

The Golden Age at our Doorstep

Smart, Sustainable and Global Growth

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PREFACE - Warning to Readers

The digital era has captivated human imagination not only with its exploits, but also with the dangers it entails. Dazzled by the brilliance of technology, we find it hard to glimpse its true potential for completely changing everything from our everyday lives to public policy. At some point in every technological revolution, a new paradigm begins to prevail. It is a moment of vertigo.

ACT I – Four (and a half) chapters

The Great Depression of the nineteen-thirties was epitomised in Charlie Chaplin's film *Modern Times* (1936). This mischievous comedy recounts the misfortunes of Chaplin's 'Tramp' character along with his companion, the 'Gamin' (Paulette Godard), at a time of unemployment, hunger and repression of the poor, against the backdrop of apparent gleam of mass production and automation, with its relentlessness and dehumanisation. In one scene, our two underdogs dream of a bountiful life in a modest suburban home from which they need only to reach their hand out of the window to grab the low hanging fruits of a brave new world. Dreams are, however, just dreams and the outcome of the story remains open. In the end, the two lovers only have each other. They walk hand in hand down a newly paved but deserted road in the middle of nowhere, towards an uncertain future.

Watching a stream of these images under the strict lockdown of the Covid-19 pandemic is unsettling. We are now at a similar moment, marked by great uncertainty about our future. At that time, 25% of wealth was concentrated in the hands of the richest 1% of the United States. That proportion is virtually identical to today's figure. The **International Monetary Fund (IMF)** has concluded that we are now facing the worst recession since the Great Depression. But the pandemic makes us overlook the underlying reality. Because this is actually a recurring story and the chapters of this thrilling series are known as Technological Revolutions.

It was the Austro-Hungarian economist Joseph Alois Schumpeter who posited that capitalism evolves in technological leaps that constitute true revolutions. Schumpeter's hero is not the highly successful businessman doing more of the same old thing, but rather the one that creates disruption. What we call an 'innovator'. This succession of

technological revolutions covers four and a half chapters. In each chapter, a new social group obtains access to the new good life.

The first chapter took place in the United Kingdom under the Industrial Revolution, which elevated a capitalist bourgeoisie and created an industrial proletariat that lived in conditions of exploitation, but would never leave the stage.

The second chapter, from 1829 onwards, led to the Victorian boom of coal, steam, iron and railways and saw the elevation of a cultured, entrepreneurial middle class in the new burgeoning cities.

The third chapter was the era of steel, heavy engineering and transcontinental navigation that led to the first globalisation under the 'Pax Britannica', while the United States and Germany made a leap to the forefront. The good life extended to skilled workers and the world of art, culture and entertainment. This was the *Belle Époque* of Lautrec, Renoir and Monet.

The fourth chapter kicked off in 1908 with the launch of Henry Ford's Model T and the era of mass production, facilitated by automobiles, hydrocarbons, networks of highways and mass electrification, and shaped by suburbanisation, mass consumption and the Cold War. Now, in the countries of the so-called advanced West, the blue collar workers of the factories at last enjoyed the wellbeing of the post-war Golden Age.

Even though these revolutions are differentiated by their technologies, they all follow a recurring pattern. Each revolution can be divided into two parts: an experimental installation period and a period of deployment throughout the economy. The installation phase is guided by the world of finance and the deployment phase by production. Installation is driven by free-market ideology, as espoused by Reagan, Thatcher and Milton Friedman. Deployment sees renewed belief in the importance of the State in guiding the market and is the moment for people such as Keynes, Roosevelt and Adenauer. These are two mindsets that prevail at two different moments. Both are part of how Technological Revolutions propagate in the market system.

The two parts are separated by an emphatic split: a crisis. This is generally a collapse of the stock market followed by a period of recession acting as the pivoting point from one half to the other, transitioning from a new technological paradigm, towards a new socio-economic and political paradigm or, in other words, a comprehensive change in the entire functioning of society. We are currently at one of these historic moments when we find it hard to imagine a better future.

We forget that for the Tramp and his lover the post-war boom was to come around some twenty years later and that his dream would become true for millions of workers. They would have their dream house with children, and a car to go to work, to

the supermarket, to school or to the beach. This was the period of greatest prosperity since the series began.

One day in 1971, the launch of Intel's first microprocessor was given a low-key report in the press, overlooked by most. That event marked the start of chapter five, the Information and Communications Technology (ICT) revolution. The digital era.

A real chance of **Smart, Sustainable and Global Growth** lies ahead. A new Golden Age.

Act II - Creative Destruction, Gilded Age

Another feature of technological revolutions is that while one stage languishes, the other emerges. The current paradigm has saturated its natural markets and introduces changes to lengthen its life. The mass-production revolution reached saturation point at the end of the nineteen-sixties. It was the time of the civil rights movement, followed by the youth rebellion of 1968. The process of demolishing the establishment and seeking new horizons took off. In the nineteen seventies, a new historical moment would appear along with the oil crisis, mass unemployment, inflation, environmentalism, feminism... and the microprocessor. The model of industrialisation by import substitution took parts-assembly to countries in Latin America and Asia in order to reduce costs, open up new markets and postpone the paradigm's death. Nixon tellingly began opening up to China in 1972. Entire factories were later moved to countries in the Third World. At some point Ronald Reagan stated that "government is the problem". And so, government started dismantling the western Welfare State and undermining the trade unions. This was when Margaret Thatcher brought the miners' union to its knees.

Milton Friedman's dictum became the new era's maxim: the social responsibility of all business is exclusively to maximize returns to shareholders. The financial system was deregulated, and investment looked for alternatives to a moribund model with decreasing returns. Capital gradually discovered innovators in places like Palo Alto, fumbling around in their parents' garages with a technology incomprehensible to their seniors. New technologies replicated and financial capital invested in them increasingly. Accelerating change rendered trades and jobs irrelevant as well as workers, regions and entire countries obsolete. A gilded age concealed rampant inequality under the patina of free-market ideology.

It is actually the financial frenzy during bubbles that makes it possible to install the infrastructure necessary for the new paradigm, long before it is profitable, as in the case of laying optical fibre around the planet. It doesn't take long to reach the point at which there are more investors than good projects. This is when speculative capital detaches from its productive substrate and initiates a self-propagating state of excess. A financial bubble arises and grows rampant until it collapses.

This relentless, ferocious process of replacing one paradigm with another is what Schumpeter refers to as “creative destruction”. The economist and venture capitalist William Janeway sums it up succinctly: “Amazon took 2.2 billion dollars to get to positive cash flow, where it was earning its way. It could never have done that, except in a bubble environment.”

ACT III - Creative Construction, Golden Age

History has consistently shown that capitalism is able to redress the imbalances it has caused, albeit only after major crises: financial collapses, recessions, wars and social unrest. There is extreme resistance to social change. During the Great Depression, F. D. Roosevelt tried to usher in the New Deal and was simultaneously accused of being a fascist and a communist. It took the enormous collective effort of the Second World War for US politics and business to understand the potential of mass production and the advantage of a proactive state. Once peace came, mass production needed mass demand.

How was that to be achieved? Simply flooding the market with money is no solution. The potential of each revolution requires the orientation of the playing field to be established in order to encourage fruitful interactions and to ensure that its benefits reach new strata of the population. Three elements are involved: enabling factors, how the playing field is oriented and dynamic demand.

What enabled that paradigm was the quantitative leap in productivity resulting from mass production, which rested on the low cost of raw materials and energy. This refers particularly to cheap hydrocarbons, which provided the main source for the huge amounts of energy required, as well as derivative products such as plastics and petrochemicals. This paradigm therefore inevitably yielded an enormous amount of waste and environmental damage, not seen as critical then.

Three directions influenced the orientation of the playing field. One, the Cold War, which generated a large number of public contracts and innovations that eventually passed into the civil domain (such as computers and Internet), another, the Marshall Plan and post-war reconstruction, and, finally and most importantly, the American Way of Life and suburbanisation. According to J. M. Keynes, housing for the middle and working classes was the path to be followed and he advised Roosevelt “to put most of your eggs in this basket.” Land on the outskirts of towns and cities was very cheap and therefore, when combined with standardised construction, costs were reduced enormously, thus making housing available to large strata. It was a clear opportunity.

Suburban life generated a huge, febrile hive of economic activity that extended its benefits to the majority. This was an entire platform supported by the State so that the market economy could unfold on it. From housing to infrastructures and endless

amenities, ranging from shopping centres and services to public schools and hospitals, jobs and businesses grew at an astonishing rate.

Dynamic demand was driven by the Welfare State and involved strengthening trade unions, collective bargaining, stable salaries, unemployment benefit, state-aided mortgage loans, consumer credit and free health and education. A mass programme of housing and consumption, for example, was unthinkable without state backup for mortgage loans and unemployment benefits as a bridge in the event of a loss of work. Jobs for life and guaranteed pensions boosted demand.

ACT IV - The Great Confinement

There have been three crises with potential for change in the installation period of the digital revolution. The first was the bursting of the dot-com bubble in the year 2000, the second the burst of the real estate bubble in 2007, which led to the global financial crisis from 2008. Quantitative Easing (QE), which then came to the rescue, led to the hope that everything would return to how it used to be. These funds, however, mainly revived the financial casino and inflated the price of assets, real estate, shares and corporate debt while increasing inequality and social instability. In every respect, it was a balloon ready to pop. The spark came from an unexpected place: the Covid-19 pandemic, which originated in China, the world's new factory.

The global Great Confinement of 2020, the trigger of the financial crash that was already on the verge of happening, is the third of these crises. It shows how the playing field has been rigged in recent decades. Badly-paid jobs have turned out to be essential: health personnel, supermarket employees, couriers, etc. Their wages were slashed during the installation period while financial profit soared. Under the lockdown, these are the two sectors that remain fully operative: vulnerable workers risk their health to keep the world afloat; the financial sector uses current volatility to make huge earnings.

At this point, free-market ideology, which had been instrumental for the installation of the ICT paradigm, has become an obstacle for deploying it to everyone's benefit.

This is similar to what occurred in the post-war period, when there was a need for reconstruction in Europe with a spirit of solidarity and the State as the promoter. Employment instability is revealing the need for a different type of social security network, perhaps a universal basic income and better payment for essential jobs. Austerity policies cannot continue to undermine health systems and essential services and State subsidies to the private sector must be suitably reflected in taxation. All this is being recognised by Klaus Schwab, the convenor of the Davos meetings, calling for a RESET of capitalism post Covid.

The handling of future pandemics and environmental and climatic problems requires global cooperation and a reset of multilateralism. The positive impact of the global lockdown on the quality of air and water (Venice's canals for example) and even on wildlife should be taken into account for the future. It has been shown that it is very possible to work remotely and to videoconference, which reduces the need for travel considerably.

Degrowth economists and environmentalists hold that the current pattern of wasteful economic growth cannot lead us to environmental sustainability. Many orthodox economists, on the contrary, consider that environmental regulations can obstruct development and growth. But neither the ones nor the others acknowledge the huge innovative potential of **smart, sustainable and global growth**. They are reluctant to believe that innovation enabled by ICTs can allow for growth based on intangible assets and services, enabling significant savings in energy and materials, generating whole new jobs creating sectors in the economy while also protecting the environment.

For finance to find productive options the direction of the playing field must be changed and the platform for the deployment of the innovative power of ICTs be created. Policies must suit the current paradigm just as they suited the previous paradigm during the post-war period. The suburbanisation model was adapted to the main innovation of the time, the car, which allowed easy access for the economic development of the entire territory. It also fitted the mass production of standardized objects with a view to lowering prices and to increasing earnings by volume in a national context.

ICTs, by contrast, with their flexible production methods allow for the segmentation of markets into differentiated products, which offer greater earning margins, in a globalized context. Both the problems inherited from the old paradigm and those generated by the installation of ICTs must be solved using the logic of these new technologies.

ACT V - Revolution 5.0: Smart, Sustainable and Global Growth

Cheap computing and information are the enablers of the current paradigm, just as cheap energy and materials enabled the previous paradigm. It is not just a matter of computers and Internet, but also of Artificial Intelligence, the Internet of Things, Robotics, Satellite Communication, Big Data, Blockchain and a virtually endless series of uses, as digital technology can be implemented from food production to biomaterials, from health to care services, in fact, to all aspects and at all levels. This means a new quantitative and qualitative leap for productivity. As on previous occasions, it is this leap that will enable reincluding the sectors that were displaced

during the installation period in the advanced countries plus, possibly this time, the majorities in the developing world.

Any direction established for the new paradigm will only work if demand has the necessary characteristics and volume. For this to happen, a powerful understanding of the current moment is essential. The most obvious direction is **Smart, Sustainable and Global Growth**.

Initially, public investment in research, development and green enterprises will be necessary to back risk initiatives that produce innovations and new synergies, and attract new investors.

To achieve this, environmental regulations should be designed as incentives. Policies to improve the energy “mix” should lean towards encouraging renewable and non-polluting sources and discouraging fossil fuels. A whole new range of industries, processes and procedures, social habits and methods of political participation will emerge from **Smart Sustainable Growth**. This is because innovation, investment and production in such a growth model respond to an equivalent consumption. Instead of a linear economy, based on materials for creating products and transporting them to consumers –which will end up as waste–, we could see a “circular” economy where design contemplates durability, maintenance and reuse.

Currently, our objects do not quickly become obsolescent because of the “frantic speed” of technological change, but rather because of a strategy to stretch out saturated markets. This leads to millions of tons of waste. This obsolescence is “planned” and its cost is socialized. The change to a maintenance economy would mean that extremely high-quality and durable products are manufactured with the best and most environmentally friendly technology possible. They would be targeted at a dynamic national and international lease sector, with processes of maintenance, modernization, disassembly, recycling and reuse, and bring a radical reduction in the consumption of materials while the needs of increasingly large strata of population would be covered. This extensive industry would undertake electronic diagnosis, 3D-print replacement parts, and use and retrain personnel displaced by technology and globalisation. Although a truly modern refrigerator would be more expensive, it would last a hundred years and would be subject to periodic updates and changes of ownership. Towards the end of its useful life it would still allow people emerging from poverty to benefit from renting such an appliance.

The necessary modernisation of infrastructure, including civil engineering and building, to recolonize cities by making them more efficient and ecological, by transforming suburbs into self-contained spaces, and by including new global productive vocations, will be a powerful and constant generator of innovation and employment.

Under the paradigm of ICT, the organisational model of many corporations has changed from hierarchical and pyramidal to horizontal and networked. The

proliferation of free web services encourages innovation in the creation of communities for sharing access to products and collaborating on creative projects. For some time we have aspired to “democratising access”, as exemplified by software as a service (SaaS), car-sharing and co-working spaces. This means changing from purchasing physical goods to temporary access to them, leasing them or replacing them with intangible services (which is what is increasingly happening with music, film and reading).

In turn, aspiring to a healthier life, with trends such as cycling and extreme sports, keto and paleo diets, organic and “gourmet” products, “experiences” and the global boom in craft beers, coaching and personal training, as well as wearing sustainable clothing, or driving electric cars, are now common currency among young people and those with higher levels of education or purchasing power. These new values, as in past revolutions, tend to spread to the rest of the population. Jobs in personal care such as physiotherapy and osteopathy, caring for the elderly, primary and preventive medicine, universal access to quality education, as well as training and lifelong re-training in a changing employment panorama are clear indications of where the new type of demand is heading.

This will not, however, solely be restricted to advanced economies. ICTs have shown their adaptability in developing countries: Internet access has incorporated to the global market parts of the world that were unable to fully participate in the previous paradigm because of lack of infrastructure. Smart green development is possible not only in Asia, but also in Africa and Latin America. The “American Way of Life” is no longer economically or environmentally viable on a global scale and must give way to a **“Smart Sustainable Way of Life”**.

All paradigms need an institutional framework that provides the necessary context for synergies in the market. First, the digital paradigm needs globalisation given that its basic infrastructure is the global internet. Providing finance to developing countries would create markets for redesigned capital goods to be sustainable and suited to the local conditions: engineering, infrastructure and equipment. This would generate dynamic demand and jobs in developed, emerging and developing countries and raise the standard of living of millions, while significantly reducing migratory pressure. Let us not forget that the intangible nature of ICT makes state-of-the-art innovations possible anywhere. In Kenya mobile phones spread rapidly and were turned into digital banks.

Mass production as a system was based on the premise of jobs for life and unemployment insurance in the event of unforeseen circumstances. In the digital era, given the demand for flexibility and resilience, many jobs are now part of the gig economy and an increasingly large proportion of the working population is self-employed. The uncertainty inherent in this system of labour must be managed. There could be a Universal Basic Income, which everyone receives but to be returned in tax by those who do not need it. It would also be convenient to have a system of banking

services that pay or collect interest in accordance with fluctuations in income over a year, thus guaranteeing a monthly fixed income.

Bearing in mind the metamorphosis to which the system is subject with the change of paradigm, a similarly changing taxation policy is necessary. Instead of taxing work and consumption, transport, resources and polluting energy could be taxed. This would encourage innovation and efficiency in energy and materials, as well as the creation of jobs and the consumption of intangibles, while favouring local production and avoiding long-distance transport. Very short-term stock market operations could be taxed heavily at rates that decrease over time in order to encourage patient long-term investment in the real economy.

This does not mean a confrontation between the State and the markets, but rather a change from obsolete and inadequate policies to others suited to the problems being faced and to the new technological potential. The solution involves establishing a positive-sum game between business and society. This is what leads to the second stage of each technological revolution and what we refer to as its Golden Age.

EPILOGUE - The Lost Treasure

The ICT paradigm has led to more horizontal organisations and has made relations among people more flexible and streamlined, but neither governments nor citizens appear to fully understand that new technologies imply new kinds of interactions. The State needs to adopt the new agile organisational models in order to offer innovative services that are easily accessed by the public, together with a much more participatory democracy. To paraphrase Tim O'Reilly, the government should become a platform that provides both data and web services that allow citizen participation in order to solve problems: Government 2.0.

This, however, is just part of the story. As happened with previous technological revolutions, national states and multilateral institutions need to adjust to the basic assumptions and the logic of the new paradigm, both with regard to how they function and the design of policies. Our challenges are of a planetary nature: climate change, epidemics, migrations and trade are global and affect us all. These require a new global governance framework with regulatory and taxing power to make a **smart, green, global and fair growth** model sustainable and possible.

The digital paradigm is our greatest opportunity now. Its potential for networking and participation contains the chance of citizen emancipation. Its capacity for dematerialising the way we fulfil our needs on a healthy planet is enormous. It is our job to find this lost treasure.