, Ultra-Fast Train

			Genetic Engineering		
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Table 2. Capitalist Very Long Waves (Cooper, 2009)

Capitalist Industrial Revolution (led by Britain)	Major technologies	<i>My interpretation of transition periods</i>	Capitalist form of Economic Organisation
First (1770s/1780s) (led by Britain)	Initially textile machinery, iron working, water power, pottery, etc. Later (from 1830s) steam engines, railways, etc.	<i>Clearly, the period stretches from 1770s to 1870s which works out to 100 year period.</i>	Small family firm Corporation
Second (1870s/1880s) (led by Germany)	Initially electricity, chemicals, steel, etc. Later (from 1920s) automobiles, aircraft, synthetic materials, etc.	<i>Similarly, 1870s to 1970s is yet another 100 year period.</i>	National shareholding
Third (1970s/1980s) (led by USA)	Initially ICT, biotechnology, optical fibres, material science, nanotechnology, etc. Later?	<i>1970s to 1980s is just a decade long and even if you stretch to 2000s (when it is said the 4th IR kicked it), it works out to 3 decades at most.</i>	Transnational corporation-cum-networks (TNCs)

THE DISCOURSE CRITIQUED

My point of departure in critiquing the 4IR discourse lies in Paul Sweezy (1950)'s assertion, when he analysed what then appeared as the likely transition period from capitalism to socialism, wherein he proclaimed: "We live in the period of transition from capitalism to socialism; and this fact lends particular interest to studies of earlier transition from one social system to another" (Sweezy 1950, 134). I find this historical approach of great help to any present and future attempts to make sense of changes that occur in any social order, and at any historical point. It helps to elucidate amongst others, the complex set of underlying factors driving change and how one order is or might be distinct from the other (i.e. it enables one to determine the extent of changes, any continuities from the past systems and therefore the nature of change itself i.e. whether or not it is radically disruptive or it's simply an extension of the past order or put it differently, is it signifying modifications and innovations within the prevailing order?), and therefore serving as the legitimate basis for any claims about the nature of change/s taking place, and what interventions are deemed appropriate from the society and its various structures. Such an approach also provides an opportunity to clearly define the phenomena under examination i.e. the current or pre-existing social order, the one that prevails

during the transition period, and the newly emerging order as well as their respective defining features.

I thus would differ with those discouraging theoretical analyses of the 4IR phenomenon such as Gary Coleman of Deloitte Consulting, who according to Prisecaru (2016, 59), such analysis is unnecessary in view of the “fact” that its impact on business and society is obvious. The danger with such approach is that it could result in rushed reactions, often not grounded in a nuanced analysis and understanding of the phenomenon underway. Here in South Africa, the government has embraced without caution the messages transmitted through the 4IR discourse, subsequently announcing the establishment of the *Presidential Commission on the Fourth Industrial Revolution* tasked with coordinating the national response action plan to deal with the 4IR (Department of Telecommunications and Postal Services, No. 42388 Government Gazette, 2019). According to Admire Moyo’s report “The commission is mandated to advise government on 4IR policies, develop a framework for implementation of a multi-sectoral 4IR strategy; and coordinate, monitor and evaluate multi-sectoral initiatives that will position South Africa as a globally competitive player in 4IR.” (Cited by Moyo 2019 <https://www.itweb.co.za/content/4r1lyMRoGmzqpmda>).

The South Africa Finance Minister, Tito Mboweni, is also reported to have recently announced on the occasion of the World Economic Forum on Africa (WEF) conference held in Cape Town, on behalf of President Cyril Ramaphosa, that the government was also working with the development of a continental strategy on 4IR. To this effect, he is reported to have said; “The free flow of data lies at the heart of the revolution...we must be prepared to take risk, or risk being left behind” (Cited by West 2019 <https://www.iol.co.za/business-report/economy/presidential-commission-to-be-established-on-4ir-strategies-for-sa-32327532>).

It is evident from the above that big business, through the World Economic Forum and in collaboration with national governments and in this specific case, the African governments, with the South Africa seemingly in the lead; are the main drivers and advocates of the 4IR discourse. This elite-driven discourse is reinforced through national and international conferences, all focused on the 4IR. Just to cite one national conference here in South Africa, which had strong international flavour, is the Department of Higher Education and Training

Research Colloquium between the 18th and 19th September 2019. The Colloquium, unambiguously titled *The Fourth Industrial Revolution: Implications for Post-School Education and Training*, preoccupied itself with key questions that focused on seeking strategies of how best to respond to the 4IR phenomenon as opposed to encouraging research towards a better grasp of the phenomenon under way. The prevailing sentiment at the colloquium was echoed by Haroon Borat, one of the prominent presenters, who proclaimed; “The 4IR is here”.

The 4IR discourse as it currently prevails, thus takes us back to and affirms the earliest observation by Karl Marx: “The ideas of the ruling class are in every epoch the ruling ideas, i.e. the class which is the ruling material force of society, is at the same time its ruling intellectual force. The class which has the means of material production at its disposal, has control at the same time over the means of mental production, so that thereby, generally speaking, the ideas of those who lack the means of mental production are subject to it. The ruling ideas are nothing more than the ideal expression of the dominant material relationships, the dominant material relationships grasped as ideas; hence of the relationships which make the one class the ruling one, therefore, the ideas of its dominance. The individuals composing the ruling class possess among other things consciousness, and therefore think. Insofar, therefore, as they rule as a class and determine the extent and compass of an epoch, it is self-evident that they do this in its whole range, hence among other things rule also as thinkers, as producers of ideas, and regulate the production and distribution of the ideas of their age: thus their ideas are the ruling ideas of the epoch”. (Karl Marx 1845 <http://www.marxists.org/archive/marx/works/1845/german-ideology/ch01.htm>).

Beyond the elitist nature of the 4IR discourse, its advocates provide an extremely limited account of the factors (especially of contextual nature) underlying the observed technological changes said to be uniquely characteristic of the 4IR order. This is evident from what in sociological terms is commonly referred to as reductionism. In the case of the 4IR discourse, this reductionist account is evident in the overly emphasis that is laid on technological factors as the sole drivers behind the revolution (Guoping, Yun and Aizhi 2017, 627-629). Such technological determinism provides a much rather narrow explanation as it fails to take into account more other complex factors that could possibly be at play. In critiquing this 4IR reductionism, I would concur with the view held by Vivienne Brown (1992) as expressed in

her acknowledgement of “the multifaceted character and complexity of modern societies”, as part of my critique of the 4IR discourse. For Brown, “the notion that there are different ‘histories’ of modern society as opposed to a single ‘history’ unsettles any idea that there is only one correct view either of society or of its history. It also displaces any notion that historical time is a one dimensional course of events or a single historical process. This means that a historical account of the formation of modernity will uncover discontinuities in the development of modernity as well as a continuous thread of progress, and that understanding any period in history entails looking backwards and sideways, as well as forwards”(Brown 1992, 129).

To overcome this deficit in analysis, I believe that the 4IR discourse could benefit from the longwave theories that were used to explain the epochal changes that defined transition from pre-industrial feudal system to industrial capitalist system. The ascendancy of long wave theories severely discredited the narrowly focused reductionist accounts. Rather than simply make an outline of the technologies and innovations that characterized industrialization then, first in England and later in Western Europe, long wave theorists examined contextual factors(both internal and external) that influenced change from feudalism to industrial capitalism. A case in point here is demonstrated by Epstein (2007) in his reference to Rodney Hilton’s account of the transition from feudalism to capitalism. Hilton attributed, as the sole cause of the collapse of feudalism, to the exploitation of peasants by feudal lords which triggered peasants-led class struggle that he argues, ultimately saw peasants being ejected from land turning them into dependent wage earners while also paving way for the wealthy land lords to produce for the markets. For Hilton, therefore, “...class struggle gave rise to agrarian capitalism and competitive, capitalist markets of sellers and buyers” and ‘explained’ the transition to industrial capitalism (in Epstein 2007:4).

Hilton’s reductionist account, Epstein argues, ran into trouble as it dismissed other equally important prime movers of change. Specifically, it was dismissive of both technological progress of the time, and the feudal political structure led by the feudal state and its role in laying institutional base for modern capitalism through creation of incentives for investment and trade (Epstein 2007: 3 and 9). In so doing, Hilton ignored, as “The ‘prime mover’ and the

‘contradiction’ within the feudal mode of production, the relations between lords, peasants, markets and the state” (Epstein 2007: 20).

Non-reductionist tradition of explaining epochal societal change and especially of transition from feudalism to capitalism, which rest on nuanced comprehensive analysis, have their roots in the 1950s intense scholarly debate that raged between Maurice Dobb and Paul Sweezy. Their analysis first begun with describing the nature of the societal order that was in existence (i.e. feudalism) and that of the emerging order (i.e. industrial capitalism). The feudal order, they argued, was defined by the mode of production that is geared towards subsistence production or production for use whereby markets for the produce are only local and meant to cater for the daily basic needs of existence. This, they argue, is unlike in the industrial capitalist system where production is for both use and exchange. Thus, while under the capitalist system, there is an ever increasing pressure to continually improve production methods (i.e. in both relations of production, forms of organization and techniques of production); under the feudal system such pressure is non-existent as there is “no boundless thirst for surplus labor”(Sweezy 1950, 136). Hence the definition of feudalism by Dobb (1950, 134-135 cited by Sweezy) as an economic system in which serfdom i.e. “an obligation laid on the producer by force and independently of his own volition to fulfill certain economic demands of an overlord... ” and where “...production is organized in and around the manorial estate of the lord”.

Based on this understanding of the nature of these societal orders, Sweezy and Dobb, advanced a much more comprehensive theoretical explanation, albeit with disagreements, of the complex set of factors (both internal and external to feudalism) that influenced a shift from feudalism to capitalism. Notwithstanding the conservative and change-resisting nature of feudal system and its bias towards “maintaining given methods and relations of production”, Sweezy (1950, 137) argues, the system was by no means stable. Its instability, which accounts for the ultimate change and displacement by capitalism, is attributed to a number of interweaving factors. These, Sweezy (1950) argues with reference to Maurice Dobb’s theory, include competition amongst the feudal lords that grew with the encroachment of commerce or trade as an external force (however not at the same level of intensity as under capitalist system), injecting an element of exchange economy into the feudal system that in turn led to intensified exploitation of producers or the serfs by the feudal lords. This occurred without revolutionizing of the

methods of production (Sweezy, 1950, 136-137). What we therefore see in this account, as correctly reviewed by Epstein in his critique of Hilton, is an interplay of both internal and external forces (i.e. competition amongst the feudal lords and the role of commerce, respectively), that created instability within the rather stubborn, conservative feudal system. Adding further instability to the feudal system, Dobb argues, was the growth of population which ran into conflict with the conservative, non-expansionary nature of the feudal system that could not cater for the growing needs (Sweezy, 1950 136).

It is the complex interplay of these major factors which, in the end, led to the disintegration of the feudal economic system. Hence Sweezy's observation of Dobb's explanatory theory of the eventual decline of feudalism in terms of which, "...the essential cause of the breakdown of feudalism was over-exploitation of the labor force ..." which triggered the flight of the serfs for whom the pressure of exploitation by feudal lords became unendurable (cited in Sweezy 1950, 138). Sweezy however challenges this account by Dobb, arguing that there was another external force that contributed to the decline of the feudal order. This, he argues, was the mushrooming of towns that coincided with the flight of the serfs. Towns, he argues, became the places of refuge for the serfs providing them with "...liberty, employment, and improved social status..." Reinforcing the need for a comprehensive analysis and account of the decline of feudalism and the onset of industrial capitalism, Sweezy concludes "...the movement away from the land, which would otherwise be incomprehensible, is seen to be the natural consequence of the rise of the towns. No doubt the oppression of which Dobb writes was an important factor in predisposing the serfs to flight, but acting by itself it could hardly have produced an emigration of large proportions" (Sweezy 1950, 141).

This level of in-depth, rigorous theoretical analysis is missing in the present 4 IR discourse. My concern here is not just with the fact that it is missing, but more that its absence presents serious difficulties with understanding the objective basis on which the whole notion of the fourth phase of industrialization and indeed the other two reported phases of industrialization(i.e. the so-called the 2nd and the 3rd IRs) are justified. Closely linked to this difficulty is the need to know just how qualitatively and significantly different is the so-called 4IR from the economic systems that are said to have preceded it. Is it not that the so-called 4IR and its precursors in the 2nd and 3rd IRs, from Marxist point of view, represent nothing other

than the internal revolutions in production methods, production forces and production relations within the industrial capitalist system that first occurred in England and spread throughout Western Europe and later to the entire world? In the absence of a rigorous empirically informed theoretical analysis, I find it extremely difficult for Schwab to justifiably defend the claim he made that the 4IR marks a fundamentally different social order. If indeed the 4IR represents a significantly different social order, the question then is: what forces brought about this change and driven by what motives? Are the driving motives significantly different from those that led to the rise of industrial capitalism? These and other relevant questions are muted in the 4IR discourse.

What also complicates the claims made about the 4 IR, is the evident lack of consensus and uncertainty amongst its advocates on whether it has indeed arrived or it is still emerging. For instance, Prisecaru (2016, 57) cites Jeremy Rifkin, one of the authors on the 4 IR, 's statement that the world has not yet witnessed or entered the 4IR era, and that instead “we are in front of the third industrial revolution and at the end of the second revolution”. Similarly, Schwab’s statements reveal an expression of doubt as to where exactly the world is as revealed in his assertions: “We stand on the brink to a technological revolution ...”, “We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive...” and “... the fourth is evolving at an exponential ...” (Schwab, 2016, 57). Also expressing a similar view as Rifkin and Schwab, are Guoping, Yun and Aizhi (2017, 627) who, in anticipating the far-reaching likely impact of the 4IR on all aspects of society, proclaimed “...we have not reached a concrete understanding about this technological trend”. Schwab also expressed uncertainty about the likely impact of the 4IR when he argues “...it is unclear as yet what the outcome would be – but might be combination of the two.”

Attempts by the 4IR writers to periodise industrial revolutions also leave much to be desired, creating even more confusion (see Tables 1 and 2 above). This is particularly so when locating this part of the 4IR discourse within the longwave theories cited above. The longwave theorists, in their account of change from one social order to the next, are of the view that change has a transition period that prevails between the two social orders. For instance, according to Dobb (cited in Sweezy 1950, 147), feudalism began to experience crisis in the fourteenth century, followed by disintegration that lasted right into the mid-1500s and later into the 1600s, when

first real signs of industrial capitalism began to show. This period of transition between feudal order and industrial capitalist order in Western Europe, referred to as *pre-capitalist commodity production* or *simple commodity production* as Sweezy would prefer to call it, lasted for well over 200 years (Sweezy 1950, 150-151).

Theoretically, this observation suggests that any major historical epochal change does not constitute or imply a clean break from the pre-existing order. Rather, there are strong elements of continuity and change that prevail during the transition period, followed by the final end and full onset of the new order. The question then is: does the 4IR discourse consider this theoretical and indeed empirically based imperative? If it does, what lengths of transition period characterise the distance between the pre-existing industrial revolution and the newly emerging one? What implications does this have for how we should conceptualize and understand the changes observed? Do they constitute long waves which typically characterize major epochal changes in history or simply internal innovations within the prevailing system of commodity production?

A simple reference to tables 1 and 2, sheds some light on the above questions. Table 1 by Prisecaru (2016), suggests that the 1st IR was in existence for 140 years between 1760 and 1900 with transition period of 40 years (1860 – 1900), while the 2nd IR's period of existence stretched for over 60 years (1900-1960) with transition period of 20 years (1940-1960). The 3rd IR stretched over 40 years with transition period of 20 years (1980-2000) while the 4th IR only started in 2000 suggesting that it has only a 10 year period of transition period. There is inconsistency here with the picture painted in the Table 2 by Cooper (2009), according to whom, both the 1st IR (1780-1880) and the 2nd IR (1880 – 1980), led respectively by England and Germany, lasted for an equivalent period of 100 years. The 3rd IR, which has according to his table, occurred in the USA over a 10 year period (1970-1980) clearly departs from the former IRs in terms of length of existence¹. What is missing in this table is any reference to transition periods between these industrial revolutions.

¹ This tabular representation by Cooper might create some confusion in terms of historical facts about the sequential order of the countries that first industrialised and those that followed. In my reading, it seems to me that Cooper is not necessarily suggesting that Germany industrialised before the USA. As it might be well known, both countries industrialised after England and their auto sectors took off during more or less the same period. While Ford motor company was founded in 1903, Mercedes Benz followed suit in 1926 with its first car said to have been manufactured in the early 1880s, not much further away from Ford's founding in 1903. I think this table by Cooper has its main focus being on the technological revolutions in Computer and

This once again heightens my view that what is reported as the 4 IR, is nothing more than the industrial capitalist order that has always been in existence since its triumph over the feudal economic order. Its technological innovations are a common occurrence within the industrial capitalist system which serve as survival mechanism of its internal contradictions. As Immanuel Wallenstein (1976: 280) correctly pointed out, “capitalism has been developed by the extension in space of its basic framework and within that by the ‘progressive mechanization’ of productive activity”. I thus concur with his earlier observation that transition from feudalism is the only transition in history whereby a “redistributive world system was transformed into a capitalist world economy” between the 15th century and 17th century. Such unique transformation, he argues, “cannot be located in a day, a month, a year, even a decade” but instead involves “a transition” (Wallerstein 1976: 276). This is confirmed by the shorter periods of transition mentioned in the 4IR discourse that speak to each phase of technological innovations within the recalcitrant world industrial capitalist economic system.

CONCLUDING REMARKS

In this article, the current discourse underlying the so-called 4 IR phenomenon was subjected to a critical review that exposed some serious limitations, and especially at the level of theoretical account of the observed technological changes taking place today. The lack of theoretical analysis makes it difficult to decipher the exact nature of the changes underway i.e. whether or not they represent a radical epochal change in human history or are simply an extension or innovations that both define and help to consolidate advanced industrial capitalist economic order. This also casts doubt about the accuracy of categorizing and describing such similar changes in the past as the 2nd and 3rd IRs. Lack of consistency in periodising the various industrializations as well as lack of consensus amongst the proponents of the discourse about whether or not, we are in the era of the 4 IR, creates even further difficulties in justifying the concept and attendant claims made about it and its likely impact on society, and how best to engage with it.

the attendant Information and Communication Technological technologies of the 1970s and 1980s. My interest though, and for the immediate purpose of this article, is in the periodization discrepancies for the so-called 1st, 2nd and 3rd industrial revolutions, the notion of which I disagree with as I have clearly stated in my argument.

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