Technology vs Nationalism: The Global Clash

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21 October 2022

TECHNOLOGY VS NATIONALISM

The Global Clash

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INTRODUCTION

In less than fifteen years, the world has experienced the worst financial crisis since the 1930's, the worst global pandemic since the flu pandemic in 1918, and the largest war fought since the Second World War. This manuscript argues that these crises are not isolated events. The main thesis is that the global economy of the twenty first century must be understood as the consequence of the global clash between technology and nationalism. The three crises happened due to this global clash, which also explains the world's climate crisis, and the uprising of international crime. We are experiencing the first technological revolution that has truly globalized the world, the ICTR (Information -Communication-Technology-Revolution); and a backlash against it, led by nationalistic, protectionist, populist tendencies. The future of the global economy during this century will be defined by the outcome of this global clash.

The ICTR is the third wave of globalization in recent times. The first wave started in the industrial revolution of the1820's and accelerated with the steel revolution of the 1870's. Due to the absence of strong international institutions, this first wave resulted in the confrontation between national interests that led to the First World War, the 1920's hyperinflation, the 1930's Great Depression and the Second World War. The second wave of globalization started after the Second World War, driven by the technological advances that started during the war - such as computation and chip technology. This second wave of globalization happened under the auspices of the strong institutions established in Bretton Woods and produced higher global productivity and higher GDP per capita growth than the first wave. The third wave of globalization, the ICTR, starts in 1990 and accelerates global productivity and economic growth. But after the 2008 GFC (Global Financial Crisis) a growing populist nationalism slows down the ICTR and its benefits. During 2020 and 2021 the world suffered the 2020 GP (Global Pandemic) and global trade slowed down even further. And in 2022, as we are leaving behind the worst part of the COVID pandemic, instead of going back to a globalized economy capable to fully reap the productivity benefits of the ICTR, the world is under the menace of a global depression. The main reason for this threat has been

the Russia-Ukraine war, that has brought about the risk of inflationary expectations, forcing the central banks to aggressively rise interest rates which may cause a recession, whose future dimension is still unknown.

The world is trapped in all kinds of nationalistic tendencies that have prevented the expected quick economic recovery. The US-China trade confrontation and China's unwarranted policy of zero Covid have unnecessarily extended the supply-chain disruptions generated during the 2020 GP. In addition, the world has entered a XIX-century-like war between Russia and Ukraine, that has generated rapid global price increases in energy and food. The inevitable outcome of these two supply shocks has been global inflation, and the rising risk of inflationary expectations. The excess demand (due to the Keynesian adjustments applied during the pandemic) was meant to stimulate a fast recovery of the global economy which could have been associated with transitory inflation, due to temporary supply bottlenecks. Instead, the two mentioned supply shocks have extended the inflationary phenomenon and raised the risk of inflationary expectations. Therefore, the central banks are rising interest rates rapidly and a global depression seems unavoidable, as the stock markets are forecasting. The key message to understand is that, in a globalized world, nationalistic policies have global spiral effects. The two previously mentioned supply shocks are a consequence of nationalistic policies; but they have changed the global economic panorama drastically, from one characterized by a fast recovery with transitory inflation, to one defined by stubborn inflation, the risk of inflationary expectations, and a global recession which might be mild or prolonged depending upon how the supply shocks are resolved in the future.

The disruptions associated with the 2020 GP have been very expensive; for example, car makers' cash flows have been hardly hit and Apple estimates that in the last quarter Covid-associated bottlenecks could reduce sales up to 10%[1]. Companies are losing faith in the international authorities' capacity to avoid future supply shocks. Therefore, there is a growing fear that future wars, extreme weather, or another new virus could create future supply disruptions. This environment is generating a new assault on globalization, based on a flight to security. Some companies, to avoid the large costs associated with the potential disruption of the fragmented production chains are undoing the ICTR, bringing more production back home. This tendency would only aggravate inflationary tendencies by drastically reducing global productivity.

[1] The Economist June 18th, 2020 "Reinventing Globalization".

In the history of the world, technological revolutions have always been opposed by nationalistic tendencies, therefore today's global clash between the globalization forces of the ICTR and nationalistic policies is not new. In the long run, at the global level, the outcome of the clash between new technologies and old nationalistic ways of thinking always favors the technological revolutions. But the result may imply severe short to medium-term global crises, as it happened in the first globalization wave, or may be relatively smooth, as it happened in the second globalization wave. Moreover, the countries that oppose the technological revolutions always lose their international leadership in the long run and are surpassed by those that promote the technological revolutions. For the future of the global economy, it is critical that policy makers and the general societies understand and accept the globalization of the ICTR and its benefits. The main goal of this manuscript is to contribute to such awareness.

Improperly, the recent populist tendencies have been associated with income redistributions in the countries that have participated in the ICTR. The advanced economies' populism is mostly an outcome of the 2008 GFC which was globally mismanaged. And in Latin America populism has been a consequence of the failed economic models adopted which had produced nil economic growth.

The world, as we mentioned before, has been experiencing several recent global crises which, we argue, are due to of weak global institutions that have mismanaged the globalization brought about by the ICTR. And these global crises have created social discontent, that has stimulated nationalistic populist movements. Populism however is not the required solution. It will only aggravate the situation. It will only generate more global crises and exacerbate the social unrest that prompted it in the first place. Populism in a nation is a desperate measure that only worsens the situation; it is like a person who is depressed because he/she is fat, and eats because he/she is depressed, and only gets fatter. There are no adequate national populist remedies in a globalized world. Attempts to impose populist solutions will only isolate the countries involved and increase their economic problems.

The history of the world can be seen as the clash between technological advances that have pushed for the formation of larger human groups, and the local ideologies of smaller groups that wish to prevail. In Veblen's terms, the fight between old modes of thinking and new ideologies. In fact, we became humans due to the enlargement of the social groups of our predecessors, due to the advances in rock technology. Cop-

per and bronze technological revolutions created the Egyptian empire, the iron revolution created the Persian empire, the monopolization of iron production by the Persian State gave rise to Greece and its democracy, which later led to the Macedonian and the Roman empires. The maritime transportation revolution created the Spanish empire, and the manufacturing revolution the English empire. In all cases old ideologies opposed technological advances. And although in certain regions and countries old ideologies have prevailed for a long time, in the world at large the technological revolutions always win the battle, and those that oppose them lose. Persia disappeared because it opposed the private production of iron, which was industrially very useful. France lost against England because it did not join the manufacturing revolution properly. This manuscript warns that, if the US promotes nationalistic policies that oppose the ICTR, in the long run it will lose its global technological leadership over China.

The main purpose of this manuscript is to create consciousness, particularly among global leaders, of the critical juncture the world is living. The old liberal globalization ideals do not work any longer in an ICTR world. Capital will not flow into the developing economies, as the neoclassical liberal model requires, and liberal democracies will clearly not be established soon in most of the world. Therefore, promoting freedom, as the liberal model propose, instead of fostering global economic growth, creates conflicts, wars, protectionism, and a serious disruption of the global economy. Liberalism is not compatible with the globalization required by the ICTR. Liberalism, in practice, becomes nothing else than nationalism in disguise. Excluding non-liberal countries from international organizations, like NATO, the WTO, or the EU, serves the wrongful purpose of maximizing the economic interests of the group of liberal countries that form the international organization, in a zero-sum game. The problem is that this zero-sum game seriously penalizes global productivity and global growth by imposing protectionist barriers against the non-liberal countries, the consequence is that it reduces global trade and seriously slows down the ICTR. Therefore, although in relative terms this group of liberal countries defends and may even improve in the short term its relative position against other countries, in absolute terms it also ends up worse off versus the wealth it could potentially generate, by allowing the ICTR to operate freely.

It is in everybody's interest to have a global economy that integrates all the economies in a functional ICTR global economy. This will imply a

huge change in the Western mentality. It will require the liberal counties to become ideologically tolerant, to promote strong international institutions (that include authoritarian countries) and to be willing to increase global economic interdependence, If the Western world does not move in this direction, it will end up in a global zero-sum game in which it will maintain in the short run its relative leadership at the cost of enormous foregone wealth opportunities; and in the long run, it will lose its technological leadership against the authoritarian China.

We argue that international relations should not be guided by ideological liberalism any longer, and that the alternative is not a pragmatic balance of power approach either. A new institutionalism with strong global institutions, and ideological tolerance, is the only viable solution for the world to be able to fully reap the benefits of the globalization that the ICTR has brought about.

Chapter one studies the ICTR and its impact on everyone's lifestyle and on the global process of economic production and distribution. The ICTR has created a new digital world that has changed the way we live, think, consume, process information, produce goods and services, and participate both socially and politically. This chapter describes how this new digital world puts together devices like the computer, the TV and the telephone with a powerful wireless network that makes them "smart" and allows communication between them at the global level.

Chapter two describes how the ICTR has drastically changed the geography of economic production. Fragmented production in developing countries, managed centrally in developed economies, has increased global productivity drastically, lowered global inflation, produced the largest reduction in global poverty in decades, and changed income distribution globally and in selected countries. However, it also points out that recently a movement towards protectionism, mainly an outcome of the 2008 GFC, has decreased the benefits of the ICTR.

Chapter three analyses the recent roots of today's assault on the globalization brought about by the ICTR. It describes the neoliberalism of the 1980's and its failed claims that: 1) developed countries would not experience financial crises; and 2) developing economies would develop following the neoclassical recommendations of the Washington Consensus. Nationalistic populism all over the world can be seen as the result of the failure of the neoliberal promises. Neoliberalism wrongly started the dismantling of the international institutions like the WTO (World Trade Organization). Populist nationalism in the developed countries is a direct

outcome of the 2008 GFC. In the developing countries, particularly in Latin America, populist nationalism is due to the lack of proper economic growth. This chapter describes how nationalism produced the 2008 GFC and gave rise to a mistaken explanation of its causes; how nationalism explains the mismanagement of the 2020 GP; how nationalism explains the Russia-Ukraine war; and how nationalism is behind the global environmental crisis and the rampant growth of international crime.

Chapter four analyses why nationalism has been so resilient in human history. It describes the evolutionary roots of human societies, and how conceptual systems and institutional arrangements come into being as a solution for the relationship between the individual and the society. It explains how and why the societies' integrative system is always conservative and resists the technological changes occurring in the economic system. It explains the paradox that the globalization claims of neoliberalism have ended up in strengthening national populism.

Chapter five discusses the present global economic situation in the context of the main theories of social change. This chapter reviews the liberal-functional-neoclassical, Marxist, and institutional theories of social change. It argues that the liberal-functional-neoclassical theory of social change does not properly explain the consequences of large technological revolutions, such as the ICTR. The Marxist theory does explain social change based on technological revolutions, but it has two main drawbacks. The first one is that it does not consider the resilience of the old modes of living and thinking that necessarily oppose the new ways of living and thinking produced by the technological revolution. The second one is that it superimposes upon its theory of social change an ideological teleology that fully defines the final social outcome of such technological revolutions. The institutional theory of social change also explains social change based on technological revolutions, but it does not have neither of the two drawbacks of the Marxist theory. Additionally, the neo-institutional theory is capable to explain social change also because of social engineering, which is an important feature of today's societies.

Finally, the epilogue argues that liberalism, Marxism, and the balance of powers political theory correspond to old ways of thinking about globalization that are incompatible with the new ICTR. The Marxists predicted that the proletariat revolution would be global, instead in the real world the leftist movements are constrained to national states which isolate themselves from the global economy and end up producing with obsolete technology. For the liberals, capital was supposed to modernize

those low-wage countries that adopted neoclassical policies, while liberalism maintained stability and progress in the developed countries. In the real world, neoclassical underdeveloped countries did not have proper economic growth; and developed countries entered the 2008 GFC and are now during the consequences of the 2020 GP. The outcome of the failed old ways of thinking about globalization is the resurgence of nationalistic populism. We need new ways of thinking about globalization. I have recently written another work called *The Economics of Global Peace*[2], in which I argue that global peace requires a) increasing economic interdependence, b) strong global institutions, c) ideological tolerance, and d) a global, credible program of denuclearization and demilitarization. To fully enjoy the productivity benefits that the ICTR can bring about, the world must change its mentality – ideological tolerance will be required. To envision the future of the world as a fight between democracies and autocracies is inappropriate. If the world ever gets to be one consisting of only democratic countries, this is certainly very far away (likely as far away as the global proletariat revolution promised by Marxism, because both are ideological idealisms); and today it is an impractical and untenable goal. Today only thirteen percent of the global population lives in electoral democracies. The globalization of the ICTR is already here with us, and it requires a workable solution. Ideological tolerance and strong global institutions are required if the increasing economic interdependence is going to work. To reduce economic interdependence, sacrificing global productivity, is a mistake for the future of the global economy. The correct answer lies in strong global institutions, ideological tolerance, peace, and the inclusion of every country into the global, interdependent economy.

[2] Obregon, C., 2022. *The economics of global peace*. Amazon.com. Also available at Research gate.com

CHAPTER ONE: WHAT IS THE ICT REVOLUTION?

The ICTR is a technological revolution that has drastically changed people's life and consumption patterns, and the way companies produce and distribute goods and services. It has globalized the consumption and production processes. It has created the possibility for individuals and customers to express their political and economic preferences globally, without the need of intermediary institutions. It has offered companies the opportunity to fragment the process of production into distinct countries creating global chains, that have worldwide providers and customers. The consequence has been formidable. Global productivity has increased enormously, and until recently there has been a long wave of low inflation, that the world had steadily enjoyed until last year. The ICTR has meant a new form of globalization that challenges the traditional models of economic growth, that has impacted key economic and demographic variables such as migration, investment flows, income distribution, poverty, underdevelopment, and competitive advantage. The ICTR seriously erodes the power of institutions and enhances the one of the individual and the consumer. It has had a decisive impact both on the economic markets and on the political life. In a nutshell, the ICTR has created a parallel virtual world that redefines geographical borders, physical distance, company-customer exchanges, economic production and distribution, and political relations.

The ICTR includes all devices, networking components, applications, and systems that, combined, allow organizations and people to interact in the digital world. It encompasses the internet sphere as well as the mobile one powered by wireless networks. The ICTR includes old technology like landline telephones, computers, computer software, radio, and television broadcast, but uses it alongside cutting-edge ICTR technology such as artificial intelligence, robotics, big data, 5 G, 3 D printing and nanotechnology, among others. The ICTR has created new popular digital devices like smartphones, digital TVs, and robots. And has modified the nature of traditional devices like cars which more and more look like a computer integrated to the digital world. The ICTR has introduced cloud storage and extended communications technology and economic

transactions to the digital world. It has changed economic and political relations and changed how people live, think, imagine, interact, communicate, transmit knowledge, learn, and solve problems whether they are personal, technological, or scientific. The ICTR has given a new voice to customers whose preferences can be expressed through social media and be understood and processed through big data technologies; and has also changed forever the political landscape by empowering individuals to manifest themselves in the social media and allowing them to communicate with many other individuals creating a new mass phenomenon. The ICTR has changed the notion of an office and of a home.

The ICTR has changed the global process of production by allowing central management, in a developed country, of a process of production fragmented amongst many countries (many of them usually developing ones), which has increased global trade and productivity and fostered economic growth with low inflation. This new mode of global production brought about by the ICTR has impacted many global economic phenomena like foreign investment, migration, technological transfer, income distribution, underdevelopment, and poverty.

The ICTR can be seen from distinct angles such as: 1) the technologies and industries involved; 2) the digitalization and globalization of daily life; 3) the value of the main companies in the US stock market related to it; 4) the relations between the customer and the companies; 5) the economic impact on the creation of global chains and its repercussions in global productivity, inflation, income distribution, underdevelopment and poverty; and 6) the relation between the individual and the State. As we will see, under any of these angles the dimension of the ICTR looks formidable. We will discuss in this chapter points 1) to 4) and, due to its complexity, leave for the second chapter the explanation of point 5). Point 6) will be discussed in chapter five.

TECHNOLOGIES AND INDUSTRIES INVOLVED

As for the technologies involved, the UNCTAD[3] in 2021 lists eleven: 1) IoT (the internet of things); 2) Drones; 3) Solar PV (solar photovoltaic); 4) Big Data; 5) Robotics; 6) AI (artificial intelligence); 7) 3 D Printing; 8) Gene editing; 9) Nanotechnology; 10) Blockchain; and 11) 5 G. A brief

[3] United Nations Conference on Trade and Development.

definition of these technologies is provided in Figure 1.1, and a summary of the main providers, countries, and companies, as well as leading user sectors for each one of these technologies is presented in figure 1.2. A critical issue to realize is that these technologies often expand each other's capabilities. For example, AI uses big data, blockchain and machine learning. 3 D printing uses big data, devices connected within an IoT network, AI, and robotics. 5 G uses IoT and AI, and so on. As can be seen in table 1.1, it is expected that in 2025 the dominant ICTR technologies will be: IoT with 48% of the market value of the listed eleven ICTR technologies, Robotics with 16%, Solar PV with 11%, AI and 5 G with 6% each, Big Data with 5%, Drones with 4%, Blockchain with 2%, and 3 D Printing with 1%. The most rapid growth between 2018 and 2025 is expected in 5 G with an annual growth rate 2018-2025 of 128%, followed by Blockchain with 89%, Robotics 48%, AI 43%, IoT 42%, Solar PV 30%, Big Data 26%, 3 D Printing 24%, and Drones 11%. Therefore, considering both the market value expected for 2025 and the forecasted annual rate of growth 2018-2025, the key ICTR technologies in order of relevance seem to be: 1) IoT; 2) Robotics; 3) Solar PV; 4) 5 G, 5) AI; 6) Big Data; 7) Blockchain; 8) Drones; and 9) 3 D Printing. Of these, as can be seen in figure 2, IoT, AI, Big Data, Blockchain, Drones and 3 D Printing are led by the US. Which means that the US is the leader in 66% of the expected 2025 ICTR technologies market value. Therefore, the US is by far the dominant player in ICTR technologies. It is also interesting to observe that within the developing economies, only China has a presence in ICTR technologies. The US is active in ten of the eleven technologies; China in six; Germany and the Republic of Korea in four; Switzerland in two; and Japan, France, UK, Canada, Sweden, Spain, Ireland, Finland, and Taiwan, in one. In terms of the market value in 2025, the US participates in 89% of the market, Germany in 55%, China in 39%, Republic of Korea in 33%, Switzerland, Japan, Spain, and Ireland in 16%, Canada in 11%, Sweden, Finland, and Taiwan in 6%, and France in 4%. It also can be appreciated in figure 1.2 that the ICTR technologies impact most economic sectors. In fact, the actual relevance of the ICTR technologies cannot be measured by their market value alone but by the impact they have on the whole economy. For example, in 2018, as it can be seen in table 1.1, the market value of these eleven ICTR technologies was $349 billion dollars, and the market value of laptops was $102 billion dollars and of smartphones was $522 billion dollars; and all these industries are closely linked. However, there is a widespread impact of the ICTR tech-

nologies which is changing the whole way in which consumers live and companies produce.

TABLE 1.1. ICT MAIN TECHNOLOGIES MARKET VALUE $BILLIONS

			Anual Rate of Growth		
	2018	% in 2018	2025	% in 2025	2018-2025
IoT	130	0.37	1500	0.48	42
Drones	69	0.20	141	0.04	11
Solar PV	54	0.15	344	0.11	30
Big Data	32	0.09	157	0.05	26
Robotics	32	0.09	499	0.16	48
AI	16	0.05	191	0.06	43
3D Printing	10	0.03	44	0.01	24
Gene Editing	3.7	0.01	9.7	0.00	15
Nanotechnology	1	0.00	2.2	0.00	12
Blockchain	0.7	0.00	61	0.02	89
5G	0.6	0.00	191	0.06	128
	349	1.00	3139.9	1.00	37

Source: Figure 5 in https://unctad.org/system/files/official-document/tir2020_en.pdf

FIGURE 1.1 ICTR TECHNOLOGIES – BRIEF DEFINITIONS

1) **IoT.** The Internet of Things (IoT) describes the **network of physical objects** – "things"–that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools.

2) **Drones.** A drone is an unmanned aircraft. Drones are more formally known as unmanned aerial vehicles (UAVs) or unmanned aircraft systems. Essentially, a drone is a flying robot that can be remotely controlled or fly autonomously using software-controlled flight plans in its, embedded systems that work in conjunction with onboard sensors and a global positioning system (GPS). UAVs were most often associated with the military. They were initially used for anti-aircraft target practice, intelligence gathering and, more controversially, as weapons platforms. Drones are now also used in a range of civilian roles.

3) **Solar PV.** Means solar photovoltaic, a technology that converts sunlight (solar radiation) into direct current electricity.

4) **Big Data.** Refers to data sets that are too large or complex to be dealt with by traditional data-processing application software.

5) **Robotics.** It is the industry related to the engineering, construction, and operation of robots – a broad and diverse field related to many commercial industries and consumer uses. The field of robotics generally involves looking at how any physical constructed technology system can perform a task or play a role in any interface or new technology.

6) **AI**. It is the science and engineering of making intelligent computer programs and machines. It is related to using computers to understand human intelligence, but it does not confine itself to biologically observable methods.

7) **3D Printing.** It is an additive manufacturing process in which a three-dimensional physical object is created from a digital design by **printing** thin layers of material and then fusing them together. It is the opposite of subtractive manufacturing processes, where a final design is cut from a larger block of material.

8) **Gene Editing.** It is the ability to make highly specific changes in the DNA sequence of a living organism, essentially customizing its genetic makeup.

9) **Nanotechnology.** It is the manipulation of materials on an atomic or molecular scale, especially to build microscopic devices (such as robots). Nanotechnology is already being used in medicine, automobile tires, land-mine detectors, and computer disk drives.

10) **Blockchain.** Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets, real and intangible, in a business network. It is the technology at the heart of the virtual currencies.

11) **5 G.** It represents the beginning of a massive change to how consumers and businesses use wireless networks. Its biggest benefits are its high capacity and minimal lag. In the era of 5G, technologies will converge to enable the intelligent edge, IoT, and AI, working together to delight consumers, streamline business operations, and more effectively use data at scale. Already 5 G has been useful in the healthcare, agriculture, retail, transportation, logistics, and manufacturing industries, among others.

FIGURE 1.2 ICTR TECHNOLOGIES – MAIN PROVIDERS AND LEADING USER SECTORS

Technology	Key Providers	Main Companies	Leading User Sectors[4]
1) IoT.	U S **(L)**[5]	Alphabet, Amazon, Cisco, IBM, Microsoft, Oracle, PTC Salesforce and SAP	consumer, insurance, healthcare provider
	Germany		
2) Drones.	Military		
	U S **(L)**	Boeing, Lockheed Martin, Northrop Grumman	
	Commercial		
	US	3 D Robotics	utilities, construction, and discrete manufacturing
	China	DJI Innovations,	
	France	Yuneec Parrot	
3) Solar PV.	China **(L)**	Inko Solar, Trina Solar	residential, commercial,
	Canada	Canadian Solar	utilities
	R. of Korea	Hanwha Q Cells	
4) Big Data.	US **(L)**	Alphabet, Amazon, Dell Technologies, HP Enterprise, IBM, Microsoft, Oracle,	banking, discrete manufacturing, professional services.
	Germany	Splunk, Teradata SAP	
5) Robotics.	**Industrial Robots**		
	Japan	FANUC, Mitsubishi Electric, Yas kawa	discrete manufacturing, process manufacturing, resource indust.
	Switzerland	ABB	
	China	KUKA	
	Humanoids		
	Hong Kong (China)	Hanson Robotics	
	Spain	Pal Robotics	
	R. of Korea	Robotis	
	Japan	Softbank Robotics	
	Autonomous Vehicles		
	US **(L)**	Alphabet/Waymo, GM,	retail banking, discrete
	Ireland	Tesla Aptiv	manufacturing sectors
6) AI.	US **(L)**	Alphabet, Amazon, Apple, IBM, Microsoft.	
7) 3 D Printing.	US **(L)**	ExOne Company, HP, Stratasys	discrete manufacturing, health care, education
8) Gene Editing.	US **(L)**	Editas Medicine, Intelia Therapeutics, Precision BioSciences, Sangamo Therapeutics	pharma-biotech companies, contract research organization medicine,
	Switzerland	CRISPR Therapeutics	manufacturing, energy
	United Kingdom	Horizon Discovery Group	
9) Nanotechnology.	US **(L)**	Apeel Sciences, Agilent, Intel Corp.	
	Germany	BASF	
	R. of Korea	Samsung Electronics	
10) Blockchain.	US **(L)**	Amazon, IBM,	nance, manufacturing,

[4] By Spending.

[5] The L indicates the main country leader.

		Microsoft, Oracle	retail
	China	Alibaba	
	Germany	SAP	
11) 5 G	**Network Equipment Suppliers**		
	Sweden	Ericsson	energy utilities, manufacturing, public safety
	China	Huawei, ZTE	
	Finland	Nokia	
	Chipmaker Space		
	China	Huawei	
	US	Intel, Qualcomm	
	Taiwan	MediaTek	
	R. of Korea	Samsung Electronics	

Source: https://unctad.org/system/files/official-document/tir2020_en.pdf

DIGITALIZATION AND GLOBALIZATION OF DAILY LIFE

The life of most people around the world has changed due to the ICTR. As it can be seen in table 1.2 fixed telephones are going away and are being replaced by cellular phones. Today even in developing countries there are more cellular phones than inhabitants, 105 cellular phones per 100 inhabitants. 97% of the population is covered by a mobile-cellular network worldwide, and 96% in developing countries. And 95% worldwide is covered by at least a 3 G mobile network, and 94% in developing countries. And 62 out of 100 individuals use internet worldwide, and 57 in developing countries. The change has been particularly fast. The annual rate of growth 2005-2021 in mobile-cellular telephone subscriptions has been worldwide 8.9% and in the developing countries it has been particularly high, 11.5%. This means that the worldwide coverage per 100 inhabitants went from 33.9 in 2005 to 109.9 in 2021; and in developing countries it went from 22.9 to 105.1. The annual worldwide rate of growth for the individuals using the internet 2005 -2021 was 10.3%, and, again, was particularly high for developing countries 14.9%. This means that the worldwide use of internet per 100 inhabitants went from 15.8 to 62.5; while in the developing countries it went from 7.7 to 57.1. Thus, the ICTR is changing the lives of most people on earth, except for the extremely poor. Given the coverage of cellular phones and the actual internet usage worldwide, there is already a significant platform for the future rapid growth of the ICTR technologies, from the side of the consumers.

TABLE 1.2. ICT KEY INDICATORS

	Millions per 100 inhabitants			
Fixed-telephone subscriptions				
	2005	**2021**	**2005**	**2021**
World	1,243	884	19.1	11.2
Developed	570	413	47.2	32.2
Developing	673	471	12.7	7.2
Mobile-cellular telephone subscriptions				
	2005	**2021**	**2005**	**2021**
World	2,205	8,648	33.9	109.9
Developed	992	1,727	82.1	134.8
Developing	1,213	6,921	22.9	105.1
Population covered by a mobile-cellular network				
	2005	**2021**	**2005**	**2021**
World	N/A	7,599	N/A	96.9
Developed	N/A	1,277	N/A	99.7
Developing	N/A	6,321	N/A	96.4
Population covered by at least 3G mobile network				
	2005	**2021**	**2005**	**2021**
World	N/A	7,447	N/A	95.0
Developed	N/A	1,263	N/A	95.6
Developing	N/A	6,184	N/A	94.3
Individuals using the internet				
	2005	**2021**	**2005**	**2021**
World	1,023	4,901	15.8	62.5
Developed	616	1,157	51.1	90.3
Developing	408	3,744	7.7	57.1

Source: ITU World Telecomunication/ICT Indicators datbase
Regions in this table are based on the ITU regions, see: http://www.itu.int/en/ITU-D/Statistics/Pages/definitions/regions.aspx
Updated: 25 January 2022 (revised series for individuals using the internet for World and Developed 2008-2012)

ICTR COMPANIES IN THE US STOCK MARKET

The market cap[6] of the largest ten US companies is presented in table 1.3. As can be appreciated, the first five are related to the ICTR, a clear signal of its importance. And taken together, the six companies that are related to the ICTR represent 80% of the market cap of the ten largest companies.

TABLE 1.3. MARKET CAP OF THE LARGEST 10 US COMPANIES $TRILLIONS

1	Apple	2.38
2	Microsoft	1.96
3	Alphabet (Google)	1.51
4	Amazon	1.07
5	Tesla	0.77
6	Berkshire Hathaway	0.69
7	Meta (Facebook)	0.54
8	Johnson & Johnson	0.46
9	UnitedHealth	0.46
10	Visa	0.42
		10.26

Source: https://companiesmarketcap.com/usa/largest-companies-in-the-usa-by-market-cap/ taken May 11, 202

The ICTR consists in easy access to information and easy communication among everybody, and it has drastically revolutionized the way people live and companies operate. The ICTR has put together frontier technologies with communication and entertainment devices like the phone and the TV. The largest US ICTR companies have been key in the development of this new interconnected, virtual world. The first stone of the ICTR was set by Microsoft, with the introduction of personal computers with easily manageable operating systems. The second stone of the ICTR was introduced by Google (Alphabet), by means of easy access to all the information in the web and being able to communicate with others through the internet. The third stone was created by Apple, and it was to bring the ICTR into anybody's hands through intelligent

[6] Market value

multiuse smartphones. The fourth stone was brought about by Facebook (Meta), and it was the ability to communicate with everybody through the social media, which created new social relations: personal, business related, and political. The fifth stone was built by Amazon, and it was to bring almost anything, to almost anybody, almost anywhere. Tesla has been an extremely successful consequence of the ICTR.

In 1980 Microsoft formed a partnership with IBM to bundle Microsoft's operating system with IBM computers; IBM paid Microsoft a royalty for every sale. In 1985, Microsoft developed a new operating system for IBM's computers called OS/2; but Microsoft also sold its own alternative, which was in direct competition with OS/2. Microsoft Windows eventually overshadowed OS/2. By 1990, Microsoft Windows had captured over 90% market share of the world's personal computers. Microsoft built the first stone required for the new ICTR world to come: computers that have easily manageable operating systems.

The next stone would be developed by Google (today Alphabet); and it was going to be easy access to all the information in the web, and easy communication with everybody. Google's email product, Gmail, was launched in April 2004. More rollouts followed: Google Maps (2005), YouTube (2005 - but owned yet by Google), Google Earth (2005), Google Calendar (2006), Google Finance (2006), Google Streetview (2007), Google Android (2007), Google Chrome (2008), Google Voice (2009), Google Labs (in 2012). Google (Alphabet) made it possible for everybody to participate in the virtual world with access to all the information and with communication with everybody.

The next stone was going to be constructed by Apple. What Apple did was to bring the digital revolution to everybody's hands through the iPhone. Apple was an earlier competitor of IBM and Microsoft in selling personal computers; but it lost the initial battle, and it had to reinvent itself. Apple's present success started in 1997, and was linked to the introduction of the iMac (1998), the iPod (2001), the touch–screen iPhone with capabilities to play MP3s and videos and accessing the internet (2007), the iPhone 3G connected to wireless networks and including a digital camera and support for the global positioning system (GPS) (2008), the iPhone 3G S which included the possibility of playing games with other iPhone users over Wi-Fi Internet connections (2009), the iPad (2010), the iCloud (2011), the smartwatch (2015), and its own very fast microprocessor M1 (2020). Apple brought the ICTR to everybody's hands no matter where we were.

The next stone was going to be introduce by Facebook (Meta), and it was going to be the ability to communicate with everybody through the social media. Facebook was launched in February 2004. It was initially intended only for those with Harvard email addresses. But by the end of 2006 it had already twelve million users. Over the next few years, Facebook launched Marketplace, Facebook Chat, People You May Know, the Facebook Wall, and many more features that have become signature to the platform. In 2012 Facebook acquired social media competitor Instagram. Other notable acquisitions Facebook made include the instant messaging application WhatsApp and Oculus VR. It has a grand total of 78 companies under its wings today. Facebook communicated everybody with everybody creating social media that changed people's social, business, and political lives.

The last stone in the ICTR was developed by Amazon, and it was bringing almost anything to almost anybody almost anywhere. Amazon is a business proposal that develops from the simple idea of giving everybody access to everything wherever they are. It started in 1995 selling books, but it quickly developed into selling almost everything. In addition, it has entered successful the cloud computing revolution, and the publication of books, mainly e books. Today the cloud is Amazon more productive business, and it has already aggressive competition. The cloud started because of Amazon's own needs to storage large information; and afterwards it came the idea to sell the cloud to other companies. Amazon was founded on July 1994 as an online marketplace for books and has expanded into a multitude of product categories. Today it focuses on e-commerce, cloud computing, digital streaming, and artificial intelligence. And it has multiple subsidiaries including Amazon Web Services (cloud computing), Zoox (autonomous vehicles) Kuiper Systems (satellite Internet).

Tesla is a consequence of the ICTR – the vehicle's electric motor is powered by lithium-ion cells – used in laptop-computer batteries—that can be recharged from a standard electrical outlet. Tesla's innovation was to develop batteries powerful enough to be used by the cars. The company started in 2004, and by 2012 Tesla began building large factories it called Gigafactories to produce batteries and vehicles. The company also branched out into solar energy products. Tesla announced several affordable electrical car models early in the 2020s.

CUSTOMERS AND COMPANIES IN THE DIGITAL WORLD

Personal computers, smartphones, wireless networks, easy internet access, social media, an interactive TV, a car guided by a computer, streaming, the Global Positioning System (GPS), robots, nanotechnology – that today form part of our daily life, are relatively recent technologies that have changed both customers' and companies' behavior. In the past, company leaders decided technological innovation guided by market research, but the focus was in satisfying the customer within the technological innovations envisioned by the companies. Today the new ICTR technologies allow the customers to express themselves as to what they really want and what innovations they are looking for. Each interactive TV, each smartphone, each personal computer is a medium to express personal preferences that can be added up with the help of big data tools. Companies today are aware of the importance and relevance of social media. But ICTR technology is not only relevant to voice personal preferences; it speeds up the market process of buying and selling and creates efficiencies that produce highly competitive environments. A customer today can compare prices between competitors, qualities of alternative products and even obtain quotes from different suppliers, almost instantly, in his/her smartphone. As massive transportation becomes cheaper the geographical space within which competition is defined has widened, and global chains compete with former local competitors. And, in addition to allow for personal voice preferences to be heard, and to make markets larger and more efficient, the ICTR technologies allow customers to design some products directly themselves. The principles of competition have changed in the ICTR technology era; the customer leads the market, and his preferences change quickly. Therefore, the three keys to success are: 1) Following the highly dynamic customer preferences in the amplified digital space; 2) being able to innovate rapidly; and 3) be willing to take the risks of innovating in fast changing markets.

The following quotes describe the new ICTR technology era.

I.- Bill Gates quotes: a) *"Who decides what's in Windows? The customers who buy it"*[7]. b) *"I believe innovation is the most powerful*

[7] https://www.aftership.com/blog/customer-experience-quotes/

force for change in the world"[8]. c) *"To win big, you sometimes have to take big risks"*[9].

II.- Larry Page quotes: a) *"The ultimate search engine would understand exactly what you mean and give back exactly what you want"*[10]. b) *"We should be building great things that don't exist"*[11]. c) *"Excellence matters. I've pushed hard to increase our velocity, improve our execution, and focus on the big bets that will make a difference in the world"*[12].

III.- Steve Jobs quotes: a) *"You've got to start with the customer experience and work back toward the technology, not the other way around"*[13]. b) *"Innovation distinguishes between a leader and a follower"*[14].**c) "Those who are crazy enough to think they can change the world usually do"**[15].

IV.- Mark Zuckerberg quotes: a) *"The question isn't 'what do we want to know about people?', It's,' What do people want to tell about themselves?"*[16]. b) *"People think innovation is just having a good idea*

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[8] https://www.bing.com/images/search?view=detailv2&iss=sbi&form=SBIIDP&sbisrc=ImgDropper&q=imgurl:https%3A%2F%2Fth.bing.com%2Fth%2Fid%2FOIP.VxTpo5sBaePYppNlfVBEKgHaEK%3Fpid%3DImgDet%26rs%3D1&idpbck=1&selectedindex=0&id=https%3A%2F%2Fth.bing.com%2Fth%2Fid%2FOIP.VxTpo5sBaePYppNlfVBEKgHaEK%3Fpid%3DImgDet%26amp%3Brs%3D1&ccid=tG47SgHC&mediaurl=https%3A%2F%2Fth.bing.com%2Fth%2Fid%2FOIP.VxTpo5sBaePYppNlfVBEKgHaEK%3Fpid%3DImgDet%26rs%3D1&exph=266&expw=474&vt=2&sim=11

[9] https://www.linkedin.com/pulse/win-big-sometimes-you-have-take-risks-ephantas-maina

[10] https://wealthygorilla.com/larry-page-quotes/

[11] https://wealthygorilla.com/larry-page-quotes/

[12] https://wealthygorilla.com/larry-page-quotes/

[13] https://www.aftership.com/blog/customer-experience-quotes/

[14] https://www.thebalancesmb.com/steve-jobs-quotes-on-innovation-2892486

[15] https://www.elitecolumn.com/steve-jobs-quotes/#:~:text=40%20Steve%20Jobs%20Quotes%20That%20Will%20Inspire%20You,much%20better%20than%20quantity.%20...%20More%20items...%20

[16] https://addicted2success.com/quotes/41-mark-zuckerberg-success-quotes/:~:text="Find%20that%20thing%20you%20are%20super%20passionate%20about,change%20who%20you%20are."%20–%20Mark%20Zuckerberg%208.

but a lot of it is just moving quickly and trying a lot of things"[17]. c) *The biggest risk is not taking any risk*[18].

V.- Jeff Bezos quotes: a) *"We're not competitor obsessed, we're customer obsessed. We start with what the customer needs and we work backwards".*[19] b) *What's dangerous is not to evolve, not to invent, not to improve the customer experience"*[20]. c) *"If you have a business idea with no risk, it's probably already being done. You've got to have something that might not work. It will be, in many ways, an experiment. We take risks all the time, we talk about failure"*[21].

VI.- Elon Musk quotes: a) *"If your customers love you, your odds of success are dramatically higher"*[22]. b) *"Good ideas are always crazy until they are not"*[23]. c) "If something is important enough, even if the odds are against you, you should still do it"[24].

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[17] https://www.overallmotivation.com/quotes/mark-zuckerberg-quotes/#:~:text="People%20think%20innovation%20is%20just%20having%20a%20good,"The%20biggest%20risk%20is%20not%20taking%20any%20risk…

[18] https://www.bing.com/images/search?view=detailv2&iss=sbi&form=SBIIDP&sbisrc=ImgDropper&q=imgurl:https%3A%2F%2Fqph.fs.quoracdn.net%2Fmain-qimg-7300096d241764881efd8e7166a3c58f&idpbck=1&selectedindex=0&id=https%3A%2F%2Fqph.fs.quoracdn.net%2Fmain-qimg-7300096d241764881efd8e7166a3c58f&ccid=cwAJbSQX&simid=608024690615527198&ck=C933D6E04F42618B209A251F8806E7D3&thid=OIP.cwAJbSQXZIge_Y5xZqPFjwHaD8&mediaurl=https%3A%2F%2Fqph.fs.quoracdn.net%2Fmain-qimg-7300096d241764881efd8e7166a3c58f&exph=321&expw=602&cdnurl=https%3A%2F%2Fth.bing.com%2Fth%2Fid%2FR.7300096d241764881efd8e7166a3c58f%3Frik%3D9wuSW397ciDGyQ%26pid%3DImgRaw%26r%3D0&vt=2&sim=11

[19] https://www.salesforce.com/blog/jeff-bezos-lessons-blog/

[20] https://www.executeresources.com/jeff-bezos-quotes/

[21] https://economictimes.indiatimes.com/news/company/corporate-trends/four-mantras-for-success-by-jeff-bezos/taking-risks-all-the-time/slideshow/69788357.cms

[22] https://deeperfreedom.com/elon-musk-quotes/

[23] https://thestrive.co/inspirational-elon-musk-quotes/

[24] https://carenmerrick.com/50-of-the-best-inspirational-quotes-on-taking-risks/#:~:text=-%20Steve%20Jobs%20"Pitiful%20is%20the%20person%20who,do%20when%20they%20have%20a%20dream%20to%20follow.

CONCLUSION

The ICTR has created a new digital world that has changed the way we live, think, consume, process information, produce goods and services, and participate both socially and politically. This new digital world puts together all devices like the computer, the TV and the telephone with a powerful wireless network that makes them smart and allows communication between them at the global level. It implies the convergence of many new technologies such as: 1) IoT (the internet of things); 2) Drones; 3) Solar PV (solar photovoltaic); 4) Big Data; 5) Robotics; 6) AI (artificial intelligence); 7) 3D Printing; 8) Gene editing; 9) Nanotechnology; 10) Blockchain; and 11) 5G. The digitalization of the world has been advancing very fast in recent years. Per 100 inhabitants, between 2005 and 2021, the use of internet worldwide went from 15.8 to 62.5, and mobile-cellular telephone subscriptions worldwide coverage from 33.9 to 109.9. In 2021, 95% of the world population was covered by at least a 3G mobile network. Today of the ten most valuable companies in the US stock, six are related to the ICTR. The ICTR has changed the relation between the customer and the company, it has empowered the customer and greatly diminished the institutional role of the companies. The three keys for a company to succeed in the ICTR era are: 1) Following the highly dynamic customers preferences in the amplified digital space; 2) being able to innovate rapidly; and 3) be willing to take the risks of innovating in fast changing markets.

Some of the forerunners of the ICTR have had he goal materializing the liberal-economist ideal of a market defined by consumer preferences. They aimed to do it by democratizing technologies previously reserved for the government and/or the army. The idea was access to free information for everybody and allowing the customers to communicate themselves through the media; to end the tyranny of institutions that impose their own product development programs to the customers' needs. And they have been successful; they have changed the customers-institutions relationship forever and have empowered the customer to an unexpected extent. The ICTR have significantly speed up the technological innovations - guided by the middle-class changing needs in free competitive markets. Paradoxically however, they have been so successful that they generated six of the ten large companies (institutions) in the US stock market.

CHAPTER TWO: TRADE AND GLOBAL PRODUCTION

One of the main changes brought about by the ICTR is the redefinition of the economic space. It made it possible to manage complex industrial operations, fragmented in many countries, from a central management location. This has changed the economic relations around the globe forever. Traditional economics saw two key routes to drive global productivity increases: A) capital moving to countries with lower salaries, and B) migrants willing to accept lower salaries, moving to high-salaries countries. The ICTR created a third route which resulted superior to the ones envisioned by traditional economics: central management in high-salaries countries of the fragmented production taking place in low-salaries countries.

Alternative A (the neoclassical model, recommended by the Washington Consensus), from a theoretical perspective, implied that given a global technology, customers preferences, and endowments, the optimum productivity would be obtained by using the available capital to produce in those locations with lower salaries. The problem with this view is that it disregards the existence of institutional entrance barriers such as: political risks, infrastructure, judicial systems, safety, social stability, administrative technology and so on. These institutional barriers implied too much risk for capital going to developing countries; therefore, it demanded very high rates of return – which meant that only few investment projects were undertaken, and only low amounts of capital entered the developing countries.

Alternative B has always been politically unacceptable for the workers in the high-salary countries. Not only on the grounds of the menace of the lower salaries paid to migrants for the same activity; but also due to the social disruptions that migrants represent. Therefore, migrations have always been restricted to low numbers. The only political pro-migration force was the hiring companies, which, with the emergence of the ICTR, have moved out to developing countries to produce in fragments, and therefore have seriously reduced their pro-migration standing[25].

[25] Peters, M. (2017). Trading Barriers. Princeton University Press, Princeton.

The ICTR did not encounter the political problems of migration policies, because it did not imply a social disruption in the developed countries; and, also, because it did not depend on the decisions of the governments, but of the companies. However, the new protectionist tendencies, after the 2008 GFC (Global Financial Crisis), constitute a serious menace for the global productivity benefits that the ICTR may entail. Figure 2.1 summarizes the main consequences of the ICTR.

FIGURE 2.1. THE ICTR: MAIN CONSEQUENCES

Protectionism increases and endangers the ICT revolution	2008 GFC happens
	Income distribution in some developed countries worsens
	Demand for low skill labor in developed countries go down
Global Trade Goes up	ICT: Fragmented Global Production, Global Chains Demand for labor in selected developing countries go up
Global productivity goes up	Poverty goes down dramatically in these selected countries
Inflation goes down	Income distribution worsens in some of these selected countries
Global welfare goes up	Global income distribution improves due to economic growth in these selected countries which improve the between countries income distribution; but the within country distribution worsens

GLOBAL TRADE AND GROWTH IN THE ICT REVOLUTION

As table 2.1 shows the ICTR, 1990-2008, has been the period with the highest annual rate of growth of trade in history, 2.6%. The ICTR produced the second-best economic growth rate in history, 2.4%; only surpassed by the 1950-1970 period, in which economic growth was due to the reconstruction after the Second World War (under the auspices of the Marshall Plan). After 2008 we have seen a new wave of protectionism. Thus, 2008-2019 we saw a negative rate of growth of global trade, which had therefore a decrease in the annual rate of global economic growth from the 2.61% in 1990-2008 to 1.81% in 2008-2018.

TABLE 2.1. WORLD'S TRADE AND GROWTH IN THE ICT REVOLUTION

Trade Index annual rate of growth %		GDP per capita annual rate of growth %	
Years		Years	
1500-1820	0.45	1500-1820	0.05
1820-1950	0.96	1820-1950	0.86
1950-1970	1.33	1950-1970	2.91
1970-1990	1.98	1970-1990	1.63
1990-2008	2.61	1990-2010	2.39
2008-2019	-0.41	2010-2018	1.81
Trade index= (exports+imports)/GDP		GDP per capita in constant international dollars.	

Source: The average of the index reported in https://ourworldindata.org/grapher/globalization-over-5-centuries?time=1988
1820-2018 https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2020
1-1820 https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-database-2010?lang=e

One of the reasons behind the growing protectionism after 2008 has been the argument that the ICTR only was beneficial for a few wealthy people in the developed countries and for a selected group of developing economies, like China. This argument is incorrect. As can be seen in table 2.2 the developed economies like the US, the UK and the European Union did benefit from the ICTR. Their adjusted net national income's (which considers the income generated from offshore investments) annual rate of growth was the highest in the ICTR period 1990-2008, and it went down with the protectionist policies adopted after 2008.

A second reason in pro of the protectionist policies adopted after 2008 was the mistaken explanation provided by the US Federal Reserve, and by the IMF, that the 2008 GFC was a consequence of the ex-ante excess savings generated in countries like China, and therefore that it was required to reduce these countries' economic surplus. And of course, the only way to accomplish China's economic surplus reduction in the real world, given China's higher productivity because of its low wages, is US protectionism. However, the consequences of protectionism are lower global economic growth, and wasting the global productivity opportunities that the ICTR entails.

TABLE 2.2. ADJUSTED NET NATIONAL INCOME (CONSTANT 2015 US$)

	Annual rates of growth		
	1970 1990	1990 2008	2008 2019
United States	1.95	2.80	2.24
United Kingdom	1.32	2.88	1.44
European Union	1.84	1.97	1.11

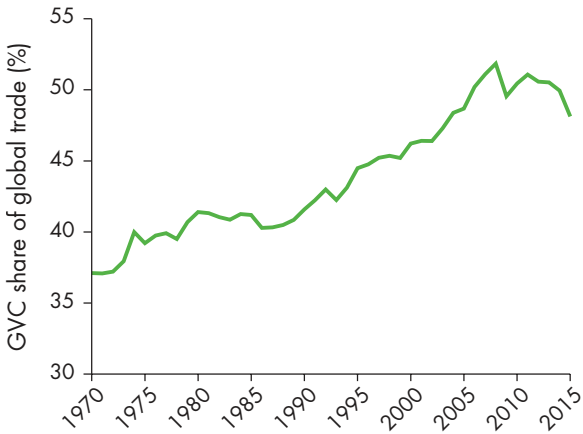
Source: Data from database: World Development Indicators
Last Updated: 04/27/2022
For UK only until 2018
For the World starts in 1971
2020 not included to avoid the pandemic influence.

A third reason for the growing protectionism is that the fragments of production exported to developing economies, reduce the demand for labor in the developed economies and therefore worsen their within country income distribution. While this is true particularly in the US, as we will see below, the solution as we discuss later is to implement income distribution compensatory polices, not to introduce protectionism which reduces global productivity and potential economic growth.

Figure 2.2 shows how the trade consequence of the global value chains (GVC) promoted by the ICTR, was the main cause of the fast trade growth in 1990-2008, and it also shows how these GVC trade has diminished after 2008. At its peak the GVC trade represented more than half of the total global trade. The World Bank defines a GVC as "the series of stages in the production of a product or service for sale to consumers. Each stage adds value, and at least two stages are in different countries". And argues that "unlike traditional international trade whose

transactions involve only two countries (an exporting country and an importing country), GVC trade crosses borders multiple times"[26].

FIGURE 2.2 GVC TRADE GREW RAPIDLY IN THE 1990S BUT STAGNATED AFTER THE 2008 GLOBAL FINANCIAL CRISIS



Sources: WDR 2020 team, using data from Eora26 database; Borin and Mancini (2019); and Johnson and Noguera (2017). See appendix A for a description of the databases used in this Report.
Note: See fgure 1.2 in chapter 1 for details. Unless otherwise specifed, GVC participation measures used in this and subsequent fgures throughout the Report follow the methodology from Borin and Mancini (2015, 2019).

THE ICTR AND THE ECONOMIC GROWTH MODELS

The economic growth 1990-2020 was defined by two key factors: 1) The economic growth model; and 2) the way the countries inserted themselves in the ICTR. China has had both: the right economic model (the Asian growth model) and inserting itself efficiently into the ICTR. Mexico's adoption of the alternative A, the neoclassical model, explains the failure of the Mexican economy versus the success of the Chinese or the South Korea economies, based on an Asian Growth Model - that fully exploited the new economic alternatives brought about by the ICTR. Japan had

[26] https://www.worldbank.org/en/publication/wdr2020, p.17.

the right economic model (the Asian growth model), but it inserted itself inadequately in the ICTR. Table 2.3 shows the economic growth of these three countries in the mentioned period. As it can be appreciated the difference in their corresponding economic growth is enormous. It goes from a great success - China, to two big failures - Japan and Mexico.

TABLE 2.3. GDP PER CAPITA, PPP (CONSTANT 2017 INTERNATIONAL $)

	Annual Growth Rate 1990 - 2020
Country	
China	8.47
Mexico	0.59
Japan	0.67

Source: Data from database: World Development Indicators.
Last Updated: 04/27/2022

However, China was not the only successful country in this period, other Asian countries, as can be seen in table 2.4, were also successful; they grew significantly faster than the world's average. All these countries had the correct model (the Asian growth model), and they entered efficiently into the ICTR.

TABLE 2.4. GDP PER CAPITA, PPP (CONSTANT 2017 INTERNATIONAL $)

	Annual Growth Rate 1990 - 2020
Country	
Korea, Rep.	4.11
Singapore	3.10
Malaysia	3.19
Thailand	3.01
World	1.73

Source: Data from database: World Development Indicators.
Last Updated: 04/27/2022

What Went Wrong in Japan?

Japan had a marvelous economic growth 1950-1990. First, because of the reconstruction after the war, and later, because the country adopted the Asian growth model and entered very efficiently the phase before the ICTR (1950 – 1980), with the production - among other industries - of computer chips and the massive production of cars. Japan offered a good infrastructure, trustable and stable institutions, good quality of labor and lower salaries that the advanced Western countries. Therefore, during these years Japan was a success story. Japan's GDP per capita annual growth rate 1950 -1990 was 5.87%[27]. However, when the ICTR started, at the end of the eighties, it allowed fragmented production – which basically meant that other countries with lower salaries than Japan, like China, became competitive. Japan should have entered the ICTR with very high savings and it also should have fragmented its production in lower-salaries countries, because Japan's labor was no longer competitive; instead, Japan decreased its savings and mostly continued producing at home. Gross domestic savings in Japan decreased from an average of 35.2% 1960-1990 to 27.9% 1991-2020. The consequence was that Japan's GDP per capita annual growth rate 1990 - 2020 was only 0.67% (Table 2.3). Notice that Japan is the only one of the Asian countries in table 2.5 that decreases its average gross domestic savings rate.

TABLE 2.5. GROSS DOMESTIC SAVINGS (% OF GDP)

	Average	
Country	1960-1990	1991-2020
Japan	35.18	27.72
China	33.04	43.94
Korea, Rep.	21.95	35.55
Singapore	27.76	50.54
Mal aysi a	27.77	38.95
Thailand	24.68	33.02
Mexico	22.87	22.36

Source: Data from database: World Development Indicators.
Last Updated: 04/27/2022

[27] Data from Maddison 2020.

What Went Wrong in Mexico?

Mexico entered the ICTR through the trade agreement with the US known as NAFTA. Mexico is a very open economy. However, it grew very slowly 1990-2020 (see table 2.3) Why? The answer is that Mexico had very low gross domestic savings - see table 2.5 - and that, because of the fragmented production, the foreign investment that entered the country was not enough to compensate for the low savings. Moreover, Mexico did not have an industrial policy of its own – thus it did not protect and develop its own industry, and it had a flexible exchange regime. In summary, Mexico followed the neoclassical model, therefore this country was expecting that once the NAFTA was signed, foreign savings (foreign investment) would flow in large amounts into the country to compensate for the low internal savings. Since this did not happen, total savings was very low and therefore Mexico only grew 0.59% 1990-2020 (see table 2.3).

What Went Right in China and the Other Successful Asian Countries?

China applied the Asian growth model and entered efficiently the ICTR with high savings and low salaries. Other Asian countries did not grow as fast as China because they had higher salaries, but still their growth was quite significant because these countries increased their savings rates.

The Asian growth model (AGM) implies: 1) High local savings. 2) An industrial policy to protect and develop local industry. 3) High international reserves to be able to control the exchange rate to promote exports and reduce imports. 4) An explicit export policy to developed countries, based on the world's frontier technology. 5) The creation of local champion companies able to compete worldwide. 6) Optimal conditions granted to the foreign investors willing to install a fragment of production in the developing country. The name of the game is the transfer of technology from abroad, the creation of local suppliers for foreign companies and the development of local large global champion companies. The AGM stimulates economic growth through three venues: a) Exports. b) Import substitution. c) Creating integrated local value chains (like in construction and many goods and services guided to the local market).

The Asian growth model was successful in Japan and other Asian countries 1960 – 1990; after 1990 it was successful in China and the other Asian countries that entered the ICTR with high savings (see Table 2.5). It was particularly successful in China because of its low salaries.

INCOME DISTRIBUTION AND THE ICTR

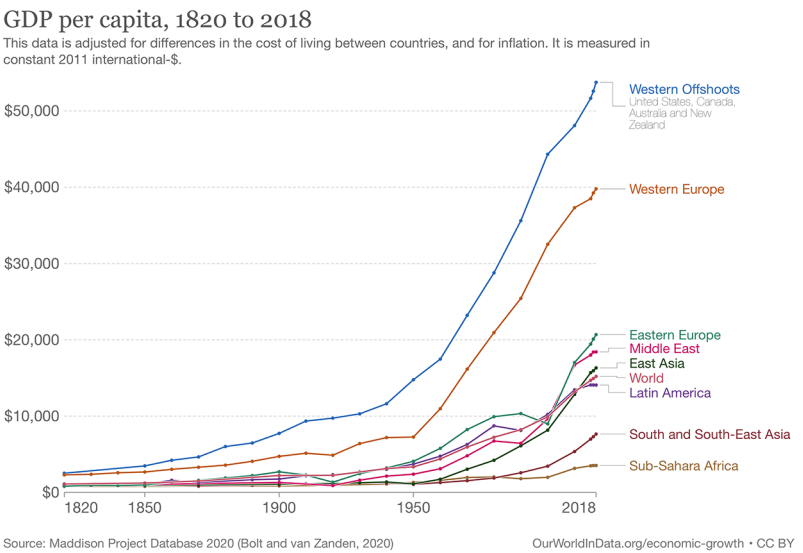
The ICTR has changed the world's income distribution. It is the first time since 1820 that the global income distribution improves, and there has been a drastic reduction in world's poverty. Therefore, the income distribution benefits of the ICTR are unquestionable. There is, however, an increase in the within country income concentration in those countries involved in the ICT, particularly the US and China. In the developing countries the income concentration is due to the profits of the entrepreneurs associated with the ICT, but it is parallel to the already mentioned drastic reduction in poverty. In the developed economies, income concentration is due to several factors such as: the unemployment in certain industrial areas due to the jobs transferred to the developing countries, the high profits of the companies associated with the ICTR, which impacted positively anybody owning shares in the stock market, the high real estate prices due to low interest rates associated with the low inflation, consequence of the ICTR, and the demand in certain cities for commercial real estate from companies establishing there their commanding ICTR headquarters. The income concentration problems caused by the ICTR should however not be counteracted with protectionist policies, but with the appropriate income redistribution policies and training programs to generate the workforce with the new skills required either by the ICTR or by the service sector. In the developed countries' service sector, the employment elasticity demand is almost infinite; therefore, well managed, the ICTR associated temporary unemployment in developed economies should be only a transitory phenomenon.

The Global Income Distribution

The global income distribution between individuals can be decomposed into the income distribution between individuals within a country and

the income distribution between countries, and using a Theil index the sum of the two should be equal to one. This can be appreciated in table 2.6 below[28]. In 1820, inequality was 92% explained by within country inequality because the GDP per capita income of the distinct countries was very similar and therefore the inequality between countries was almost nil. However, since 1820 their GDP per capita became more and more unequal, see figure 2.3. Therefore, by 1990 only 23% was explained by the income distribution within the countries, and 77% was explained by the between countries income distribution.

FIGURE 2.3 GDP PER CAPITA: HISTORICAL TRENDS



Source: https://www.visualcapitalist.com/cp/visualizing-global-income-distribution-over-200-years/

Since 1990 the impact of the ICTR can be appreciated. The fragmented production in selected Asian countries has three effects: 1) It increases GDP per capita in these selected Asian countries and therefore reduces the between countries inequality; 2) it increases the within country inequality in these selected Asian countries, particularly China 3) it

[28] Inequality Among World Citizens: 1820-1992. François Bourguignon; Christian Morrisson. *The American Economic Review*, Vol. 92, No. 4. (Sep. 2002), pp. 727-744.
Bouguignon, F. (2015). *The Globalization of Inequality*. Princeton University Press, Princeton.

increases the within country inequality in the developed countries that transfer jobs to the selected Asian countries, particularly the US. The total effect is: a) total global inequality decreases (the Gini coefficient starts going down after 1990 in table 2.6), because the effect 1) outweighs effect 2) and 3), since the between countries income distribution is a larger component of total global inequality than the within countries income distribution; b) because the between countries inequality goes down and the within countries inequality goes up, the % explained by the between countries inequality starts going down since 1990 (as can be appreciated in Table 2.6).

TABLE 2.6. HISTORY OF TOTAL GLOBAL INEQUALITY

Year	Gini Coefficient	Between Countries % Explained Theil Coeff.	Within Countries % Explained Theil Coeff.
1820	0.430	8	92
1850	0.532	25	75
1913	0.610	49	52
1980	0.657	74	26
1990	0.703	77	23
2000	0.683	75	25
2008	0.638	69	31
2010	0.623	66	34

Source: Data from database: World Development Indicators.
Last Updated: 04/27/2022

It should be pointed out however that the improvement in the global income distribution in Table 2.6 is only due to the rapid growth in the GDP per capita in China (which is the main effect) and India. If we eliminate these two countries, the rest of the world between countries income distribution deteriorates, and therefore the global inequality instead of improving deteriorates[29]. While global poverty is significantly reduced with the ICT, most of the reduction happens in China. And the problems of underdevelopment and poverty of the countries not associated with the ICTR remain unresolved. Table 2.7 shows the reduction of poverty in millions in the world due to the ICTR between 1990 and 2017. At

[29] Obregon Carlos.,2018. *Globalization Misguided Views*. Amazon.com. Also available at Research gate.com.

$1.90 DD (dollars a day), the world between 1990-2017 reduces poverty headcount by 1221 million, of which 1077 (88%) happened in East Asia & Pacific. At $3.20 DD East Asia & Pacific reduces 1372 million (122% the world's) and the world only 1121 million, because there is a substantial increase in Sub-Saharan Africa (28% the world's reduction). At $5.50 DD there was an increase both in South Asia (148% the world's reduction) and in Sub-Saharan Africa (161% the world's reduction), while the poverty reduction in East Asia & Pacific of 1080 million represents 386% of the world's reduction, which was only 280 million. Thus, there is no doubt that the most important influence in reducing poverty has been the fast economic growth in East Asia & Pacific.

TABLE 2.7 POVERTY REDUCTION 1990-2017 (MILLIONS)

	$1.90	% of World's	$3.20	% of World's	$5.50	% of World's
East Asia & Pacific	1077.32	0.88	1371.92	1.22	1080.33	3.86
Europe & Central Asia	14.20	0.01	43.69	0.04	101.87	0.36
Latin America & Caribbean	42.41	0.03	70.06	0.06	73.89	0.26
South Asia	279.50	0.23	-5.45	0.00	-412.74	-1.48
Sub-Saharan Africa	-146.80	-0.12	-319.06	-0.28	-449.24	-1.61
World	1220.55	1.00	1120.76	1.00	279.53	100.00

Source: Data from database: World Development Indicators Last Updated: 12/16/2020

Income Distribution in Developed Economies

In the long term the income distribution in the developed economies has improved mainly due to the emergence of the middle class. Table 2.8 presents the income share of the top 10% of the population. Market value (MV) income distribution is obtained before government transfers and social expenditures as reported by WID (as suggested by Piketty)[30]. But, since in the twentieth century both government transfers and social expenditures have increased considerably, we have been arguing that using

[30] WID stands for World Inequality Database.

market value for long-term comparisons does not make sense[31]. Therefore, Obregon 2018 has estimated the disposable income value (DIV) income distribution that corresponds to the WID reported MV. It can be appreciated that for all the countries in the table, there is a strong income de-concentration 1920-2013. In France the middle class (understood as the lowest 90% income earners) gains a 31% share of total income, in Sweden 22%, in the UK 10% and in the US 9%.

TABLE 2.8. INEQUALITY HISTORY DEVELOPED COUNTRIES

	Top 10% Income Share WID					
	Market Value			Disposable Income		
Country	1910	1980	2013	1910	1980	2013
France	51.51	31.11	29.81	51.08	20.50	20.50
Sweden	43.88	22.48	30.62	43.43	14.08	21.25
UK	37.03	28.37	41.29	36.54	19.88	26.83
US	40.51	31.77	45.64	40.26	21.87	31.55

Source: Obregon, C. Globalization Misguided Views Amazon.com. Pages 122, 135, and 138. See footnotes in the above reference for methodology.

However, in the same table it can also be appreciated that 1980 -2013, in three of the countries listed – UK, US and Sweden – there is an income concentration. To further explore this issue table 2.9 presents the disposable income distribution based on survey data in selected countries. Table 2.9 confirms that there has been an income concentration in the UK and the US in recent decades. However, it points out that in the UK this concentration happened between 1980 and 1990 and was due to Margaret Thatcher's economic policies and not to the ICTR; 1990 to 2008 the income distribution in the UK is very stable. In the US, part of the concentration is due to Ronald Reagan's policies and the other part to the ICTR. France, as in Table 2.8, does not show an income concentration. Sweden, contrary to Table 2.8, does not show an income concentration. In Asia there are mixed results: Japan does show an income concentration, but the Republic of Korea and Singapore do not.

[31] Obregon, C., 2015. *Piketty is Wrong*. Amazon.com. Also available at Research gate.com.

In any case, what seems clear is that the ICTR did produce an income concentration in the US.

TABLE 2.9. INEQUALITY HISTORY DEVELOPED COUNTRIES

	Top 10% Income Share Survey Data Disposable Income				
Country	1980	1990	2008	2013	2018
France	27.24	24.96	26.30	26.91	25.90
Sweden	18.36	20.18	21.67	21.67	22.40
UK	22.45	27.22	27.26	25.70	24.97
US	25.35	27.56	30.61	30.29	30.81
Japan	N.A	21.70	26.15	26.41	26.50
Korea R.	29.36	25.66	23.00	22.31	22.45
Singapore	28.20	31.50	28.49	29.36	29.36
Notes:	France 1979	Swed. 1992		Korea 2012	US 2019
	Swed. 1981	UK 1991		Sing. 2012	Japan 2014
	UK 1979	US 1992			Korea 2016
	Korea 1982	Japan 1993			Sing. 2012
		Korea 1992			
	Sing. 1978	Sing. 1988			

Source: WIID 25 May 2021, United Nations

INCOME DISTRIBUTION IN DEVELOPING ECONOMIES

In developing economies, we find mixed results. As table 2.10 shows 1990-2008 there is an income concentration in China due to the ICTR, this is a result of the high profits of the ICTR companies. In Mexico there is an income concentration 1980 -1990 due to the Latin American crisis of the 1980s, but after 1990 the ICTR did not produce further income concentration. In Malaysia and Thailand, the ICTR did not produce an income concentration.

TABLE 2.10. INEQUALITY HISTORY DEVELOPED COUNTRIES

	Top 10% Income Share Survey Data Disposable Income				
Country	1980	1990	2008	2013	2018
China	N.A.	25.80	31.97	30.28	29.35
Malaysia	39.30	36.41	34.66	31.82	31.26
Thailand	36.67	41.23	38.97	36.81	35.29
Mexico	33.32	37.73	37.28	37.00	34.30
Notes:	Mal. 1979	Mal. 1989	Mal. 2007	Mex. 2014	China 2016
	Thai. 1981	Mex. 1989	Thai. 2007		Mal. 2016
					Thai. 2017

Source: WIID 25 Mayo 2021, United Nations.

2008 GFC AND THE ICT REVOLUTION

It is interesting to note in table 2.9, that the income concentration happened in the UK between 1980 and 1990, and in the US between 1980 and 2008. That is why I have argued elsewhere that the political populist support observed in the votes in favor of Brexit and Donald Trump have more to do with the 2008 GFC than with the concentration of income[32]. While there is no doubt that given the 2008 GFC, the unemployment generated by the ICTR, together with the absence of re-distributional polices, did provide some additional political support for national populism to emerge. It is important to realize that the main source of today's populist nationalism in developed economies is the 2008 GFC; we will leave for chapter three the explanation of how this sequence of events unfolded.

CONCLUSION

The ICTR drastically changed the geography of economic production: 1) it fragmented production into developing countries while managing it centrally in developed economies; 2) it further increased drastically glob-

[32] See also, Obregon, C. *Globalization Misguided Views*, op. cit.

al productivity; 3) it lowered inflation globally; 4) it produced the largest reduction in global poverty in decades; and 4) it changed income distribution globally and in selected countries. Recently however, a movement towards protectionism, mainly consequence of the 2008 GFC, has decreased the benefits of the ICTR. As we will see in the next chapter, the 2020 global pandemic (GP) and the Russia Ukraine war present new challenges that will necessarily slow down the ICTR.

CHAPTER THREE: TODAY'S ASSAULT ON GLOBALIZATION

This chapter argues that nationalistic populism, all over the world, can be seen as a consequence of the failure of the neoliberal promises. It describes the neoliberalism of the 1980's and its failed claims that: 1) developed countries would not experience financial crises; and 2) that developing economies would develop following the neoclassical recommendations of the Washington Consensus. Neoliberalism wrongly started the dismantling of the international institutions like the WTO (World Trade Organization). The developed countries' populist nationalism is a direct consequence of the 2008 GFC. In the developing countries, particularly Latin America, populist nationalism is a consequence of the lack of proper economic growth. This chapter describes how national liberalism produced the 2008 GFC and gave rise to a mistaken explanation of its causes; how nationalism explains the mismanagement of the 2020 GP; how nationalism explains the Russia-Ukraine war; and how nationalism is behind the global climate crisis and the rampant growth of international crime.

As I am writing this manuscript the stock markets have gone down around 20% to enter bear territory, the Federal Reserve is increasing rates aggressively, inflation is the highest in many years and the IMF and the World Bank are forecasting a slowdown of the global economy. How is all this possible in the midst of the ICTR? What is going wrong? The answer is: the resilient nationalism.

The ICTR has the power to produce a global, booming economy. However, the ICTR has been slowed down by the 2008 GFC and the populism it generated in the developed economies, the international mismanagement of the 2020 GP, the recent Russia -Ukraine war, and the low economic growth in a large group of developing economies. Each one of these factors, that has slowed down the ICTR and its benefits, has a connection with a resilient nationalism, which explains, to a large extent, the poor international management of each one of these cases.

Economists have always defended globalization as a route to economic progress. Smith and the liberal economist emphasized the im-

portance of free trade, and Marx saw the globalization of the economic process in capitalism as the key to unravel the true essence of humans as a "species being". Paradoxically however, both liberalism and Marxism have strengthened the old nationalisms. Marxism has argued that the global revolution of the proletariat should open the door to an international communist humane society. In practice however, the international proletariat has never come into being; Marxists revolutions occurred in specific underdeveloped countries and served the purpose of strengthening their old nationalisms. Communist countries became inward-looking economies, isolated from the global economy, using obsolete technologies. On the other side, liberalism argued that free trade and democracy should bring global progress and peace. Neoliberalism, in the eighties, wrongly started the dismantling of the international institutions like the WTO (World Trade Organization). Free markets, it was argued, would provide economic stability and economic growth to the developed countries. And it was asserted that in a liberalized world, international capital would develop the lower salary developing economies. Instead, the developed economies had the 2008 GFC, the 2020 GP and are now indirectly involved in the Russia-Ukraine war. And the developing countries that adopted the liberal recommendations did not grow; while a selected group of Asian countries, following a non-liberal economic model, grew very fast.

Populist nationalism is a consequence of the disenchantment with liberalism. In developed economies after the 2008 GFC people became disappointed with the liberal global economic model; and demanded from their governments to defend their national interests, which opened the door to populist politicians. This explains, for example, the triumph of Donald Trump, Brexit, Biden's and Trump's commercial confrontation with China, Biden's protectionist policies like the proposal that the government would only buy made in America and the violation by the US of the trade agreement with Canada and Mexico in the production of electrical cars. In developing economies, particularly Latin America, the disappointment with the low economic growth produced by the liberal policies have favored the electoral success of populist politicians (most of them leftist) in Mexico, Brazil, Argentina, Chile, Colombia, Venezuela, Nicaragua, Ecuador, and Bolivia. Populist politicians defend national populistic policies that have produced a slowdown in the ICTR.

In what follows we will briefly describe how nationalism has been involved in the assault on globalization that has happened in: 1) the 2008

GFC, its interpretation, and the rise of populism in developed economies; 2) the 2020 GP; 3) the Russia-Ukraine war; 4) the lack of growth in Latin America and the success of populist politicians; 5) the global climate crisis; and 6) the booming of international crime.

THE FAILURE OF LIBERALISM IN DEVELOPED ECONOMIES: THE 2008 GFC

I have extensively written on the real causes of the 2008 GFC, the interested reader should refer to those books[33]. Greenspan rightly thought, as he has written in his memoirs, that the world was living a new era in which it was possible to eliminate business cycles. In fact, Greenspan was right, the productivity potential of the ICTR is such that it could sustain a long-term economic boom. Then, what went wrong? Greenspan reduced the Fed's rate to stimulate the economy, revive the stock market and provide easy housing financing (subprime mortgage loans) to the low-income class, so that they could also enjoy the benefits of the economic boom. The Fed however, within few years returned the Fed's rate to normal levels, which rapidly increased the payments of variable rate subprime mortgage loans and produced many defaults in this market. Then came the two big mistakes: 1) The Fed and the US financial authorities, trained in liberal economics, were mistakenly confident that the private markets were going to take care of the defaults in the subprime variable rate subprime loans. This argument was twice argued in the Economic Report of the President. 2) The financial authorities in the US, in Europe and in the international organisms did not understand the degree to which the financial markets were already interlinked globally, due to the ICTR.

The official explanation of the crisis was that trade imbalances — mainly due to China's exports— produced ex-ante over-saving in the global economy, which reduced the real long-term interest rate; and therefore, generated the real estate boom, whose crash produced the 2008 GFC. This explanation was also associated with irresponsible and unprofessional economic agents, like consumers that borrow too much, greedy bankers, lenders with overextended balance sheets, rating agen-

[33] Obregon, C. *Globalization Misguided Views,* op. cit. Obregon, C. 2011. La crisis financiera mundial. Siglo XXI. Ciudad de Mexico.

cies that did not do their job, auditing agencies that were irresponsible, and so on. This official explanation has many problems. The first one is that, as Mervyn King has recognized, with floating exchange rates, central banks do have control on their monetary policy; therefore, interest rates would not have come down in the US if the Federal Reserve had not validated them. The second one is that the real estate boom in the US (where the crisis started) was significantly less than in Europe. And the third one, that fully destroys the official explanation, is that the overall real estate crash in the US happened after the banking crisis and not before it. Therefore, what explains the overall real estate crash is the rising interest rates due to the banking crisis; and it is not the overall real estate crash what causes the banking crisis, as the official explanation argues.

The official explanation was built using the wrong overall real estate index, the Case-Shiller index. This index overweights the subprime real estate market, and therefore, it starts declining before August 10, 2007, which was the day on which the interbank lending rate (Libor) drastically went up, signaling the beginning of the banking crisis. The FHFA[34] expanded index was not available when the official explanation was presented; but once it became available, it showed that the official explanation of the crisis was wrong. Because the overall real estate market only went down slightly before August 10, 2007; and this slight decline was due to the portion that the subprime real estate represents of the total real estate market, see table 3.1.

What happened was that that the adjustable-rate subprime loans had been securitized within larger securities, 75% of which were held by US banks and international banks. And since it was impossible to unravel the risk within these large securities, a local adjustable-rate subprime loans crisis (that could have been avoided by a relatively inexpensive intervention of the US financial authorities) became a banking crisis. Therefore, the interbank lending rate went up, the banks' lending rates to the public went up, and due to the rise in interest rates, the crisis became generalized to the overall real estate market and the stock market. And since international banks are interconnected with the US banks, and also had bought the mentioned larger securities, the financial crisis reached Europe, despite three years of arguments by the European financial authorities that the financial crisis was only a US problem.

[34] FHFA stand for Federal Housing Finance Agency.

TABLE 3.1. HOUSING SECTOR REAL PRICE INDEX (ANNUAL RATE: INDICATED QUARTER VERSUS SAME QUARTER OF PREVIOUS YEAR)

Year & quarter	*FHFA expanded*	*Case-Shiller*	*FHFA purchases*	*FHFA all transactions*
		2006		
1t	5.2	7.2	5.1	6.3
2t	3.8	3.8	3.6	4.6
3t	0.9	- 1.3	0.6	1.9
4t	2.0	- 1.6	1.8	3.4
		2007		
1t	- 0.3	- 4.0	0.2	1.4
2t	- 2.8	- 5.9	- 1.3	- 0.2
3t	- 4.5	- 6.5	- 1.4	- 1.8
4t	- 8.3	- 11.5	- 5.7	- 4.1
		2008		
1t	- 11.4	- 17.0	- 8.9	- 5.6
2t	- 12.5	- 18.0	- 10.6	- 7.4
3t	- 14.7	- 20.1	- 13.0	- 10.6
4t	- 14.3	- 21.2	- 12.5	- 9.4

Source: FHFA and R. Shiller.

The 2008 GFC was consequence of the Fed's rapid movement of the Fed's rate without a prompt intervention of the US financial authorities to remedy the damage caused by the rapid increase in the Fed's rate. In highly interconnected local and global financial markets, local defaults in small markets may have grave consequences. This episode should warn the Fed today to be vigilant of the consequences of raising rapidly the interest rate and reducing fast its bond portfolio.

Nationalism played an important role in the 2008 GFC. European authorities disregarded the crisis as being a US problem. Nobody understood the sophisticated international links of the financial world. Liberalism had created the wrong environment. The role of the international financial institutions had been greatly diminished. There was the expectation that local national markets would be highly efficient in dealing with risk. All these assumptions were wrong. We had the 2008 GFC in a highly interconnected global financial market, which to operate properly,

would have required strong and vigilant financial institutions, both at the national and the international level.

It is interesting to note that the official explanation of the 2008 GFC was the ex-ante excess savings in countries like China, which - as I have shown- had nothing to do with the crisis[35]. This explanation was unfortunate, because it strengthened the nationalist populism against China which has slowed down the ICTR.

Particularly due to Piketty's writings, it has become commonplace to explain national populism in the developed countries as the consequence of the income concentration produced by the ICTR. As I have argued elsewhere, this argument is mistaken[36]. The income concentration in the UK and the US had happened before 2008 (see table 2.9) and had not produced populist tendencies. In fact, in the UK, there was de-concentration of income after 2008. National populism in the developed economies is a direct consequence of the 2008 GFC; which diminished drastically people assets (such as housing, retirement funds and stock holdings), generated unemployment and reduce the future rate of economic growth. People in these developed counties were asking their governments to protect their wealth and economic well-being, to bring about the promises that liberalism had failed to deliver. The assault on globalization in developed economies, that gives rise to Brexit and the triumph of Donald Trump is to a large extent consequence of the mismanagement of the US, European and international financial authorities of the 2008 GFC. Liberalism cannot sustain a well-functioning globalization, which requires strong global institutions that were missing in 2008.

THE MISMANAGEMENT OF THE 2020 GP

Strong international institutions are not only missing in the financial world, but also in the health sector. The WHO (World Health Organization) has a budget that is like the one of a large US hospital. The WHO has done a poor job confronting the 2020 GP. As if it was not a global pandemic, each country has followed distinct local policies. I have visited Japan since 1990; and back then, it was already customary for people

[35] See documents quoted in footnote 30.

[36] Obregon, C. *Piketty is Wrong,* op.cit.

to mask themselves to prevent spreading respiratory infections. Yet the WHO did not realize the relevance of masking until June 5th, 2020, even two full months after it was recommended by the CDC in the US[37] (the CDC recommended mask wearing on April 3rd, 2020). As Mariscal and I have shown, early international coordinated measures could have seriously diminished the damage in human lives and the economic wealth consequence of the 2020 GP[38]. Table 3.2 shows the excess deaths and GDP per capita for selected countries and the world. Up to May 23rd, 2022, *The Economist* estimates a total accumulated death toll for the world of 21.5 million, which represents 270 excess deaths per 100 thousand inhabitants. The eight Asian countries that have followed the Asian growth model, have an average of only 53 excess deaths per 100 thousand inhabitants. If the world had followed the health policy of these countries, the total death toll would have been only 4.2 million (twenty percent of the actual estimated 21.5 million). Eighty percent of the deaths could have been avoided. Of course, it could be argued that these countries are richer than the world on average. But looking at table 3.2 one can appreciate that China's GDP per capita is quite like the world's average; and China only had 57 excess deaths per 100 thousand inhabitants. Using China as a reference, still 79% of the deaths could have been avoided. Looking at table 3.2 one can see that the national strategies followed were very diverse in different countries. Some were successful and others were a failure. Latin America in general performed worse than the world's average, with two exceptions in the table, Chile, and Uruguay. Peru and Mexico stand out for their bad performance. Mexico, being 10% richer that the world's average, has had 2.3 times the excess deaths of the world's average. The United States has done better than the world's average. But being richer than the main Western European countries, Japan, or South Korea (Korea Republic.), the US performed significantly worse than them. And the main Western European countries performed worse than Japan or South Korea. The table leaves no doubt: an efficient homogeneous global health strategy could have saved many lives. A coordinated health strategy could have significantly reduced the economic costs of the pandemic, for a discussion in this topic see Obregon 2020[39].

[37] CDC stands for Centers for Disease Control and Prevention.

[38] Obregon C, and Mariscal J., 2020. Covid 19, A Self-Inflicted Tragedy. Amazon.com. Also available at Research gate.com.

[39] Obregon, C., 2020. *A New Global Order*. Amazon.com. Also available at Research gate.com. Chapter three.

TABLE 3.2. COVID EXCESS DEATHS PER !00 THOUSAND AND GDP PER CAPITA SELECTED COUNTRIES

	Excess Deaths	GDP Per Cap.		Excess Deaths	GDP Per Cap.
Taiwan	14	NA	Argentina	315	19691
Singapore	37	93397	Mexico	608	17852
China	57	16316	Brazil	356	14064
Korea. Rep.	49	42336	Chile	202	23325
Malaysia	91	26472	Colombia	357	13449
Thailand	100	17285	Venezuela	233	NA
Japan	15	40232	Peru	708	11261
Hong Kong	64	56154	Uruguay	112	21608
Ave	53		Ave	361	

	Excess Deaths	GDP Per Cap.		Excess Deaths	GDP Per Cap.
United K	114	42676	Romania	350	28871
France	74	42321	Poland	257	32399
Spain	114	36211	Hungary	240	31098
Germany	63	51423	Czech Rep.	179	38511
Italy	138	39073	Ave	257	
Ave	101				

	Excess Deaths	GDP Per Cap.		Excess Deaths	GDP Per Cap.
United Sta.	208	59920	U. Arab E.	412	63299
Australia	29	48679	Saudi Arab.	656	44328
Canada	48	46064			
Russia	541	26456	Cen. Afr. R.	179	936
Ukraine	281	12376	S. Africa	752	12666
			Botswana	823	14655
World	270	16185			

Source: Excess deaths per 100 thousand demography adjusted from The Economist "The Pandemic true Death Toll" Updated May 23. 2022
GDP Per Capita in 2020 Data from database: World Development Indicators World Bank
Last Updated: 05/25/2022

Once the economic damage of the 2020 GP was produced, there was a proper Keynesian response by most of the countries around the world. Thus the 2020 GP, that probably could have been avoided to a large extent, once it occurred was however, afterwards, better managed than the 2008 GFC[40]. But when the recovery, due to the excess demand consequence of the Keynesian policies, was supposed to happen, two unexpected supply shocks delayed the recovery. And therefore, what was supposed to be a transitory inflation due to a temporary imbalance between the Keynesian excess demand and the shortages of supply due to the bottlenecks associated with the 2020 GP, became a lasting inflation capable to generate inflationary expectations. A situation which has forced the central banks to drastically reduce their bond holdings and to increase rapidly their official rate. As a result, in the US and other countries, a recession is very likely. The two unexpected supply shocks that we mentioned are: 1) China's unilateral decision to pursue a zero Covid policy and 2) the Russia-Ukraine war. Both of which unfortunately happened in the context of escalating commercial tensions between the US and China, due both to the increasing protectionism of the US and the diminished international role played nowadays by the WTO (World Trade Organization).

Nationalism again has slowed down the ICTR. A stronger WHO would have seriously reduced the negative economic impacts of the 2020 GD. A stronger WHO would have coordinated the global Covid policy, and therefore the unwarranted unilateral zero Covid policy followed recently by China would not have happened. A stronger WTO could have seriously reduced the extent and costs of the commercial war between the US and China. A better coordinated commercial relation between the US and China would have diminished China's incentives to support Russia. Stronger global institutions would have understood the mistake of maintaining NATO and leaving Russia out of it. And Russia's populist nationalism could have been avoided by integrating it into the global economy since the 1990's (see next section).

The point to be made is that the world is suffering from uncoordinated national policies, that seriously hurt globalization. Nationalistic populism is awfully expensive in a world globalized by the ICT. Even within a nation like the US, the cost is very high. Let us analyze Joe Biden's policies. On one side, his government adopts a Keynesian policy stimulating demand, on the other it initiates a

[40] Obregon C., 2021. *Keynes Today*. Amazon.com. Also available at Research gate.com.

trade war with China and supports Ukraine against Russia. Both sides are incongruent among them. Stimulating global demand while creating the cost-push inflation associated with the Russian-Ukraine war and fostering unnecessary supply bottlenecks originated in the commercial war with China, is clearly incongruent. And it has the US on the verge of a recession, and Biden on the verge of losing both the midterm election and the future presidential election. Even in purely selfish political terms, the incongruence in policies does not make sense. Somebody should have told President Biden that inflation would destroy his electoral chances.

THE VIOLENT CONFRONTATION OF NATIONAL INTERESTS: THE RUSSIA-UKRAINE WAR

The Russia-Ukraine war, as I have recently argued, should never have happened[41]. It is a historical regression, that makes no sense. On the Russian side, it is a gorilla-like approach corresponding to the vision of the world as a zero-sum game which belongs to the most primitive version of humans. The notion of the gains of an isolated nation as the key to progress is simply wrong. Even Alexander the Great and the Roman Empire understood the notion of global order as a precondition for each nation economic progress. The isolated Russian communist model simply does not work. It is based on exporting oil and commodities, and its economy has very obsolete technology. Russia has very limited contemporary competitive industrial power. Russia does not export any machinery and equipment to developed countries, while China is a leader in this market. Russia has been losing for years any relevant position in the world economy due to its isolation. The war will only isolate it further and condemn it to become a completely underdeveloped economy. The war is the wrong strategy for Russia.

For the Western world the war is also a losing proposition. The cost-push inflation associated with the war has already changed the pattern of recovery of the whole Western economy. The cost associated with the war will be huge for the West. How did the world enter a lose-lose game like the Russia-Ukraine war? Contemporary mathematical economic theory has the answer. As Nobel prize Nash showed many years

[41] Obregon, C., 2022. *Conflict and Resolution*. Amazon.com. Also available at Research gate.com.

ago there are many non-Pareto general equilibriums, which means that there are many potential games that have suboptimal solutions (like a lose-lose game). The actual general equilibrium does not depend only on endowments, preferences, and technology, as the neoclassical economists thought; the settings of the game are also crucial for the kind of solution to be obtained. And the settings of the game can be seen as institutions. Thus, what explains the Russia- Ukraine war is the lack of strong international institutions. The world had decades to prevent this war. This war is the accumulated sum of many mistakes. Ukraine was artificially put together after the Second World War by the Soviet Union. And from its beginnings, it was a very heterogeneous nation with both pro-Russian and pro-Western territories and people. With the collapse of the Soviet Union, the dismantling of its former republics was less than perfect. And among the many unresolved issues was Ukraine. With strong global institutions, the collapse of the Soviet Union should have been followed by a Western financial package to aid in its recovery. An aid package – Marshall-Plan like - aimed at integrating it to the global economy. Instead, Russia remained isolated, and adopted a package of neoclassical economic policies that created the partial destruction of the economies of the former Soviet Union, including Russia, during the 90's. The terrible performance of these economies was an important preamble for the closed authoritarian economy that characterized Russia during its recovery in the 2000's.

Even as late as 2001, Putin asked Clinton for Russia to became part of NATO, but Clinton did not agree to admit it. In fact, with the USSR being economically collapsed, there was not even need to maintain NATO alive. But the West not only kept it alive, but it extended it to former soviet countries. In 2008, George Bush Jr. convinced NATO (against Angela Merkel's recommendation) to declare that both Georgia and Ukraine would soon become part of NATO. In this same year, 2008, Russia invaded Georgia. In 2016, after a pro-Russian president was thrown out of Ukraine, Russia invaded Crimea. With so many antecedents, the Russia-Ukraine war was highly likely. And it is only due to the lack of strong international institutions that there were no negotiations trying to prevent it. For further recent discussion on this topic, please refer to Obregon 2021[42].

[42] Obregon, C. 2022. *Conflict and Resolution,* op. cit.

THE COLLAPSE OF LIBERALISM IN LATIN AMERICA VERSUS THE SUCCESS OF SELECTED ASIAN COUNTRIES

The liberal promises to developing economies never became true. Mexico, which has been the country that followed most closely the neoclassical model, as can be seen in tables 2.3 and 2.4 only grew 0.6% 1990-2020; versus the 8.5% of China, the 4.1% of South Korea and the above 3% growth of Singapore, Thailand, and Malaysia. But the lack of economic growth was not only a problem of Mexico. Although less than Mexico, the whole area of Latin America & Caribbean was wrongly influenced by the neoclassical model. As it can be seen in table 3.3, the consequence was a very low growth of Latin America & Caribbean versus East Asia & Pacific, 1.7% versus 6.3%.

TABLE 3.3. THE GROWTH FAILURE OF LATIN AMERICA GDP PER CAPITA ANNUAL GROWTH RATE

Region	1990-2020
World	2.6
Latin America & Caribbean	1.7
East Asia & Pacific	6.3

GDP per capita, PPP (constant 2017 international $) Data from database: World Development Indicators Last Updated: 05/25/2022

The globalization model of liberalism was wrong. Capital did not go to the developing economies. The economies that followed the neoclassical model did not grow. The world became globalized through the ICTR technological revolution and the fragmented economic production that it allowed; and the only countries that grew were the ones that followed the Asian growth model and that integrated themselves properly into the ICTR.

NATIONALISM AND THE BOOMING OF THE INTERNATIONAL CRIME

Global crime is booming. The combination of the ICTR with fiscal paradises and bitcoins has produced ideal conditions for money laundering and the internationalization of crime. In 2017 it was estimated that global crime was worth between $1.6 to $2.7 trillion. That makes the CCGs

(Global crime groups), in terms of purchasing power, the eighth most powerful economy in the world.

Crime activities are interconnected and GCGs operate in most of them; and they have globalized. Fighting each one of the crimes at the regional level is the wrong strategy, because GCGs can move between regions and to change from one criminal activity to another. Crime has become a global issue and given the lack of proper global governance it is very difficult to fight it. The most efficient mechanism to stop GCGs would be to attack their financial structures, because reducing their financial flows jeopardizes their operational capacity. This strategy, however, has not yet been very successful, mainly because of the lack of proper regulation of fiscal paradises, which is often stopped by powerful groups with vested interest in these locations. What to do? It is required to have both international law and international courts accepted by all national members. Unless there is the international possibility to sanction countries nothing will change. International organizations without sanction capabilities do not make any difference in the real world. Anonymous companies must disappear, and fiscal paradises must be under the obligation to report to other countries any transaction done by the other countries' citizens. The most efficient way to cause true damage to GCGs is by jeopardizing their capacity to move and use their financial flows. The interested reader will find further information on this topic in Obregon 2020[43].

NATIONALISM AND THE INTERNATIONAL CLIMATE CRISIS

The climate crisis is another example of the consequences of the lack of strong international institutions with sanction capabilities, previously agreed upon by the participating nations. The first thing to understand is that reducing gas emissions has a direct and significant cost in GDP growth. Therefore, the climate change, due to the global warming caused by the greenhouse effect, will not be solved by the UN Climate Action Summits. They do not have any sanction capacity. And if there are no costs imposed on gas emissions, there is no economic incentive for a given country to stop them. This situation is a typical game theory problem. In the first place, any given countries' benefits from the reduction in gas emissions are not proportional to the costs that each one of them

[43] Obregon, C., 2020. *A New Global Order*. Op. cit. Chapter five.

would have to incur by reducing the emissions. In the second place, if N-1 countries comply with the agreements, the one country that does not receives practically all the benefits anyway. Thus, substantial economic incentives to violate the agreements exist. There are many games to be played that lead to suboptimal Pareto solutions, and that will predominate in the outcome.

The way out is to change the production technology to adopt clean technologies, processes, and methods, which has already been proposed by many authors and by President Biden[44]. This solution is very good for two reasons 1) It makes compatible high levels of GDP today with low gas emissions, therefore avoiding the problem of intergenerational transfers; and 2) The costs associated with transforming the economy to a green one will only be temporal, and in fact will boost a faster economic growth during the reconversion. There will of course be losers and winners, but for the society as a whole the reconversion cost will be more than offset by the short-term boost in GDP that it will imply, even without considering the long-term benefits. But again, because there will be losers, most countries will not enter the reconversion unless there are sanctions associated with not doing it. There is no escape to the need of a proper global governance[45].

CONCLUSION

The two globalization paradigms of recent times have failed. The globalization Marxists dreamed of - through an international revolution - never happened; and Marxism collapsed into national communisms, that fostered the development of closed economies with obsolete technologies. This misleading nationalistic approach is still highly influential in Russia, Cuba, Venezuela, and other Latin American countries, including Mexico.

[44] Green House Emission (GHG) could be reduced by 49% within the next decade by switching electricity generation to renewables sources and away from coal. This will reduce carbon dioxide (CO2) emissions by 70% by 2030, and since they account for 70% of GCH emissions, a total reduction of 49% will be achieved. This would require a five-fold increase in wind and solar energy, as well as closing 2,400 coal-fired power stations globally within the next decade. Which is viable and cost-effective. Yet, there are no signs that it will happen. In fact, today there are 250 additional coal units under construction.

[45] Further discussion in this topic can be found in Obregon, C., 2020. *A New Global Order*. Op. cit. Chapter five.

On the other hand, the globalization envisioned by liberalism did not happen either. In the developed economies private markets generated instability and were unable to manage the interconnections of the globalization, as the 2008 GFC and the 2020 GP have shown. The failure of liberalism in the developed countries has given rise to a national protectionist populism. In the USSR the liberal model applied in the 90's failed because the USSR economy had obsolete technology and was not prepared to be opened so fast and without international aid (as for example East Germany had). The failure of the liberal model in the USSR, including Russia, ended up in the resurgence of an inward-looking authoritarian communism that is a prelude of the Russia-Ukraine war. In the developing economies the failure of the liberal model has generated the rise of nationalistic populism – most of it, (although there is also right-wing populism like Bolsonaro's in Brazil) inspired in communist ideas. The liberal dismantling of international institutions has given rise to the mismanagement of the 2008 GFC, the 2020 GP, the climate problems and international crime. Thus, paradoxically, the dreamed globalizations of Marxism and liberalism have given rise to nationalistic populisms.

CHAPTER FOUR: WHY IS NATIONALISM SO RESILIENT?

Why have both liberalism and Marxism collapsed into a renewed national protectionism? Why is nationalism so resilient? Is nationalism ever going to end? And if not, given the presence of powerful national interests: which are the alternatives today to manage the ICTR globalization properly? These are the questions that will be addressed in this chapter. As we will see, nationalism is a historical institutional arrangement which is already far larger than the original evolutionary nature of humans – which was belonging to small groups of around one hundred members.. And there is no long-term tendency towards its disappearance.

The ICTR has globalized the world, but it has not disappeared the nations. The global harmonic idealisms, both of Marx's international humane communist society and of the liberal democracies living in peace and progress, are incompatible with the historical reality of powerful nations confronting each other. What is needed is a globalization solution which is compatible with the existence of such nations and their interests. And once we exclude liberalism and Marxism, there are only two possible solutions left: 1) the political theory of balance of powers, and 2) institutionalism. The political theory of balance of powers, however, does not generate a stable global political solution; moreover, it does not provide a global economic solution. Therefore, the only way out for a globalized ICTR world is to develop strong international institutions.

WHY IS NATIONALISM SO RESILIENT?

Human beings were evolutionarily designed to belong to small groups of around 100 to 150 members. The connection between the members of these groups is to a large extent emotional and happens through their visual connection. The life in large groups violates the evolutionary conditions for the human brain to develop properly. Humans require emotional care since they are born. That is why enlarged societies have maintained the family, whether nuclear or extended, as a fundamental basis

for social life. The family provides the required emotional centrality for the proper development of the human brain.

Evolutionarily speaking, humans have the potential to belong to the universe surrounding them, that is what allows them to survive. In other works, I have distinguished three belonging ways: love – belonging to the people near to us, with whom we have an emotional connection; social significance – belonging to an extended social group; and existential significance – belonging to the outside biological and physical universe. In small, primary groups, the emotional personal connection is to the whole social group; thus, the first and second way of belonging are almost indistinguishable; this is our evolutionary heritage. However, the technological revolutions significantly extended the size of the social group. The copper revolution intensified the urban life, and the bronze revolution produced the first great empire, Egypt. Members of these enlarged social groups could not see or touch one another anymore; and therefore, their social belonging became mainly established through conceptual systems that had in parallel a corresponding institutional arrangement. Primary societies did also have a conceptual system and its corresponding institutional arrangement; but it was closely interconnected with the emotional belonging that tied the members of the society together. In enlarged societies, the emotional belonging stays with the family or the small group near to us, and conceptual belonging becomes more relevant as the fundamental social tie between the members of enlarged societies.

Since the beginning, conceptual systems in the primary societies were very conservative, because this was needed to preserve life. In a highly unpredictable environment, any knowledge obtained had to be protected through very strong conservative traditions. Social belonging, for analytical purposes, can be decomposed into three large social systems: the integrative, the power and the economic system. The integrative system is the one that holds the society together. The power system is used either to penalize deviant behavior or to battle out-groups. The power system, therefore, is always a complement of the integrative system. And the economic system regulates exchanges and the production and distribution of goods and services. The economic system, as well as the power system, is always sanctioned and approved by the integrative system. The integrative system holds the main values of the conceptual system. And the conceptual systems are composed of a set of conservative traditional values, that hold the society together. As we will see in the next chapter, conceptual systems always oppose initially the social change brought about by the technological revolutions.

The topic that interests us presently is why nationalism is so resilient. The answer is that nations represent a long history of struggle between smaller social groups; and in the process of their conformation, nations create the conceptual values and pragmatic institutions required to hold them together. Thus, given their historical background, nations are resilient to changes, and therefore they will not disappear anytime soon.

Table 4.1 shows the relationship between the individual and the society, and table 4.2 presents the definition of the social categories mentioned in table 4.1. The interested reader can find further discussion of these topics in Obregon 202146.

TABLE 4.1 SOCIAL INTERACTION

	Love	
individual	Social significance	Institution: Conceptual System and Institutional Arrangement
	Existential significance	
	Integrative System	
Social significance:	Economic and Trade System	
	Power System	

TABLE 4.2 DEFINITIONS OF CATEGORIES OF ANALYSIS OF SOCIAL BELONGING

Institution: is the sum of a Conceptual system and its corresponding Institutional Arrangement.
Conceptual System: it is a mixture of knowledge, beliefs and habits that fully explain the social and physical reality, and guide and direct social and individual behavior.
Institutional Arrangement: The set of institutions that make operative the Conceptual system.
Integrative system: traditions and customs and social obligations, for example: established rules, the law; values and social beliefs in general; ethical principles; religion; benevolence; and individual commitments individually socially sanctioned.
Economic and Exchange System: the production and distribution of economic goods and the selfish exchange in any social relations, including economic exchange.
Power System: the social use of force

[46] Obregon, C., 2021. The Philosophy of Belonging 2nd Edition. Amazon.com. Also available at Research gate.com.

What is relevant for us here, is to emphasize that human history started with very small groups, structures inherited from the hominids and other ancestors, and that larger groups were created due to technological revolutions. The concept of a nation took thousands of years to be conformed. And modern nations are a consequence of institutional arrangements, that provide solution to the conflicts among the smaller groups that constitute the nation, that have been built through centuries. Therefore, nations are resilient, and likely will remain powerful for many years to come.

IDEALISMS ARE INCOMPATIBLE WITH NATIONALISMS

Nations are a concrete historical outcome. Idealisms are a consequence of the imagination. Ideals are useful as a guide for future behavior; but they are always incompatible with the actual social reality. As I have argued elsewhere47, the liberal ideal does not correspond to the world's historical reality. Liberals have offered a recipe for peace and progress. But free markets by themselves have been unable to deliver: 1) stability and progress to the developed economies; and 2) economic growth to the developing economies. Thus, liberalism has not delivered progress. Free markets are a necessary condition for rapid progress, but they are not sufficient. As we have learned both in practice and in theory, to operate properly in the real world, markets require a strong institutional arrangement. As for peace, there is no evidence that allows us to conclude that a world of only democratic nations would be peaceful. Moreover, only 13% of the global population lives in liberal democracies[48], and there is no foreseeable tendency to argue that anytime soon the other 87% will live in such democracies.

While free markets and democracy are clearly relevant for the future of the world, they will not, by themselves, provide the solution for an ICTR globalized world, composed of powerful nations that pursue well-defined interests. Something else is needed. The political theory of the balance of powers has forceful argued that nations do exist, and that it is necessary to establish a balance of powers that lies outside the scope of

[47] Obregon, C., 2022. The Economics of Global Peace Amazon.com. Also available at Research gate.com.

[48] Obregon, C. 2022., *The Economics of Global Peace*. Amazon.com. Also available at Research gate.com. Figure 1.3, chapter one.

the liberal policies. But a balance of powers can be shown to be highly unstable in game theory. Besides, the political theory of balance of powers does not provide an economic solution for the globalized ICTR world. Strong international institutions are required.

Idealisms have always been part of the history of the world, and they are relevant since they provide a guidance for future behavior. Christianity never succeeded in convincing everybody to love others as they loved themselves and the people near to them; but it has always been an important guide for humanistic projects. Marxism never accomplished the desired international proletariat revolution, but it has provided a conceptual framework to evaluate and promote equality and justice. Liberalism failed as a useful guidance for practical international economic and political relations; but certainly, it has succeeded in showing the relevance of free markets for economic progress, and the humanitarian virtues of democracy. Thus, idealisms are necessary, and they are always welcome, if they are not used for actual pragmatic economic and public policies. In practice, Christianity became the inquisition; Marxism inspired closed, violent, authoritarian economies; and liberalism promoted an aggressive imperial capitalism, that has favored a small group of developed nations.

The globalized ICTR world needs a pragmatic solution that must understand the relevance of free markets and economic interdependence, but also that this interdependence will not work properly in a real world of powerful nations unless there is ideological tolerance and strong international institutions.

A BRIEF LOOK AT OUR EVOLUTIONARY NATURE

In this section we discuss our evolutionary nature, and how it implies conflict between social groups. Conflict is might be avoided through belonging. But social belonging based on conceptual systems and institutional arrangements is always unstable: there are always belonging failures. The historical solution has been the conformation of nations, and there is no trace yet of a well-institutionalized global social life. Nations themselves are unstable social formations – given the tensions between the internal groups that constitute them. Therefore, nations are always struggling to remain together. Thus, they are conservative and resilient; and they oppose global changes that threaten their survival.

How Did We Become Humans?

Humans from the beginning were a social being. We became humans through a long evolutionary process which was initiated by changes in the rock technology, which allowed for an expansion of the social group. Our closest relative is the chimpanzee, with whom we had a common ancestor around 7 million years ago. And it can be proven in the laboratory that chimpanzees can learn the rock technology that or predecessors discovered in Egypt and that corresponds to 3.4 million years ago, but they cannot learn the rock technology, also discovered in Egypt, that corresponds to 2.6 million years ago. Therefore, something happened that clearly disassociated the hominids from their closest relative, the chimpanzee. The accidental discovery of rock technology allowed for an economic surplus, that enlarged the social group, and fostered key developments in the hominids. The use of their hands for productive purposes made them *erectus*, which increased their phonetic capacity. Social life in a larger group meant the need for developing a more sophisticated language. In the laboratory, chimpanzees may learn some forms of protolanguage, but they do not use it in their actual life because their social groups are smaller; and they can never learn a syntactic language. The enlarged social hominid groups also required to understand each other's minds, and to develop more sophisticated facial responses. A more sophisticated language, a more complex social life, and the need to learn new technologies produced an enlargement of the brain, which in turn supported mind developments. In all these processes, more sophisticated conceptual systems were evolving. Nothing distinguishes us more as humans than a sophisticated language, that allows the notion of an extended time. Our unique syntactic language allows for significantly higher combinations of mental images, that give rise to a sophisticated conceptual relationship with reality. Which always goes together with the institutional pragmatic knowledge that permits a positive survival feedback loop with reality.

In short, the capacity to learn a simple protolanguage was already present in apes, but it was not until the development of new technologies, 2.6 million years ago, that the social life of the hominids began to change. And it required more social cooperation and a greater cognitive capacity. Six processes, occurring simultaneously, evolved influencing each other: 1) greater technical skill used in hunting, gathering and rituals; 2) the increased need for cooperation and communication, ex-

panding social life, increasing the ability to imitate others and to understand their minds, and creating the need for learning to regulate one's emotions; 3) greater cognitive capacity, leading to more sophisticated thoughts; 4) physical development that creates the required bipedalism, freeing hands for other activities and creating new phonological physical capacity; 5) enlarged brain size, and 6) language. Gradually and slowly, these six processes were producing the biological and social evolution that led to modern humans.

For our present discussion, what is relevant of how we became humans is that: 1) evolutionarily we belong to small groups to which we are emotionally bound. 2) Social changes, including the ones that made us humans, happen through technological revolutions. 3) Real life changes through institutional modifications in the conditions of life, but due to the sophisticated human language they always correspond to a given conceptual system.

How is a Child Raised?

When a child is born from the womb of its mother, there is already a duality in the relationship; the child sucks the mother's milk for survival and generates pain in her nipples. The child cries calling her attention to satisfy its needs. Mothers get tired and nervous, but the little tyrant most of the time gets its way. The child is born with instincts such as fear, hunger, sex, and aggression; which are required for survival; but there is also a belonging instinct between the child and the mother that guides the other instincts and permits the survival of the child. We are born as individuals and, looking out for our survival, we necessarily confront others and the external world. The first conflict is with those people near to us, and its resolution is through the first way of belonging – love. Conflict is present in many daily simple cases, like two brothers fighting for a toy, or a wife and a husband discussing which movie to watch. And occasionally extreme cases of conflict occur, such as when people abandoned in a small boat in the middle of the ocean eat each other, or when a relative rapes a child. Love is also manifested on many occasions, as for example when parents give their lives to protect their children. Love allows the life together of the small group near to us, conflict guarantees that everyone will look after his/her survival.

The mother socializes the child teaching it to speak a language and to adopt required social norms. Socializing is required for the child to integrate to a social life that includes not only the people near, but also other people. There are distinct in-groups to which the child must learn to belong, and diverse out-groups with which it must interact. There is not only conflict between the child and the people near – whom he/she loves, but also between the child and members of the larger in-groups to which the child belongs. Moreover, there is also conflict between the child and different out-groups. In addition, there is conflict between the distinct in-groups and out-groups.

A human child is born in a social group that has already a sophisticated language, a conceptual system, and an institutional arrangement. Conceptual systems are older that the homo sapiens, the first documented burial ritual is 500 thousand years ago, date on which a sophisticated protolanguage already existed, while the homo sapiens is between 200 and 100 thousand years old. The mother socializes the child by teaching him/her the social life that takes place under the institutional arrangement that corresponds to the conceptual system of reference. And since the human mind's reality is representational, distinct conceptual systems emerge that differ between them; therefore, there is also a built-in evolutionary conceptual conflict between diverse cultures or social groups.

For our interest in here, what is relevant of how a child is raised is: 1) that it is evolutionarily prepared to connect with the outside world. 2) That the mother socializes him/her. And that 3) it is socialized by learning language and social customs.

The Three Ways of Belonging

A newborn baby's brain is not yet fully developed, nor is the baby apt to survive. Babies' survival requires a caregiver; therefore, the first belonging relationship is with the mother or caregiver. The belonging relationship to those near to us, I have called love in other works; and it has been explored at length by the psychology of attachment. But the mother and the baby are not evolutionarily made to survive by themselves, the mother needs social protection to be able to spend the required time to nurture the baby, and not to succumb to other animal or human predators. From the beginning, we became humans by social interaction. Thus, the second belong-

ing relationship is with the social group, which I have denominated social belonging. Social belonging has been documented by sociology, social psychology, and other schools in psychology. And, like any form of life, as a survival requirement, humans are evolutionarily prepared to interact with the material and biological world that surrounds them; this third belonging relationship, I have named as existential belonging. Existential belonging has been documented by medicine, and by Buddhist psychology.

Belonging changes the whole perspective of who we are. Belonging is an instinct, which guides the other instincts towards social life. Babies are born aggressive, and it is their caregiver the one that teaches them social behavior; they are taught to redirect, in a socially acceptable way, the other instincts of fear, hunger, sex, and aggression. Language is a social development, and culture is transmitted through narratives which create social belonging. Existential belonging is a social conception of the relationship of humans with the biological and material universe. Belonging gives cohesion to social life. Bowlby only developed the first way of belonging in the psychology of attachment; I have - in other works - discussed, and created, the categories of social belonging and existential belonging. A critical issue to understand, is that humans are an evolutionary outcome; and that they evolved as social beings. Therefore, individuals are only significant within a social context. The whole meaning of who we are, how we relate to others, and to the material and biological universe surrounding us, is of social origin. To be able to mentalize our emotions, language is required, and language is a social evolutionary outcome. To point out that individuals by themselves are meaningless, I have also called social belonging *social significance*, and existential belonging *existential significance*. Belonging then consists in realizing our evolutionary potential to identify ourselves with the external world. Belonging involves reason, but it has an emotional centrality. The personality of the baby is shaped in the first twelve months by the emotional relationship with the caregiver; long before the baby's capacity to be able to reason is developed.

What is relevant to emphasize of the three ways of belonging is that: 1) the emotional centrality required to survive is given by the first way of belonging. 2) That to survive we need to be evolutionarily prepared to connect (to belong) with the outside world. 3) But that there is always conflict (tension) between surviving personal instincts like aggression and the belonging instinct which usually guides them through socialization. 4) Belonging failures then generate social disarray and aggression.

Brain Development

Contemporary neurobiology has proven that proper brain development requires adequate belonging. Genetics only works adequately when nurturing (belonging) works well. Brain development requires: 1) adequate belonging to the existential world, which is expressed in moving and exploring a defiant environment, paying attention to our surroundings[49]; and a positive mental attitude towards life and the existential world in general[50]. 2) Proper love: the psychology of belonging has shown that the whole personality of a person is defined within the first twelve months after birth, and it is a function of the quality of the emotional relation with the mother or caregiver; children which are abused grow smaller than normal brains, with less than usual neuronal synapsis. 3) Proper social belonging. The child's brain requires social nurturing to mature. Language is a social outcome. Because humans are social beings, any conceptual knowledge is social in origin, whether it is science, religion, or others. Therefore, any human conceptual connection with reality is the result of social belonging.

What is relevant in here about brain development is that: it requires a successful belonging. We are chemical beings. Belonging produces dopamine and oxytocin and generates a physical well-being that reduces stress and allows for our defenses to remain high. Belonging failures, aggression, produce cortisol which destroys our cells, creates stress, reduces our defenses, and increases our propensity to get sick.

Social Belonging: The Three Social Systems

Any social system to survive must develop some basic functions. Its most basic function is to guarantee that individuals remain together as a social group; this is the purpose of the integrative system. Another key function is to produce and distribute the economic means for survival, which is the task of the economic system. And finally, power must be exercised, if needed, to punish violations of the social group's rules, and to defend the group from other groups, which is the reason of the existence of the

[49] Obregon, C. *The Philosophy of Belonging* 2nd ed., op.cit.

[50] Obregon, C. *The Philosophy of Belonging* 2nd ed., op.cit.

system of power. Other classifications are possible, but this one, owed initially to Kenneth E. Boulding, seem to us very basic and useful. Social significance is a belonging relationship. And establishing belonging is the basic function of the integrative system; therefore, social significance is obtained in all societies through the integrative system. Another of the functions of this system is to validate, from the point of view of belonging, the other two: the economic and the power systems. In all societies, the use of power is validated by the integrative system, only when it is necessary to maintain social order, or to defend the group. The use of individual power is prohibited in all societies, to understand this was the great contribution of Hobbes. Social significance is obtained via the power system, only when it is validated by the integrative system The hallmark of the Western society is the high degree in which the integrative system validates the economic system as a source of social significance.

The relevance of the three social systems for our purposes in here is that: 1) any social system creates an in-group tied together by the integrative system, and out-groups with which the relationship is established through the power system. 2) Because we are evolutionarily made to belong to small groups, it means that conflict between them always exist. 3) Conflict is avoided through social belonging, the conceptual system defines belonging through the integrative system and its institutions, but what lies outside the integrative system gets into the power system.

The First Social Groups: The Primary Society

Dunbar[51] has estimated that, according to the size of the human brain, the corresponding size of the human social groups should be between one hundred to one hundred and fifty members. In a group of this size, it is possible for the group members to know each other, look each other in the eyes, and have an emotional (limbic) contact. The conceptual system in the primary societies, characterized by a small number of members, was emotionally based – rituals played a key role. I have called in other works the conceptual systems of the primary societies "magic"[52]. Magic

[51] Dunbar 1992. Neocortex size as constraint of group size in primates", Journal of Human Evolution, Vol. 22, pp. 469-493.

[52] Only for analytical purposes, we have created the three highly arbitrary abstract social categories: the primary society, the traditional society, and the Western society (which we

defines, like any other conceptual system, the three ways of belonging: love, social significance, and existential significance. In these societies, existential belonging (significance) is highly dominant because surviving in a hostile biological and natural environment is a priority. Thus, "magic" is a universal cosmology that explains in an ordered manner the existential universe – in which everything has a defined place. There is not the notion of a God, and there are no proactive, individual humans in the sense that they are valued in contemporary Western society. Individuals are not yet differentiated; they just perform their existential role like any other thing in the universe – whether it is alive or not. Social belonging is mostly defined by the integrative system, the economic system is completely underdeveloped and almost exclusively guided by the integrative system. The power system is used to strengthen the integrative system by harshly penalizing deviant behavior, and by confronting out-groups. Magic however is not a uniquely defined conceptual system, there are many diverse institutional arrangements, in very diverse primary societies with their corresponding, distinct versions of "magic". Therefore, since the beginning, in addition to territorial and economic conflicts between human groups, there were also ideological and conceptual conflicts. Evolutionarily, we were designed to use aggression to establish order within and between groups[53]. But within the group, aggression is constrained by social belonging. In small groups, members know each other very well; and the limbic connection, mainly through the eyes, works very well. Primary societies were not hierarchical; they did not require a central authority to operate. In primary societies the three belonging ways are defined simultaneously by the universal cosmogony of the conceptual system and its corresponding institutional arrangement. In primary societies, since the groups were small, love and social significance were/are both with the social group as a whole; and existential significance is also largely obtained through the social group. Since they believed in a synchronic world of existence, in which everything repeats itself, it was natural that the primary societies tied social order to their relationship with the biological and physical universe; and that they valued the stability and maintenance of the social order. Therefore, conservative

already introduced earlier in this manuscript). Of course, none of them has ever existed as such. But this arbitrary classification has the purpose of focusing the discussion on the particular, differential characteristics of contemporary Western societies versus other societies, including the ones that existed in the West's own history.

[53] This is our animal heritage, as Lorenz shows in his book: On Aggression. Lorenz,1996, p.118.

behavior is encouraged, and deviations are often penalized with death. In the primary society, the integrative system and the power system are more relevant; and the economic and exchange system is highly restrictive. Therefore, production and distribution of economic goods is mainly decided within the integrative system. The social group provides the individual with his economic and social well-being. In primary societies, everything is just the way it is. And it is the consequence of a large process of adaptation to a very uncertain and scarcely manageable external environment. If there is any philosophical principle that can be attached to this society, it is just the mandate to be conservative, and to do things as they always have been done.

For our purposes in here what is relevant is to realize that the survival of any group depends upon its integrative system, which must be conservative to be resilient. This in an inheritance from the primary societies.

The Enlargement of The Social Group: The Traditional Society

As societies became larger, hierarchical and functional duty differentiations were required. Therefore, individuals were differentiated with respect to their obligations. In other works, I have called societies with this characteristic "traditional societies"; and their conceptual system I have named "rationality". As the social group gets larger, conceptual, limbic belonging is no longer possible – individuals within the group do not have visual contact with each other any longer. Therefore, the conceptual system is more and more based on abstract concepts – rational concepts. These enlarged societies of course are composed of smaller groups, such as the extended family and others, in which the limbic connection remains – and these groups are key for social stability. That is why Confucius put so much emphasis on the importance of the family. The abstract rational concepts, however, provide a weaker tie than the limbic connection – therefore, the potential for conflict is created between the diverse small groups that constitute the larger society. Moreover, as conquests took place, traditional societies encompassed groups belonging to distinct cultures, and additional layers of conceptual, ideological, cultural, racial, and religious conflict were generated. Religions started in the traditional societies; they are an outcome of the differentiation of the individuals based on his/her duties.

In traditional societies, the individual is differentiated, but only in relationship to his duties to the group; he does not have yet individual rights. The social group provides the individual with his economic and social well-being. As the individual is differentiated, a social hierarchy of status is established, some groups or individuals enjoying higher ranking and others low. The status in the traditional societies is established based upon the social duty of each group or individual. Those who hold positions of power and authority usually constitute the high class. There are social norms, traditions, customs, and values, that hold the social classes together; but they are also differentiated by distinct social classes.

The direct limbic social interaction, that happened naturally in the primary societies, generates not only a social bond, but also a chemical one, through oxytocin and dopamine secretion. Therefore, it is evolutionarily needed. In traditional societies, the extended family plays the primary role of providing emotional belonging. Although tribes, clans, and other associations like sports games, or belonging to a social institution like the Roman senate, and so on, also play a complementary role. In traditional and contemporary Western societies, religions inherited the cosmogony vision of the primary societies. But they differentiate Gods, or a God, that did not exist previously in primary societies. The Gods were differentiated while societies were differentiating individuals performing diverse social roles. In traditional societies, as we have said, love was/is mainly with the extended family. For example, who to marry is decided usually by the extended family. In traditional societies, social significance was automatically obtained from the group, because by being born in such a society the individual had already a well-defined social role, whether it was to be a fisherman, or a carpenter, or a king. Existential significance may or not be obtained through the social group; but in any case, there was always a very well-defined route to access it.

In traditional societies already composed by distinct groups, and in which individuals do not have physical contact anymore, as we said, social order cannot any longer be sustained only by evolutionary emotional belonging, and the question of how to establish social order became critical. In the old Rome, for example, as in many other traditional societies, social order was initially based on the direct representation of diverse clans or regions in a general council. Later, in the Republic however, it changed to a more sophisticated system. This system consisted of 1) direct democracy for certain public posts of secondary importance, 2) the greatest social authority was given to the Senate, elected by the elites,

and 3) the emperor. And as we know social order was always fragile, and in many cases, it had to be imposed by force. Remember for example, Cicero's confrontation with Caesar. In traditional societies, the economic system is differentiated, but it is still not dominant. In the Western societies the economic system is a main pillar of the social significance. And even if the integrative system remains central since it validates the importance of the economic system, its relevance is reduced (for definitions of primary, traditional and Western Society see Table 4.4).

For our purposes it is relevant to realize that enlarged societies are always composed by smaller groups in conflict, whether economic, political, or ideological. And they create institutional arrangements and their corresponding conceptual systems to process these conflicts. And therefore, their survival depends upon the resilience of their institutions.

The Routes of Diversification: The Western Society

In Western societies, the individual is differentiated by his rights; and he is made responsible for obtaining his significance in the three ways. One consequence of the differentiation of individual freedom is that the economic system takes precedence and shares the centrality that previously only the integrative system had. A substantial central part of the individual relationship with the society becomes to be defined based upon the economic system, which is based upon selfishness. Selfishness is also expressed via the integrative system through free democracy; but the free vote has other components besides selfishness, such as social values, principles, customs, and others.

In other works,[54] I have identified seven main routes of differentiation in the traditional societies, of which the Western society is only one. 1) The Indian South Asian; 2) the Neo-Confucian North Asian; 3) the Greek-Roman rationality; 4) the Christian; 5) the Muslim; 6) the Western society; 7) hybrid routes[55]. Each one of these routes is very different from the others, and additionally in each route there are numerous variations. This complexity in the representational understanding of reality is an evolutionary characteristic of societies that were built from

[54] Obregon, C. *The Philosophy of Belonging* 2nd ed., op.cit.

[55] Like Latin America.

smaller groups. Today most big countries include diverse populations with distinct cultural backgrounds that usually include more than one of the seven routes of differentiation mentioned earlier. While the representational conceptual diversity of so many groups may imply a source of social conflict, its resolution is provided by envelope conceptual systems and institutional arrangements, that become however more and more fragile as they get larger.

What is relevant is to realize that there are profound differences between the Western societies and other traditional societies that make exporting democracy quite difficult. However, there are very large difference between the Western societies themselves, and even larger distinctions among diverse traditional societies.

Diversity: The Characteristic of Human Groups

The main conclusion to be reached from our evolutionary heritage is that we came from small groups which formed distinct conceptual systems and institutional arrangements. Our brain development is tied to our emotional belonging to small groups with which we have physical and visual contact. Large societies therefore must consist of small groups and there is necessarily conflict between them. Conflict is resolved with social conceptual systems and their corresponding institutional arrangements which are always more fragile than emotional belonging. Therefore, societies are based upon conservative traditional values; and the resilience of these values and their corresponding institutions is what provides stability too large societies.

HOW NATIONS CAME INTO BEING, AND WHAT IS THEIR LIKELY FUTURE

The beginning of nations is through conquest and warfare, as one social group imposes itself upon others. They hold groups with distinct conceptual system and institutional arrangements. There are all sorts of conflicts within nations, whether ideological, economic, or political that make them unstable. Democracy has strengthened the nations in the Western

world. In the feudal times kings were only feudal lords fighting all the time other feudal lords. What consolidated the power of the kings was the power of the new burgos or cities on their territories. Thus, democratic movements are in fact closely associated with the consolidation of the contemporary nations in the West. In other cultures, nations are usually a consequence of the need to unify against a common enemy. This was the case of modern Japan, China, or South Korea. In any case, each nation corresponds to a very specific historical formation of its own. Nations to survive require having resilient values. And therefore, they are always opposing to a globalization in which everyone could have the same rights. A global democracy is today unthinkable because it would imply the disappearance of nations. All through human history, international life has been accommodating the existence of powerful nations, and it will continue to be so for the foreseeable future.

CONCLUSION

Globalizing idealisms like liberalism and Marxism will never prosper in a world of powerful nations. And the political theory of balance of powers does not provide a solution for the globalized economy of the ICTR world; and even the political and military solution that it offers is very unstable. Nations are rooted in the history of mankind and are a natural consequence of our evolutionary heritage of belonging to small groups. There are no historical antecedents of a true global life. However, the ICTR is globalizing the world and a solution is required. We have argued that given the resilience of powerful nations, the answer are strong global institutions that, while recognizing the national interests, are capable to establish a social order for the world at large.

CHAPTER FIVE: THEORIES OF SOCIAL CHANGE

To understand why the globalization benefits of the ICTR have been resisted by populist nationalisms, it is convenient to discuss the theories of social change. Social change theories could be classified along many dimensions. In this manuscript, however, we are particularly interested in the social consequences of major technological revolutions like the ICTR. From this point of view the two most relevant dimensions are: 1) whether significant technological revolutions will produce major social disruptions, or not; and 2) whether at the end, this social change will always generate social order and progress. Table 5.1 shows the four main responses.

TABLE 5.1 SOCIAL CHANGE CONSEQUENCE OF A MAJOR TECHNOLOGICAL REVOLUTION

	Generates Major Disruption		Produce Always Order and Progress	
Group:	YES	NO	YES	NO
A		X	X	
B	X		X	
C	X			X
D		X		X

In this chapter we will discuss the distinct theories of social change that defend each one of these answers; and we will investigate empirical reality, discussing the major technological revolution that have occurred in history and their social consequences in distinct societies.

GROUP A THEORIES: SMOOTH SOCIAL CHANGE TOWARDS PROGRESS AND ORDER

The implicit idea in the theories that have defended smooth social change is that technological change generates economic progress steadily, and that it will always lead to a superior social order. This idea is behind con-

temporary liberal economics[56] and contemporary functional sociology[57]. The defenders of smooth social change see the Western societies as the natural route for the rest of the world, and argue that liberalism will take them there. However, both empirically and theoretically the theories of smooth social change are not suitable to explain the social consequences of large and sudden technological revolutions. We will first discuss the main arguments of functional sociology and its historical roots; without denying its contributions, we will argue that defending smooth change through sociological functionalism is not adequate to understand the social impact of the ICTR. Afterwards, we will briefly discuss again the assumption of liberal economics that economic freedom and Western institutions will bring economic growth, social progress, social order, and peace; and reiterate why, despite its relevant theoretical contributions, it is not an acceptable theory to understand the social impacts of the ICTR.

Sociological Functionalism

What produces social change? The need for the society to adapt to dynamic internal and external conditions. Internally: there is a permanent struggle between distinct individuals and groups, there are scientific and technological discoveries, there are new values and institutions and there is a permanent transformation of the three social systems: the integrative, the power and the economic systems. Externally: there are confrontations with other human groups, climate changes, deployment of resources or discovery of new ones, new viruses, and all sort of physical and biological changes in the environment. Because the society, in order to survive, needs to function, a certain degree of social order and stability must be maintained; therefore, usually social change happens smoothly. The strong defense of social functionalism is that: social functionality is a must, and therefore social change should, most of the time, happen smoothly. Despite its important contributions as to the required adaptative survival capacity of the societies, there are two caveats to sociological functionalism. The first one is that it is not a suitable theory to explain sudden large technological revolutions, like the ICTR. The second one is

[56] As expressed in Hayeck, Friedman, Lucas, and many others.

[57] As expressed in Parsons, Merton, Social Exchange Theory, and many others.

that the argument of sociological functionalism that the Western society is superior as to its adaptive capacity is highly questionable.

In relationship to the second caveat, it must be emphasized that history does not follow an evolution from worst to best. After 1960 a group of Asian countries following the Asian growth model adapted better than most Western countries, see table 2.4.

In relationship to the first caveat, we also emphasize that, in the real world, major relatively sudden technological revolutions have happened. The main ones are: the rock revolution that created the first social groups of hominids; the copper revolution that fostered urban life; the bronze revolution that produced the first great empire - the Egyptian; the iron revolution that generated the Persian empire, the Greek cities, the Macedonian empire and the Roman empire[58]; the navigation revolution around the 1500's that allowed the discovery of the Americas and going to the east; the first industrial revolution in the 1820's; the so-called second industrial revolution (or steel revolution) in the 1870's; the chips and computing revolution after the Second World War; and the ICTR. Each one of them drastically changed the world.

In economic terms, we can easily see the fundamental changes that each one of these revolutions have created: 1) they drastically accelerated global production, see table 2.1; and 2) they have produced large disparities between those countries that ride well the new technological revolution and those that did not, see figure 2.3 and table 2.6.

Large technological revolutions are not easily accepted. Therefore, they signal the beginning of new empires (that adopted the new technology) and the demise of old ones (that refuse to adopt the old technology). Persia was finally conquered by Alexander the Great because of its refusal to adopt the iron revolution in commercial uses. The Greek cities were a consequence of Persia's prohibition of the private production of iron, which then was produced in Greece. Without this prohibition, maybe the whole Western culture would not have started. France lost its European leadership, despite its large population, because it did not adopt properly the manufacturing revolution that started in the 1500's and ended in the first industrial revolution in the 1820's. By 1870 France was no longer a powerful nation, and lost the war against Germany, losing in this confrontation Alsace and Lorraine, the two most important steel production areas in Europe. Thus, when the steel revolution came in the 1870's, France was in a weak position.

[58] See Obregon, C. 1997,2020. *Capitalismo hacia el tercer milenio*. Available at Research gate.com.

The consequences of a major technological revolution are not always positive in the short to medium term, neither at a country's level, nor at the global level. At the country level we have mentioned the examples of Persia and France. At the global level, a dramatic example is the steel revolution of the 1870's which had as a consequence the First World War. Thus, the way in which a country, or the world at large, accept the transformations imposed by the new technologies is extremely important. Resistance generates backwardness, war, conflicts, and delays the benefits that the new technologies may bring.

It is true that functionality and social order are required, and that most technological changes are adopted due to the societies' adaptative capacity; but a society can adapt to these changes at very different levels of optimality. The large technological revolutions after 1820, for example, left a very unequal world, in which different countries operated at distinct optimality levels.

To exemplify how different societies "function" in our contemporary world, let us look at some empirical data. For simplicity we will first use the homicide rate per 100,000 inhabitants as an indicator of social order: the highest the rate, the less social order. We will secondly use the PPP GNI per capita in international 2017 dollars, as an indicator of economic progress. Thirdly, we will use the infant mortality as an indicator of social progress. And finally, we will use the number of people in prisons per 100,000 inhabitants as the indicator of social power (the power exercised by the society to maintain social order). As table 5.1 shows there are all sorts of functional possibilities.

These data show that it is possible to have social order without social and economic progress, with high poverty, with an unequal distribution of income and using low social power, the case of South Asia (SA). This clearly indicates that the integrative system plays a fundamental role in social order. And it highlights that it is possible to have social order (functionality) without achieving other economic and social goals. SA has clearly not been able to participate fully in the last technological revolutions.

In the other extreme, it is also possible to achieve social and economic progress without social order, the case of Latin America & Caribbean (LAC). LAC has participated more in the technological revolutions than SA. It has as much an unequal distribution as SA, has much less poverty and uses much more social power which clearly shows that LAC's integrative system is weaker than SA's.

The comparison between East Asia & Pacific (EAP) and LAC is interesting. Both regions have participated similarly in the technological revolutions since both have similar GNI per capita. They are similarly unequal regions with similar social progress, with EAP having more poverty. But EAP has extremely good social order and LAC has extremely bad social order. LAC uses significant more social power.

TABLE 5.1. SOCIAL FUNCTIONALITY

Regions	Prison populati on	Homicide rate	Gross national income (GNI) per capita	Infant Mor	!0% richest	Poverty
	(per 100,000 people)	(per 100,000 people)	(2017 PPP $)	rate per 1000	Share	$1.90 day
	2013- 2018	2013- 2018	2019	2018	2010-2018	2008-2018
Arab States	126	..	14,869	25.8	26.6	4.9
East Asia and the Pacific	131	1.0	14,710	13.0	29.5	1.7
Europe and Central Asia	230	3.1	17,939	13.7	27.2	0.8
Latin America and the Caribbean	253	22.3	14,812	13.9	37.8	4.2
South Asia	49	3.1	6,532	33.4	30.9	18.2
Sub-Saharan Africa	88	9	3,686	52.5	33.9	45.7
OECD	265	5.6	44,967	5.8	28.7	
World	142	5.6	16,734	28.4	30.6	

Source: United Nations Human Report 2020 For Sub-Saharan Africa homicide rate corresponds to 2015 and comes from World Bank online data

Finally, it is interesting to compare the OECD with EAP. With much higher GNI per capita, more social progress, and no poverty, the OECD has less social order and uses significantly more social power.

As it is expected given the new developments in economic theory, all sorts of social equilibrium are possible. This is what reality is showing us. Social functionality (social order) is an important goal; but it can be achieved with diverse levels of optimality along diverse economic and social dimensions. To understand the impact of major technological revolutions, it is needed to analyze well beyond the smooth adaptability of a functional society. Technological revolutions shape the whole world's economic and social map. They create great opportunities, but also risks. Countries that ride the technological revolutions develop quickly; while those that do not, remain significantly behind.

Liberal Economics

Neoclassical economics has important theoretical contributions: 1) it has alerted us as to the efficiency of private markets in transmitting information, an efficiency that cannot be substituted by the institutions; this is the critical difference between the success of the US versus the failure of the USSR in the postwar period[59]. In fact, markets are extremely well prepared to induce and transmit smooth technological change. 2) It has shown the contribution of free trade to economic growth; and 3) it has provided a theoretical framework to discuss many critical economic problems. But as a practical guide for global policy, liberal economics has failed. Neither the developed economies have had stability and progress; nor have the developing countries that adopted liberal policies had economic growth. The "liberal economic world" was supposed to be one of stability and progress, in which inequalities between countries would disappear. Instead: 1) the large technological revolutions have created a very unequal world; 2) the developed world, as a consequence of the 2008 GFC (which was produced due to the markets' incapacity to manage abrupt large changes), is experiencing a return to a national populism, that is retarding the benefits of the ICTR; and 3) LAC is experiencing a populism that is a consequence of the absence of the economic growth promised by liberal economics.

It is true that economic interdependence stimulates economic growth, as the neoclassical model shows; but it is not enough, what happens with globalization largely depends upon the quality of the

[59] Obregon, C, *Globalization Misguided Views,* op.cit.

international institutions. The first wave of globalization due to the 1820's and 1870's technological revolutions ended up in the First World War, the 20's hyperinflation, the 1930's Great Depression and the Second World War. And therefore, the world did not fully enjoy the benefits of the first wave of globalization, that resulted much less productive than it could have been. During 1820-1950, the world's GDP per capita grew only 0.86% annually, a much lower rate than any period afterwards - see table 2.1.

It is critical to understand that the ICTR's productivity benefits may or not be adequately enjoyed by the world; it all depends upon the quality of institutional arrangement that we may develop. At the present moment populist nationalism is becoming an important impediment to fully enjoy the benefits of the ICTR. During 1990-2010 the world's GDP per capita grew 2.39%, and it has slowed down to 1.81% in 2010-2018 - see table 2.1.

Theoretically, it has been shown that a neoclassical model generates many equilibriums. Some of which are Pareto efficient but may show permanent underdevelopment or unemployment (information economics); and others are even Pareto inefficient (Nash equilibriums in game theory)[60]. Therefore, it has been clearly established that although market efficiency is required, it does not by itself define the optimality of the equilibrium to be achieved. The degree of optimality of the equilibrium also depends upon the quality of the institutional arrangement (which can be seen as the availability of information in information economics, or the setting of the game in game theory). Thus, what is expected theoretically is precisely what reality has shown: many diverse, possible functional equilibriums. Globalization, while needed and welcome, does not provide by itself an acceptable rate of economic growth, unless it is accompanied by an adequate institutional arrangement. Moreover, globalization will create inequalities between those countries that ride properly the new technologies and those that do not.

Smooth social change theories are unable to fully describe what happens in major sudden technological revolutions, because these revolutions generate large social disruptions, which cannot be resolved with the old institutions, that defined the social equilibrium that existed before the sudden large technological revolution happened.

[60] Obregon, C. 2020. *New Economics*. Amazon.com. Also available at Research gate.com.

GROUP B THEORIES: SOCIAL DISRUPTION, BUT AT THE END, SOCIAL PROGRESS AND ORDER

To understand the social disruptions caused by major technological revolutions, we must discuss theories that have made large technological revolutions, and their social consequences, the center of their analysis. Marx was the first thinker who focused on technology as the main source of social change. He argues that it is in the transformation of the material environment that human beings developed historically. Marx's materialism turn upside down Hegel's idealism. In Marxism, class conflict between the proletariat and the capitalists is derived straightforwardly from the production process. Starting from the philosophical premise that humans are a "species being", Marx argues that all value comes from labor; and therefore, whatever is in the price of a merchandise which is not paid to labor is exploitation. Capitalists should not enjoy the profits of capital because, given the assumed "species being" nature of humans, the means of production should be owned collectively. Marxism has been highly influential and has inspired many distributional theories that see in redistribution the key for social peace and economic progress[61]. There are however two main caveats.

The first caveat is that Marxism is embedded within a teleological essentialism which is not justified by contemporary neurobiology. There is no way for the human mind (alone or scientifically aided) to get to know universal philosophical premises such as the one assumed by Marx: that human beings are a "species being"[62]. And once we take away this pre-empirical premise introduced by Marx, his whole teleology of history falls. And this is precisely what reality has shown. The expected international proletariat revolution (guided by the conscience of humans of their true nature as "species being" exploited by the capitalists) never happened. Instead, we have had two World Wars, and many more conflicts between nations, in which proletariats and capitalists from one nation fight together against other nations.

The second caveat is that distributional theories have failed to show that they can generate both economic growth and social peace. Distributional policies do not work properly unless they happen within an adequate economic growth program[63]. The progressists' tenet that redistributing would

[61] Such as Conflict Theory, Human Needs Theory and Structural Balance Theory. See Obregon, C. *Conflict and Resolution,* op.cit.

[62] Obregon, C. The Philosophy of Belonging, op.cit.

[63] Obregon, C., 2020. *Three Lessons from Economists That Policy Makers Should Never Forget*. Amazon.com. Also available at Research gate.com.

create a local middle class that would strengthen the local market, generate local profits, and stimulate economic growth is mistaken. In a globalized world the frontier technology is defined globally; and therefore, any local development with obsolete technology will necessarily fail. That is why the communist model failed in the USSR, in the communist China before it joined global capitalism, in Russia even today, in Cuba, in Venezuela and so forth. It is also the explanation of the failure of the import-substitution model followed mainly by LAC[64]. Moreover, distributional policies do not generate more social order, nor do they bring peace[65].

As for the first caveat, once Marxist teleological historicism is rejected, we are left with the fact that major technological revolutions do produce serious social disruptions; but whether they will lead to social progress and order is not known. The communist humane society that will come as the end of history, announced by Marxism, is just a preconceived idealism with no basis in any real social science. In the real world, as we have seen, all sort of possibilities exists. Globalizations, caused by major technological revolutions, may conduce to progress or to war and chaos; and they may create pronounced disparities between nations and individuals. All sort of possible functional equilibriums can exist. It is critical to address the issue of the quality of the institutional arrangement under which the abrupt new technological revolution will happen. Thus, we need to move into Group C theories.

GROUP C THEORIES: SOCIAL DISRUPTION, THAT MAY GENERATE SOCIAL PROGRESS AND ORDER, OR NOT

In this group of theories, we find institutionalism, which is the best route to understand the consequences of major technological revolutions – particularly in the contributions made by Thorstein Veblen for whom the conflict between habits of thought related to the old technology and habits of life consequence of the new technology do not have a predictable solution.

A satisfactory social theory must be able to explain: 1) social stability; 2) social change; and 3) the role of social conflict in social change. Moreover, the explanation must be based on the microanalysis of the interaction be-

[64] See Obregon, C. *Globalization Misguided Views,* op.cit.

[65] See Obregon, C. *Conflict and Resolution,* op.cit.

tween individuals and groups. And any macro-perspective must be understood as based upon *ad hoc* abstract constructions by the analyst which serve the purpose to illustrate better the social dynamics, but caution must be exerted in that different abstract constructions could be built by diverse analysts. And at the end, the usefulness of the abstract macro-categories must be judged by their capacity to illustrate social dynamics, which is always based on the micro-interaction between individuals and groups. Whatever social theory is proposed must be compatible with 1) scientific knowledge in neuro-evolutionary biology and in social sciences; and 2) the fact that social dynamics in distinct societies has been historically very diverse.

Human beings started living in social groups which had already an institutional arrangement, and what characterizes them as a species is that they intensified furthermore their social life. Thus, humans are social beings. Any social theory based on the free individual of the Western society as the key element of social dynamics must be refused, the key element of social dynamics is always a social group. Groups of course are formed of individuals, but a distinction must be made between individuality and individualism. Individuality is a biological reality, individualism is the differentiation in Western societies of an individual that has human rights: among them, political and economic freedom. The rights of individualism however, at the end, are given by the society – are part of the specific institutional arrangement of the Western society.

Scientifically we know that humans do not have access to essential eternal truths. Therefore, there is no way to know the true essence of humans. Humanism is a socially constructed concept about humans. We must reject any essential vision of the nature of humans such as: the neoclassical free independent individual; the neo-institutionalist free individual with limited rationality; and the Marxist species being. Language is origin. Therefore, what Veblen called habits of thought and habits of life[66] are of social origin – the true agent of social stability and change is a social individual, who has a physical individuality but always exists in a social group that defines both his/her conceptual and institutional reality.

Different social groups have formed different conceptual systems and institutional arrangements, in which the power to define the social changes that are needed to adapt to external and internal shocks may reside either in democratic decisions (made by the free Western individual), in

[66] Veblen's "habits of thought" correspond to what we have called the conceptual system, and his "habits of life" to the institutional arrangement. For a discussion of institutionalism see Obregon, C., 2008. *Institucionalismo y desarrollo*. Amazon.com. Also available at Research Gate.com.

group decisions (like in primary societies) or in a selected group chosen by the elites (like the Roman senate).

Individualism is only one of the many social institutional differentiations in human history, and even today it is not of general acceptance. Around eighty seven percent of the population of the world today lives in societies where social stability and social change are defined by traditional conceptual systems and institutional arrangements that have diverse characteristics amongst them – but which have the commonality that the individual differentiation of human rights is not the axis of social stability and change.

Scientifically we know that rock technology played a decisive part in the evolution of human beings, because it allowed extended groups to exist and the development of an erected human that used the hands, a larger brain, a sophisticated language, and the capacity to read other's emotions. Thus technology, as Marx, Veblen and North argued, is a fundamental element of social change. But we also have enough evidence that humans since the beginnings have constructed conceptual systems, burial ceremonies are documented at least two hundred thousand years before the Homo Sapiens. Therefore, symbolic interactionism is also right, individuals interact with one another to create symbolic worlds, and these worlds influence the individual's behavior. These individuals are already social individuals that live within a specific institutional arrangement, not isolated individual social agents. Moreover, there is no doubt that conceptual systems do exist in human societies and that they have a dynamic of its own, as North has argued. And that, independently of who takes the decisions, social engineering responding to external and internal shocks is a required survival characteristic of human societies.

Although individualism is a particular social differentiation of the Western society, individuality is an evolutionary biological reality consequence of the evolutionary requirement to diversify as much as possible the genetic pool. And individuals to survive need survival instincts such as hunger, fear, sex, and aggression[67]. Therefore, although individuals are always social and live within a specific institutional arrangement, there is also always a tension between the individual and the group that is never fully resolved. As it has been largely documented in psychology, belonging failures bring back individual aggression as the main form of social relation between individuals[68].

[67] This is our animal heritage, as Lorenz shows in his book: On Aggression. Lorenz, Konrad, *On Aggression*. New York: Harcourt, Brace and World. 1996.

[68] Obregon, C., 2021. *The Philosophy of Belonging,* op.cit.

Moreover, evolutionarily human beings were made to belong to small groups of around one hundred to one hundred and fifty members[69]. In these groups, social belonging occurs through physical interaction between the members, and therefore it is still partially based on limbic connections[70]. As societies are extended, and they are composed of many small groups, social belonging within these small groups is still limbic, but between the extended groups it is not. Thus, there is an evolutionary potential conflict not only between the individual and the social group; but also, between the distinct groups that constitute the extended society. Conflict is particularly strong between societies that do not share a common conceptual system or institutional arrangement.

Social conflict is an evolutionary feature of human societies because social belonging always has failures. A full integration between the individual and the group, and between the distinct groups that constitute the society is an evolutionary impossibility. Social conflict in fact is a healthy feature in human societies. If, as an example, one looks at the recent history in Western societies, many positive features that are accepted today and that functionalism argued to be highly valuable adaptive features like democracy, black voting, or female voting, were the result of social conflict.

Social conflict, however, must happen within an institutional arrangement that provides unity and functionality. If social life was only guided by social conflict, nothing would guarantee social survival. Thus, although on occasions social conflict destroys the old institutional arrangement and creates a new one, an institutional arrangement is needed for the functionality of the society - in this point functionalism is right. Naked power cannot provide social stability for long. To provide long lasting stability social power must be functional. But the differential characteristics of the agents that constitute the society (whether individuals or groups) do play a key role in social conflict, which is a fundamental element in the process of social change. Social change based on social conflict may on occasions end in the destruction of a particular society, but in most cases, this does not happen because social conflict is guided by social belonging, and therefore at the end a new form of functional stability is institutionalized.

Social belonging is defined by the three social systems: the integrative, the power and the economic system. These systems, as we have argued, are abstract constructions, useful for social analysis, that might be substi-

[69] Dunbar 1992, op.cit. Obregon, C., 2021. *The Philosophy of Belonging,* op.cit.

[70] Obregon, C., 2021. *The Philosophy of Belonging,* op.cit.

tuted for other ones. We use them because they have the advantage to point out that economic power is only one of the features of social stability and change. Integrative power and the power system itself also play a fundamental role in social stability and change.

Social stability and social change happen in different ways in distinct societies, in this ethnomethodology is correct[71]. We have used the abstract categories of the primary society, the traditional society, and the Western society to exemplify this diversity. But in the real world there are, of course, many different societies within these abstract general categories; and the boundaries between them are not clearly defined either. However, an undeniable scientific fact is that the social differentiation made in in the West, particularly as it relates to human rights and democracy, is only one of the several routes of differentiation historically taken.

Social stability and change happen in different ways in distinct societies. There are however some common features: 1) social belonging and social conflict always exist; 2) social belonging in general guides social conflict; 3) all societies develop functionality; 4) social change is the consequence of external and internal shocks, as for the internal shocks technological changes are particularly relevant; 5) social conflict is important, because it provides social flexibility in the response to the shocks suffered[72]; 6) all societies develop a conceptual system and an institutional arrangement that adapts and changes through time; 7) social change happens both at the level of the institutional arrangement and at the level of the conceptual system; 8) because of evolutionary individuality the agent of change has to be the individual; but in all cases, even in Western individualism, the individual is always a social individual that lives within a specific institutional arrangement.

The micro functioning of the society is extremely relevant in any society, and the microanalysis is particularly relevant for Western societies. But such micro functioning always occurs within a historical context which implies a given conceptual system and an institutional arrangement. The agent of change is always the individual, but it is a social individual influenced by the conceptual system and its corresponding institutional arrangement. Change happens both in the institutional arrangement and in the conceptual system, and there is social creativity at both levels.

The economic development of the West is due to several factors such as: 1) technology, as Veblen and Marx state; 2) free markets, as

[71] See Obregon Carlos., 2022. *Social Power*. Amazon.com. Also available at Research gate.com.

[72] See Obregon Carlos., 2022. *Social Power*. Amazon.com. Also available at Research gate.com.

the neoclassical thinkers defend; and 3) individual innovation, as North argues. But it is also consequence of the consolidation of the middle class, which was the one that definitively enlarged the market, and whose dynamic preferences guided and fostered technological development. Social change is always the consequence of a complex interaction between the three social systems: the integrative, the power and the economic.

The price system as a transmitter of information does not have a specific relevance in Veblen. In North instead, it is essential to transmit incentives for individual creativity. In the view proposed here, the price system is crucial to transmit the changing needs of the middle class, which provide the central guidance for the fast technological development in capitalism[73].

The economic development of Asia is not well explained neither by the neoclassical thinkers, Veblen or North. The view presented in here explains it in terms of institutional policies that: a) reflect the institutional strengths of these cultures; b) recognize the need for an endogenous savings policy; and c) establish an investment policy aimed at producing for the mass consumption of the Western middle class – and therefore requires using world's frontier technology.

Underdevelopment in North is the consequence of institutions that do not promote individual creativity and innovation. In Veblen it is explained by obsolete institutions that do not allow technological development. In the view presented in here, underdevelopment is the consequence of a) a non-competitive local institutional arrangement; and b) an inadequate global institutional arrangement[74].

The world's global problems are explained in Veblen by the prevalence of old habits of life and thought, in North they are the consequence of not having proper institutions that free human individual creativity in all the countries; in the view presented here they are the consequence of an improper global institutional arrangement.

Diversity and conflict in the society are welcome, as they make it more plural and flexible. But too much conflict without institutional functionality results in social chaos. Therefore, what is needed for proper social change is a strong institutional setting, which however must be flexible enough to incorporate changes fast; changes due to the social diversity allowed, and the conflict of ideas that propose distinct paths to accom-

[73] See Obregon Carlos., 2022. *Social Power*. Amazon.com. Also available at Research gate.com.

[74] See Obregon Carlos., 2022. *Social Power*. Amazon.com. Also available at Research gate.com.the ch dynamic preferences are theible, m, nor realism are the solutions for the complex interational relations Institucionalis.

modate to endogenous and exogenous parametrical changes. The flexible institutionalization of diversity is a critical element for a society to have the capacity to have an adequate process of social change. When a society is confronted with a sudden large technological change the quality and flexibility of its institutional arrangement will define whether the full benefits of the new technological revolution will be obtained; the outcome is never guaranteed and social progress and order may be achieved or not.

GROUP D THEORIES: SMOOTH SOCIAL CHANGE WHICH MAY NOT GENERATE SOCIAL PROGRESS

In group D there is not actually a specific group of theories. But even though this case has not been studied theoretically in specific by any major school of thought; it is clear a feature of reality. There are regions in the world like Sub Saharan Africa in which social change has happened smoothly (because major recent technological revolutions have not fully entered in this region) without very much progress.

CONCLUSION

In Veblen's terms, the problem of the world today is that the old habits of life and of thought have not yet adapted to the new technological changes brought about by the ICT revolution. In our language, while the ICT revolution has globalized the world, the international institutional arrangement has lagged. The old conceptual systems still used today are no longer useful to understand the reality of the contemporary world's society, that has been globalized by the ICT revolution. Liberalism belongs to the conceptual system of the modern Western society; but it is ill suited as a reference for today's globalized world and its future dynamics. Realism rightly points out the difference between distinct national interests and national points of view; but its proposal, of maintaining a balance of powers between nations, is restricted to the power system and is unstable and insufficient. Although nations constitute an undeniable reality, and any global perspective must deal with the interest of powerful countries, the view of a world defined by national interests is conceptually behind

the globalized reality imposed by the ICT revolution. The only way to move forward is to strengthen global institutions capable of responding to the needs of the global economic interdependence; to foster ideological tolerance and to enter a credible demilitarization program of the world. If we do not do it, the unresolved conflicts between national interests, within the intense international interaction brought about by the ICTR, will continue to be the cause of continuous acute global problems and suboptimal solutions.

EPILOGUE: CORRECTING THE GLOBAL ROUTE, POLICY ALTERNATIVES

The three main negative events of the last twenty years that have jeopardized the global performance of the ICTR (the 2008 GFC, the 2020 GP and the Russia-Ukraine war) did not have to happen. The US-China trade war did not have to happen. The protectionist policies in so many countries are clearly a mistake that could be avoided. All these negative events have slowed down the ICTR and reduced its global benefits. And what is not often realized is that all these events are not isolated independent events, they are linked by a common causal root – nationalism.

The 2008 GFC's international potential impact was underestimated by years, because policy makers did not realize the rapid internationalization that the financial sector had suffered before 2008. Isolated markets do not exist in a world globalized by the ICTR. The US' adjustable-rate subprime market that started the 2008 GFC was interlinked through securitization not only to the financial safety of the US banks, but also to the financial safety of most of the banks all over the developed countries that had bought the securitized paper. The US Federal Reserve by first decreasing and then increasing rapidly the FED's rate created a crisis in the adjustable-rate US subprime market; and it further assumed that this market was going to self-correct itself through the private banks' intervention. Instead, the US banks and other international banks, owning the securitized paper, collapsed; and therefore, we had the 2008 GFC.

The 2020 GP was a consequence of the globalization of the ICTR's process of production that interconnected China with the rest of the world; but was badly mismanaged by a WHO which has had a total budget smaller than the one of a large private hospital in the US. The 2020 GP was largely confronted by each nation's own policies: which was highly inefficient in an interconnected world.

The Russia-Ukraine war did not have to happen. It was the consequence of an isolated nationalistic Russia, looking backwards to a world of isolated countries, instead of forward to a globalized world; and of a

stubborn West playing a zero-sum game against Russia, instead of a collaborative game - as it should be done in an interconnected world.

The US-China trade war is inappropriate in an ICTR world, in which both economies have become interdependent. And the nationalistic protectionism in so many countries has only exacerbated the difficulties for the world to enjoy the benefits that the ICTR can provide.

The ICTR is the third wave of globalization in modern times. The first wave was due to the increased global productivity consequence of the 1820's industrial revolution and of the steel technological revolution (also called the second industrial revolution) in the 1870's. This first wave lacked an appropriate global institutional framework and ended up in the open confrontation between nations fighting each other to decide how to divide amongst themselves the new globalization benefits. The consequence was the collapse of the first wave of globalization into the First World War, the national protectionist policies in the 1930's that caused the 1930 GD (Great Depression) and the Second World War. The second wave of globalization initiates after the Second World War and lasts until 1990 (year in which the ICTR starts). This second wave was successfully managed in the Western world, under the leadership of the US, due to the strong international institutions established in Bretton Woods. This second wave was however mismanaged in the USSR, which isolated itself and collapsed at the end of the eighties. The third wave of globalization, the ICTR, was relatively well managed until the 2008 GFC; but it is now under the threat of nationalisms - just as it happened in the first wave of globalization. The global leaders must be very careful. The ICTR has globalized the world to a point of no return, in which the nationalistic rhetoric becomes awfully expensive.

It is true that the nationalisms are deeply rooted in human history; and therefore, most certainly they will prevail in the future to come. But what is not true is that nations must interact with each other under a weak institutional international arrangement. The good results of the second wave of globalization in the Western world, versus the disastrous results of the first wave, testify to the importance of strong international institutions.

In fact, the three most recent waves of globalizations are not the first instances where nationalisms are confronted by a globalizing tendency. Many of the old empires were built with a globalizing view. This was the case of the Macedonian empire under Alexander the Great, the Roman empire, and so on. All the old empires must deal with the nationalistic tendencies of the smaller conquered regions. And although it is true

that these small regions were conquered by force, it is also true that the empires were built under a global embracing ideology that was looking forward to building common values. The Mayans, the Egyptians, the Persians, the Chinese, the Greeks, the Macedonians, the Romans, the Spaniards, the French, the English – all of them were building a larger culture than their own initial nation. Nationalisms will not disappear in the future, but world leaders must understand that these nationalisms must be made compatible with the globalizing reality brought about by the ICTR. Not doing it will be awfully expensive for the world.

Today's assault on globalization is not new. Technologies have always enlarged the world and have always been confronted by tribal, regional, or national political forces. Thousands of years ago, already the copper and bronze technological revolutions gave rise to the Egyptian empire, as large urban centers consolidated themselves through warfare to bring down the regional barriers that opposed the enlargement of the production process. In the long run, all the forces that oppose the enlargement of the production process brought about by the technological revolutions lose their power base. There are many historical examples that in the long run the technological revolutions always prevail. When Persia declared the private use of iron illegal, authorizing it only to be used by the State, the consequence was the iron production by small producers in the offshore Greece, the eventual confrontation of Greece and Persia, the latter invasion of Persia by Alexander the Great, and the birth of a new larger empire – the Roman. France, due to the vested interests of the king, the nobility, and the church, did not fully join the manufacturing revolution that started in the thirteenth century and ended up in the 1820's first industrial revolution. The consequence was that France lost its European leadership; and in 1870 it lost the war against Germany and had to give up the two key European steel production centers, Alsace and Lorraine. Due to this, France was unable to join the steel industrial revolution of the 1870's, and by the First World War France had become a second-class military and economic power, that was easily invaded by Germany. The USSR isolated itself from the technological revolution occurring in the West after the Second World War, and it collapsed at the end of the 1980's. Whoever isolates itself in the future from the ICTR will lose. The technological revolutions always triumph in the long run. This is a key message for the Western world, and particularly for the US – any protectionist policies will backfire in the long run by diminishing the involved countries' global competitiveness.

Neither liberalism, nor political realism, are proper guidelines for international policies in a globalized ICTR world. We need a new perspective: institutionalism. Allowing and promoting the global interdependence brough about by the ICTR; strong global institutions, built around the interests of powerful nations, but establishing clear and fair global rules; ideological tolerance; and a reliable and sustainable internationally agreed de-militarization; are the key ingredients of the new international policy guidelines proposed here. The establishment of this new perspective will not be an easy task; it will take major changes in the actual global conceptual system and institutional arrangement. But it is the only way out for a world that is already being globalized by the ICTR. Not doing it will be awfully expensive in terms of future global crisis, wars, and losing the full benefits that the ICTR can bring about.

It is time to dream of a future better integrated global world, and to take the actions required to move in this direction; just like many of our predecessors have done when dreaming of and building the big China, the large Macedonian empire, the invincible Roman empire, the intercontinental British empire, and so on. Today the world, for the first time, has been truly unified by the ICTR. And thus, for the first time, we must seriously dream of and adopt the required policies to build a new, truly better, integrated global world.

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