

# **RETHINKING GLOBALIZATION AFTER THE COLLAPSE OF THE FINANCIAL BUBBLE**

**An essay on the challenges of the Third Millennium**

Carlota Perez

Honorary Research Fellow

SPRU  
Freeman Centre  
Sussex University  
Falmer, BN1 9RF  
United Kingdom

tel: +44-1273- 678173  
fax: +44-1273- 2646823

Independent Consultant

EUREKA, A.C.  
Ota.San Javier  
8va transversal  
Urb.Altamira.

Caracas 1060  
Venezuela  
tel/fax: +58-212-283 5803

Senior Research Fellow

CERF  
Judge Institute  
Cambridge University  
Trumpington Street  
Cambridge CB2 1AG, UK

tel: +44-1223-760580  
fax: +44-1223-33 97 01

E-mail: <carperez@carlotaperez.org>

Web page: [www.carlotaperez.org](http://www.carlotaperez.org)

*Paper to be presented at the First Globalics Conference  
Rio, November 2-6, 2003*

## Contents

A.	Introduction: The sources and the forms of globalization .....	1
B.	Great Surges in economic development: Recurrence and uniqueness.....	2
C.	The ruthless role of the great financial bubbles .....	9
D.	Recession, Turning Point and institutional recomposition .....	11
E.	Post -neo-liberal globalization: Some thoughts for conceiving a North-South positive-sum game .....	13

## List of figures

Table 1.	Five technological revolutions in 230 years: Main industries and infrastructure .....	3
Figure 1	The double nature of technological revolutions .....	4
Table 2	A different techno-economic paradigm for each great surge of development .....	5
Figure 2	The life cycle of a technological revolution.....	6
Figure 3.	The social assimilation of technological revolutions breaks each great surge of development in half .....	7
Figure 4	Parallel surges with infrastructure manias, Golden Ages and approximate dates of Turning Points .....	11

## A. Introduction: The sources and the forms of globalization

The present understanding of “globalization” is inextricably tied to the “free market” ideology for both proponents and opponents. This paper will argue that globalization has many potential forms of which the neo-liberal recipe, applied up to now, is only one. The need to recognize the whole planet as the economic space is inherent to the present technological revolution and its techno-economic paradigm. In that sense, globalization, in one form or another, would be basically inevitable.

However, just as in the previous mass production paradigm national State intervention in the economy took several different forms, so globalization can be socially and politically shaped to favor truly global development for the full deployment of the current paradigm. Simply put: globalization need not be neo-liberal.

The pro-development version of globalization has not yet been designed or defended as such.<sup>1</sup> Yet, it will be argued that, without it, not only would it be very difficult to relaunch development in the South but also to overcome the present recessionary trends in the North.

These propositions stem from a historically-based model of the way in which successive technological revolutions are assimilated in the economic and social system, generating great surges of development that follow a recurring sequence.

The present period would be the mid-point of the surge, after the collapse of the major financial bubble, when the structural tensions that underlie the ensuing recession require a fundamental institutional recomposition. Among other tasks, income needs to be rechannelled towards new layers of consumers in order to help overcome the *premature market saturation*, which results from the polarization of income in the top band of the spectrum, in each country and in the world. This paper will argue that the present is, for that reason, the most appropriate time to put forth bold proposals for a profound redesign of global regulation and institutions.

The argument will be developed beginning with a general summary of the model, in section B. Then, Section C will focus on the recurrence of great financial bubbles, a decade or two after the irruption of each technological revolution, and will examine their role in facilitating the paradigm shifts and in concentrating enough investment in the installation of the new infrastructures. Section D will analyze the post-bubble recessions and the structural distortions inherited from the previous casino economy, which must be overcome by appropriate regulation and institutional changes. The final section E will discuss the crossroads the world is confronting today and present the option of a post-neo-liberal form of globalization, as a difficult but viable strategy for a positive-sum game between North and South.

---

<sup>1</sup> Though it could be held that the European Union has some important features of such a version

## B. Great Surges in economic development: Recurrence and uniqueness

Beginning with *The Industrial Revolution* in England, towards the end of the 18<sup>th</sup> Century, the capitalist economy has been transformed by five technological revolutions. Each of these Schumpeterian ‘gales of creative destruction’ has articulated a constellation of new inputs, products and industries, one or more new infrastructures, usually involving novel means of transport of goods, people and information and alternative sources of energy or ways of getting access to it. Table 1 shows the composition of the five revolutions, which have generally been identified with their most prevalent technologies.

The countries indicated are those that served as leaders of the surge and as core countries of the world economy at the time. The single dates shown for each refer to the initial *big-bang*, which is the date of the public introduction of the most emblematic and significant technology of that revolution. It is the moment when its enormous innovation potential is made visible to would-be entrepreneurs and investors. It is Arkwright’s Cromford mill, signaling the irruption of mechanization in the cotton textile industry. It is Stephenson’s Rocket steam engine for the Liverpool-Manchester railway, which initiates the Age of Steam and Railways. It is Carnegie’s huge Bessemer steel plant launching the world of heavy engineering; Henry Ford’s first Model-T inaugurating the Age of Mass Production and Intel’s microprocessor opening the Age of Information Technology. Each showed a wealth of possible innovations and ushered in the corresponding technological -and later financial!- ‘gold rush’. These dates do not follow the usual Schumpeterian dating of ‘long waves’ because they do not represent the beginning of an economic upswing, as in Schumpeter’s model, but rather the irruption of a technological revolution. The author has proposed the term *Great Surge of Development* to refer to the whole process of diffusion and social assimilation of each technological revolution, from big-bang to maturity.<sup>2</sup>

Each of these great surges of development does not merely add the set of new industries of the technological revolution to the existing ones. On the contrary, these new technologies provide the potential for modernizing the whole productive structure and for raising the general level of productivity and quality to a higher plateau. This is due to the double nature of each technological revolution. As indicated in Figure 1, together with the new industries and infrastructures, each of these constellations generates a new best practice model or *techno-economic paradigm*, including all-pervasive generic technologies and organizational principles applicable both to the setting up of the new firms and industries and to the modernization of most of the existing economy.

---

<sup>2</sup> No “ending date” is shown for the surges, because the spread of each revolution continues after maturity in a process of decline and migration to further and further peripheries, while already the next revolution is taking off. Thus, there is a long overlap between surges. In fact, the big bang is a conceptual construct to indicate the highly visible innovation that facilitates the articulation of the whole revolution and its early propagation. But, before irruption, the set of technologies involved has undergone a long *period of gestation* in the midst of the previous paradigm.

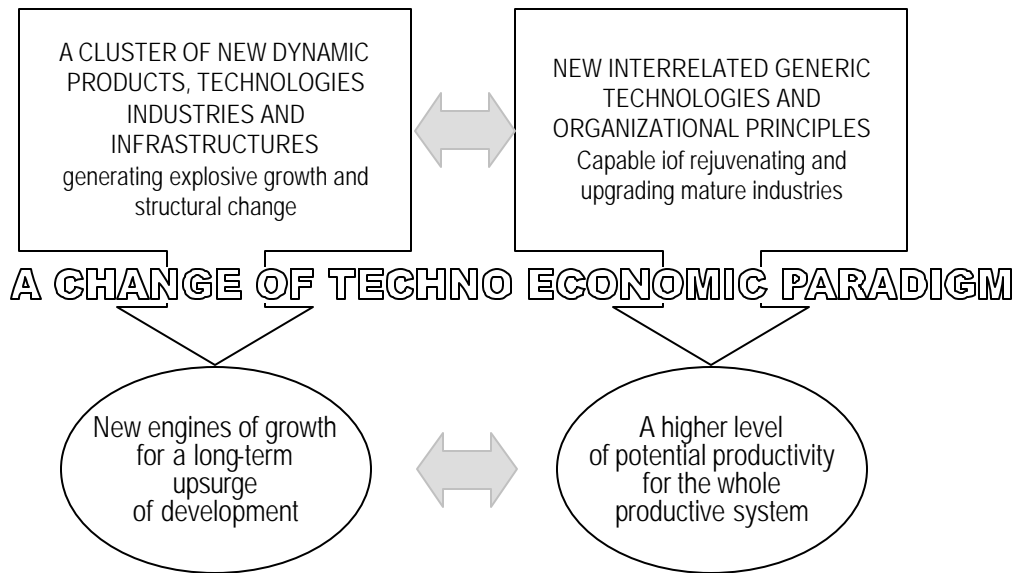
*Table 1. Five technological revolutions in 230 years: Main industries and infrastructure*

<i>Technological revolution</i>	<i>New technologies and new or redefined industries</i>	<i>New or redefined infrastructures</i>
FIRST: <i>The 'Industrial Revolution'</i> Britain From 1771	Mechanized cotton industry Wrought iron Machinery	Canals and waterways Turnpike roads Water power (highly improved water wheels)
SECOND: <i>Age of Steam and Railways</i> In Britain and spreading to Continent and USA From 1829	Steam engines and machinery (made in iron; fueled by coal) Iron and coal mining (now playing a central role in growth)* Railway construction Rolling stock production Steam power for many industries (including textiles)	Railways (Use of steam engine) Universal postal service Telegraph (mainly nationally along railway lines) Great ports, great depots and worldwide sailing ships City gas
THIRD: <i>Age of Steel, Electricity and Heavy Engineering</i> USA and Germany overtaking Britain From 1875	Cheap steel (especially Bessemer) Full development of steam engine for steel ships Heavy chemistry and civil engineering Electrical equipment industry Copper and cables Canned and bottled food Paper and packaging	Worldwide shipping in rapid steel steamships (use of Suez Canal) Worldwide railways (use of cheap steel rails and bolts in standard sizes). Great bridges and tunnels Worldwide Telegraph Telephone (mainly nationally) Electrical networks (for illumination and industrial use)
FOURTH: <i>Age of Oil, the Automobile and Mass Production</i> In USA and spreading to Europe From 1908	Mass-produced automobiles Cheap oil and oil fuels Petrochemicals (synthetics) Internal combustion engine for automobiles, transport, tractors, airplanes, war tanks and electricity Home electrical appliances Refrigerated and frozen foods	Networks of roads, highways, ports and airports Networks of oil ducts Universal electricity (industry and homes) Worldwide analog telecommunications (telephone, telex and cablegram) wire and wireless
FIFTH: <i>Age of Information and Telecommunications</i> In USA, spreading to Europe and Asia From 1971	The information revolution: Cheap microelectronics. Computers, software Telecommunications Control instruments Computer-aided biotechnology and new materials	World digital telecommunications (cable, fiber optics, radio and satellite) Internet/ Electronic mail and other e-services Multiple source, flexible use, electricity networks High-speed physical transport links (by land, air and water)

*Note:\** These traditional industries acquire a new role and a new dynamism when serving as the material and the fuel of the world of railways and machinery

Source: Perez (2002) p.14

Figure 1 The double nature of technological revolutions



Source: Perez (2002) p.9

The process of paradigm shift takes place overcoming the resistance of the previous paradigm but, because of its clear superiority in terms of productivity, it ends up deeply transforming the whole productive structure as well as the way of life and of reorganizing the economy and society. It is a process as complex as that of cultural change and for that very reason it is difficult, painful, uneven and turbulent in both social and economic terms.

Table 2 gives a very general idea of the core concepts of each of the five techno-economic paradigms. The new principles are not as easy to identify as the new technologies. In fact, they only gradually surface into consciousness as the new technologies propagate and the engineers, managers, entrepreneurs, consumers and other agents experiencing the change discover the most compatible and effective ways of taking advantage of the new potential. Eventually, such principles are adopted as generalized ‘common sense’ and become almost imperceptible again. It is only in times of paradigm shift that both the old and the new criteria for best practice can be clearly discerned and compared.

*Table 2 A different techno-economic paradigm for each great surge of development*

<b>Technological revolution</b> Country of initial development	<b>Techno-economic paradigm</b> 'Common-sense' innovation principles
<i>FIRST</i> <i>The 'Industrial Revolution'</i> Britain From 1771	Factory production Mechanization Productivity/ time keeping and time saving Fluidity of movement (as ideal for machines with water-power and for transport through canals and other waterways) Local networks
<i>SECOND</i> <i>Age of Steam and Railways</i> In Britain and spreading to Continent and USA From 1829	Economies of agglomeration/ Industrial cities/ National markets Power centers with national networks Scale as progress Standard parts/ machine-made machines Energy where needed (steam) Interdependent movement (of machines and of means of transport)
<i>THIRD</i> <i>Age of Steel, Electricity and Heavy Engineering</i> USA and Germany overtaking Britain From 1875	Giant structures (steel) Economies of scale of plant/ vertical integration Distributed power for industry (electricity) Science as a productive force Worldwide networks and empires (including cartels) Universal standardization Cost accounting for control and efficiency Great scale for world market power/ 'small' is successful, if local
<i>FOURTH</i> <i>Age of Oil, the Automobile and Mass Production</i> In USA and spreading to Europe From 1908	Mass production/mass markets Economies of scale (product and market volume)/ horizontal integration Standardization of products Energy intensity (oil based) Synthetic materials Functional specialization/ hierarchical pyramids Centralization/ metropolitan centers-suburbanization National powers, world agreements and confrontations
<i>FIFTH</i> <i>Age of Information and Telecommunications</i> In USA spreading to Europe and Asia From 1971	Information-intensity (microelectronics-based ICT) Decentralized integration/ network structures Knowledge as capital / intangible value added Heterogeneity, diversity, adaptability Segmentation of markets/ proliferation of niches Economies of scope and specialization combined with scale Globalization/ interaction between the global and the local Inward and outward cooperation/ clusters Instant contact and action / instant global communications

Source: Perez (2002) p.18

In the earlier surges in the 18<sup>th</sup> and 19<sup>th</sup> centuries, the spread was by word of mouth, imitation and texts written from personal experience. Later, in the 1910s and 1920s the Taylorist and Fordist principles of “Scientific Management” were published in widely read books and spread by engineers and other professional consultants. This practice has been even more intensive in the present surge. During the 1980s and 1990s, thousands of consultants and management books have been spreading the gospel of the flexible organization of the ICT revolution. The contrast between the old rigid hierarchical pyramids and the new adaptable networks has been made in innumerable ways. The same can be said about the shift of accent from tangible to intangible value-added, from homogeneity to diversity and from energy-intensity in the old paradigm to information intensity in the emerging Knowledge Society.

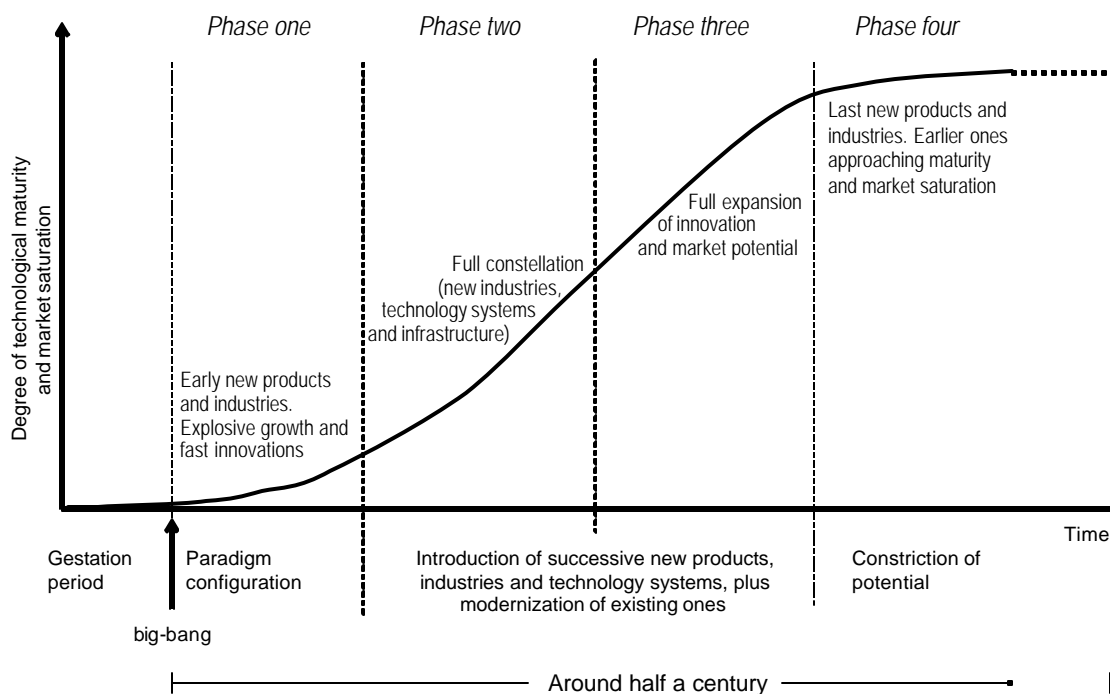
But the changes do not stop at the door of the firm or at the edge of the market. Being the means for taking best advantage of the new wealth creating potential, paradigms end up involving criteria to shape the economic space and the institutional framework, within countries and on the international arena, as suggested in Table 2.

In that sense, globalization has been a part of the current change of paradigm. From different angles various authors and actors have announced the demise of the national State, its exit from economic intervention and the growth of the global economy without trade barriers. In Section E, below, it will be argued that the global nature of the economy, which seems to be in the nature of the present paradigm, does not question an important role for the State at several levels, from the local to the global, including the national

Such profound and widespread transformations cannot occur smoothly. The process of diffusion and social assimilation of revolutions and paradigms is economically turbulent and socially divisive.

As many authors have shown for the case of individual technologies, industries and technology systems,<sup>3</sup> the theoretical life cycle of a technological revolution tends to follow a logistic S-curve (see figure 2). During its unfolding, it functions as a sort of envelope influencing all the life cycles of the component technology systems, industries and products.

Figure 2 The life cycle of a technological revolution



Source: Perez (2002) p.30

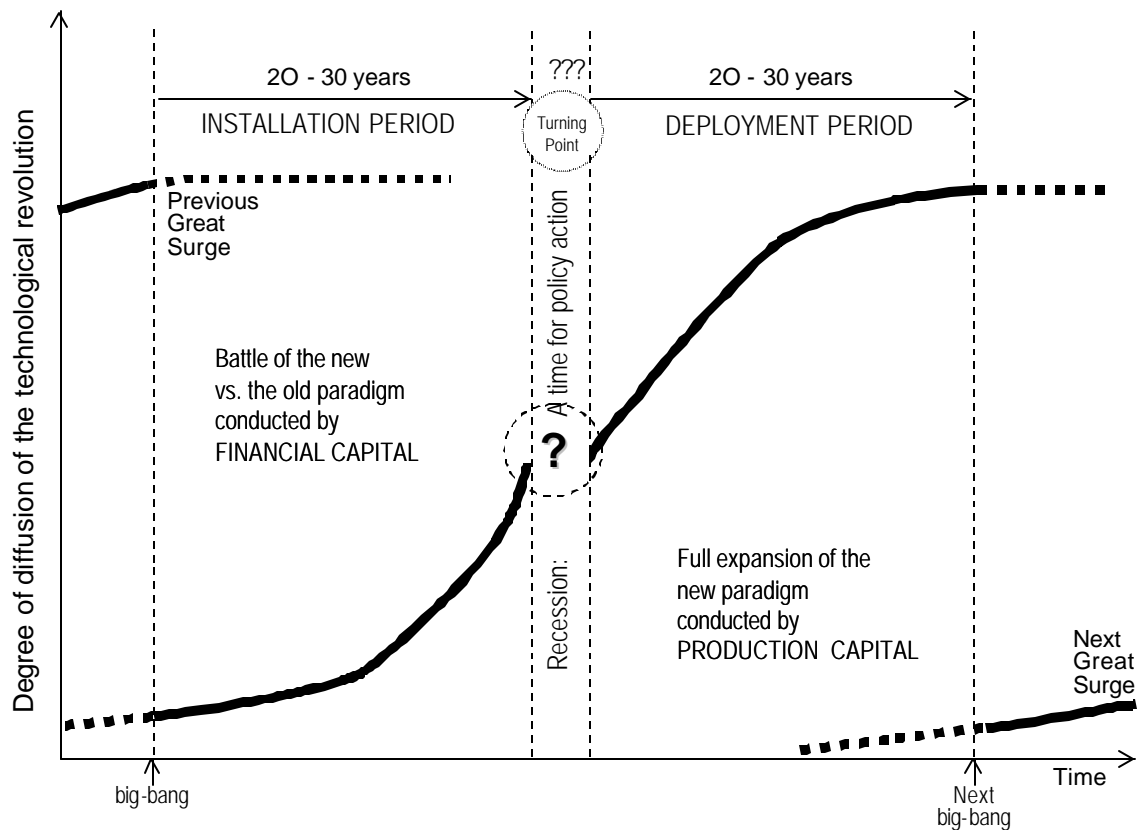
<sup>3</sup> Nelson and Winter, Dosi, Sahal, Chris Freeman, Rosenberg, etc.



However, each technological revolution irrupts in the space shaped by the previous one and must confront the old practices, criteria, habits, ideas and routines deeply embedded in the minds and lives of the people involved as well as the general institutional framework, established to accommodate the old paradigm. This context, almost by definition, is inadequate for the new. For this reason the surge of development, which takes around half a Century to propagate the new industries and their modernizing paradigm, is broken in two.

As shown in Figure 3, the first 20 to 30 years are historically characterized by the battle between the old and the new paradigm. It is the *Installation Period*, when there is an increasing process of decoupling between the new and the old industries, between the growing and the declining regions and countries, between the new economy and the old institutional framework. It is a time of economic and social polarization, when the rich get richer and the poor get poorer. It is during this period that the new paradigm is learned and the old one gradually unlearned; it is also when the new infrastructures, creating the main externalities to facilitate the application of the new technologies, are installed. As will be discussed in Section C, this whole period is increasingly led by financial capital submitting production capital to its short-term interests. This bias is intensified towards the latter part of this period, which is marked by the emergence of a technology-related financial bubble, the collapse of which marks the end of the first half of the surge.

Figure 3. *The social assimilation of technological revolutions breaks each great surge of development in half*



Based on Perez (2002) p.37

The *Turning Point* is the uncertain time between the two periods, when the control of the economy tends to pass from financial to production capital. This is usually achieved through government intervention, with regulation curbing the many excesses of financial capital that are revealed after the collapse of each bubble, and with market-expanding policies of one sort or another. Both are spurred by the duration, depth and stubbornness of the recession and its consequences, as well as by the political pressure of the excluded.

When conditions have been made favorable, the second half of each great surge can begin. It is the *Deployment Period*, which also lasts two or three decades. These periods are the so-called “Golden Ages” (as the Victorian boom in the 1850s and the Post WWII prosperity), when the full potential for wealth creation contained in the paradigm can be displayed. The rhythm of growth may not seem as intense as towards the end of Installation, but it is a steadier and more balanced prosperity, tending to spread to wider and wider portions of the population involved. However, in the latter phase of this period, many of the products and industries of the revolution are approaching maturity, restricting the growth of productivity, markets and profits. This creates the conditions for social and political unrest in the core countries, migration of markets and production activities to the peripheries and a search for new technologies that leads to the next big-bang and a new great surge of development.

Here, it is important to mention briefly the role of techno-economic paradigms in reinforcing the mode of technical change by revolutions, which has characterized capitalism for more than two centuries. The paradigm that accompanies each revolution becomes embedded in the minds, habits, routines and “common sense” of people, in their shared world view, in the norms, laws and regulations, in the relative cost-structures and in the form of occupation of the territory. It shapes the national systems of innovation, production, consumption, trade, transportation, education and even government. In the process, this embedded paradigm becomes a filter for inclusion and exclusion of potential innovations. Those that are compatible with the existing habits of production and consumption and with the existing network of suppliers and distributors will be more profitable than those that break the established innovation trajectories and cannot count upon externalities. Such incompatible innovations will be shaped, made to adapt or relatively marginalized. To give just one example, the semi-conductors that would eventually become the core of the information revolution, in their early days were shaped to fit typical mass production, serving to make portable radios, record players and other electrical consumer products. This process of adaptive incorporation, together with the relative autonomy of science and technology, will create the pool from which the next revolution will emerge when conditions are favorable. Such conditions appear when the innovation potential of the current revolution approaches exhaustion and the search for new sources of profit relaxes the exclusion mechanism.

Obviously, this is a stylized narrative of a thread of recurrence extracted from the otherwise unwieldy mass of unique facts that characterizes real history. There are no clean breaks; there are plenty of overlaps, many peculiar forms that rebel against a rigid interpretation of the model and much richness that begs recognition when concrete analyses of specific times and places are to be made. The claim is that, if the proper distance is maintained between the model and history, the regularities identified represent real fundamental forces and an underlying dynamics that helps understand the system and provides some criteria for anticipating possible futures and designing appropriate actions.

The model summarized here refers mainly to the core countries of each revolution, where the surge is fully experienced. Elsewhere there are lags and exclusions, linking and delinking of

regions and countries. Propagation tends to go from core to near periphery and then, at maturity, to further and further peripheries. But the cases of the early diffusion of the third surge to Argentina and other Southern Hemisphere countries, in the Installation Period of the 1880s, and the parallel cases of the Asian Tigers, in 1980s and 90s of the present fifth surge, show that -at least when the paradigm is globalizing by nature- there can be other patterns of propagation.

These peculiarities, associated with the specific paradigm will be an important element when it comes to discussing the viable options at this Turning Point, in the final section of this paper.

### **C. The ruthless role of the great financial bubbles**

The set of routines acquired in order to flow naturally with a particular paradigm can turn into very stubborn resistance when paradigm-changing innovations are made. As the maturity of the paradigm leads to market stagnation and profit constriction, the cooperation between financial and production capital that characterizes the Deployment period will begin to deteriorate.

Incumbent *production capital* is tied down to the current paradigm by its investment in physical capital, the knowledge and experience of its management and personnel, its networks of suppliers, distributors and customers as well as by the confidence that previous successes have instilled in its leaders. *Financial capital*, by contrast, though it had been sharing the same mental habits, is free from any such ties in the real economy and is essentially mobile and footloose.<sup>4</sup> Therefore, when idle money begins to accumulate without profitable outlets along the established trajectories, it is more likely to react, breaking away in a search of novel investment directions.

Thus, when maturity arrives, production capital will continue tied to its technologies and its products and will search for faraway markets and even faraway production locations (as happened massively in the 1970s giving place to the idea of a New International Economic Order). Financial capital will accompany these forays, but will also go its own way taking risks with new creditors and with path breaking innovations. The new creditors will end up in the debt crises in the periphery that recur every half Century;<sup>5</sup> the search for truly novel opportunities will lead to backing the next technological revolution.

Thus, financial capital becomes the routine breaker against incumbent production capital, which turns conservative at the end of each surge. The Installation of the next revolution will be characterized by the alliance between the new entrepreneurs and financial capital, probably represented more and more by bold new venture capitalists and rash financiers.

The initial general resistance to the new paradigm will require political strength to almost force the diffusion. Yet, the powerful circles of old production capital will be part of the resistance, while new production capital is likely to be still small and weak. The new entrepreneurs will

---

<sup>4</sup> This distinction between the nature and motives of production and financial capital is at the core of the model being presented and, in view of the author, is an important part of the explanation of the cyclical nature of the system. See Ch. 7 and 14 in Perez 2002.

<sup>5</sup> For the case of Latin America, Marichal (1988) provides the dates of the massive loans, which coincide with the maturity of each surge (the "Independence loans" in the 1820s during the maturity of the first surge, then 1860-73 in the second, 1904-14 in the third and 1960s and 70s in the mass production surge) See Perez (2002) figure 8.1 p.87, with the data organized by periods, and the original source: Marichal 1988.

often only have technical capabilities, drive and ambition. No money of their own and no political power. This is one reason why financial capital will gradually take over economic leadership during the Installation period.

The other reason is the vicious circle of new infrastructures. Without enough automobiles, a sufficiently large network of roads is not economically justifiable and without sufficient roads, enough automobile demand will not come forth. The same can be said about canals, railways, ports and ships for transcontinental routes, home electricity and digital telecommunications networks (see Table 1). Each of those infrastructural networks was absolutely necessary for the deployment of the technology systems of the corresponding technological revolution. Each grew in a *frenzy phase* of over-investment, which pulled in enormous sums of eager money from all quarters, only to frustrate most of those hopes with the ensuing collapse.

Such have been the major technological bubbles: canal mania in the 1780s, railway mania in the 1840s, the rage of foreign investment in transcontinental railways and global markets for meat and wheat and copper from the South in the 1880s, the stock market bubble of the roaring twenties, with electricity, oil and the real estate boom creating the externalities for mass production and finally, in the 1990s telecommunications and Internet mania. Huge quantities of money were poured into these processes and even greater mountains of paper wealth were wiped out at the end. Many fortunes were made in each case and many were lost, together with the destruction of the life savings of great numbers of naive participants.

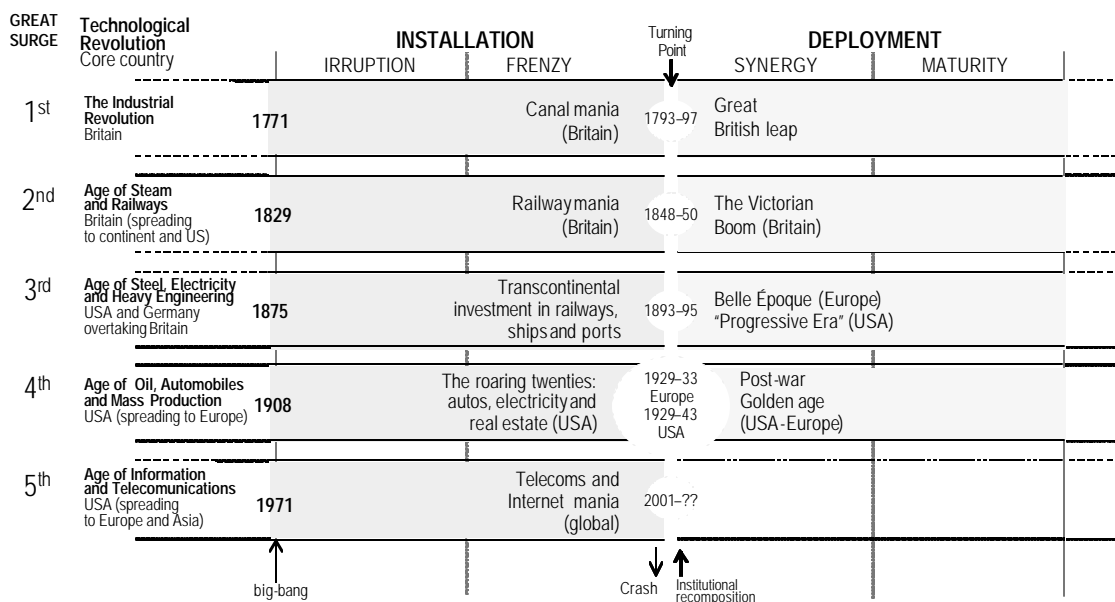
But after the imaginary wealth is eliminated the real infrastructural networks remain and they generally achieve enough coverage during the frenzy to become positive externalities for the full deployment of the paradigm, when the ensuing recession is overcome.

Figure 4 sets the five great surges in parallel, showing the equivalent periods and indicating the dates of the big-bang, the main infrastructures set up in the Installation period, the dates of the Turning Point recessions and the Golden Ages that followed. The dates are approximate and the intention is indicative. There are several complexities that make the model less neat than the figure suggests. These are discussed in Perez 2002, but cannot be addressed in this brief paper.

Financial bubbles are then a phenomenon leaving a very complex legacy. The negative side is the most obvious: the moral breakdown that leads to fraud and corruption, the polarizing effect on income distribution, which creates extreme wealth in one end and extreme poverty in the other, and the recession that follows and hurts the impoverished even more.

On the other hand, this ruthless way of concentrating available investment in the new technologies installs the platform that can facilitate the next “golden age”. After the bubble, there is enough infrastructure for the needs of a decade or more; the new paradigm has been accepted as ‘common sense’; the new production and consumption models have been established; the successful business models have been tested; the industries that will replace the previous engines of growth of the economy have been identified: the core firms of the technological revolution have become the new giants and possibly formed oligopolies. The economy of the core country or countries is ready for full expansion, but the institutional context is not.

Figure 4 *Parallel surges with infrastructure manias, Golden Ages and approximate dates of Turning Points*



Source: Based on Perez (2002) p.57

#### D. Recession, Turning Point and institutional recomposition

The recession that follows the collapse of the bubble is a scene of social unrest, business uncertainty and policy disconcert. The breakdown of the illusion of unending prosperity is very confusing for all concerned. Easy solutions will be sought until the stubbornness of the recession reasserts itself after every episode of apparent recovery. Only policies that confront the underlying structural tensions will unleash the second half of the surge, bringing sustainable growth.

There are three structural tensions lurking behind the post-bubble recession. The first tension is between paper and real wealth, which is the very nature of the bubble and is only partly resolved by the collapse. The other two relate to the deep distortion in income distribution, making the rich richer and the poor poorer. This polarization leads to a serious tension in the economic sphere and to another in the socio-political sphere.

In the economic sphere, there is a tension between the profile of potential supply and the profile of existing demand. The new industries that are capable of being the engines of growth have become ready to multiply their output many times and even to reduce prices significantly, but the adequate solvent demand is not available. The top-of-the-pyramid incomes that had provided the dynamic market for the introduction of all the new exploratory products have saturated their consumption levels of the new technologies and now prefer to acquire rare luxury goods or

rather search further opportunities to invest. They are thus no longer a suitable growth market for the new technologies. Yet, the potential markets in other segments of the pyramid or other parts of the world do have enough income yet. The phenomenon can be called *premature market saturation*.

In the socio-political sphere, the massive exclusion and the worsening of conditions for the poor lead to various forms of violence, political and social unrest and migratory pressures. The tension becomes so acute that it creates serious problems of governance and may turn the rich-poor divide into the rich-poor confrontation.

The solutions to these structural problems can take many forms. Yet in order to allow the full deployment of the paradigm, they need to be solutions, not merely band-aids. In one form or another, the leading role in the economy needs to go from the hands of financial capital to those of production capital. That is the essence of the Turning Point between the two halves of the surge. But resistance can be great, not only because the power acquired by financial capital during the frenzy phase is difficult to curb, but also because even those who would benefit by the change are not necessarily conscious of how to further their interests.

In the 1930s Franklin Roosevelt, apart from setting up the necessary regulation to curb the excesses of the financial world, tried to overcome the depression with several new policies and institutions. This *New Deal* was meant to provide masses of government funded employment, subsidies for the impoverished farmers and other measures to help the poor, as well as establishing State corporations, such as the Tennessee Valley Authority, that built a major hydroelectric dam and engaged in multiple other activities to pull up some of the most backward and poor regions of the country. These policies met with ferocious opposition from the whole business community in the USA, claiming that such forms of State intervention in the economy were leading to communism. It took the experience of World War II, which became a dress rehearsal for both mass production and the “Military-Industrial Complex”, for business to rediscover that State intervention was compatible with capitalism and could be very profitable.

In 1943, with the war still raging, the Bretton Woods agreements established an orderly context for international exchanges, with the US dollar as the basis and with the IMF and the World Bank as enabling and balancing institutions. On the national level, various elements came together into the “Welfare State”, providing a coherent framework for social peace and a steadily growing volume of demand for mass production.<sup>6</sup> Officially recognized labor unions and unemployment insurance would provide an uninterrupted flow of rising salaries. Increasing employment in government and private services and in the growing construction industry would absorb the active population that the high productivity manufacturing and agriculture could not occupy. (Farm subsidies and production cuts, would actually restrain such productivity from translating into lower incomes for farmers)<sup>7</sup>. Government demand was to grow in several directions, civil and military, for capital and consumer goods and for all sorts of construction from highways and airports to schools and hospitals. Finally, the application of Keynesian forms of demand management by central government would try to maintain economic growth with

---

<sup>6</sup> See the French Regulation School for a similar interpretation including a full theory and a very thorough analysis of US regulation, during the what they call the Fordist period (see Aglietta 1976, see also Coriat, etc.),

<sup>7</sup> This was the case in the USA where agriculture was to be fully mechanized. In Europe the subsidies were given later to protect low productivity traditional farming.

restrained inflation and full employment. All this was deeply consistent with the requirements of the mass production paradigm.

In fact, that paradigm, with its economies of scale, based on very high volume and standardized demand for military and consumer goods, seemed to require some form of “national statism”. The four political systems that were adopted for growth with that paradigm were: Soviet socialism, Nazi-Fascism, Keynesian democracy and State developmentalism, as one could call the various versions of State-led growth in the Third World. In spite of their profound differences, these four systems were all coherent with the requirements of the growth potential provided by the paradigm. Hence, they shared many formal features, including centralized governments with huge demand and significant employment and mechanisms for controlling or ‘overseeing’ the national economies and the inter-national exchanges. They were established at different dates after the 1908 big-bang of the Age of mass production; each exhibited a great variety of models; they lasted differing periods for different reasons; those that survived until the irruption of the Information Revolution have, since then, either collapsed and disappeared, as the Soviet Union, or been deeply modified, as the Keynesian democracies and Chinese socialism, or have lived a protracted period of deterioration, as continues to be the case for many countries of the so-called Third World.

Moreover, even though the term Golden age has been used to refer to the early phase of the Deployment Period of each surge, it is possible, as happened in the third surge, that prosperity may be more like an ostentatious “gilded age” with a shiny veneer on the surface. Such can be the interpretation of the character of the *Belle Époque* in Europe and of the *Progressive Era* in the United States at the turn of the twentieth Century. The main core industries of that surge were in heavy engineering (metallurgical, industrial, chemical, civil, electrical). Hence the demand necessary for full deployment was in the capital goods market, for big business, big railway companies, navies and other military agencies or imperial governments, rather than in consumer goods.

Such specificities, but mainly the major differences between the social arrangements which proved adequate for mass production, are a reply to those who might misunderstand the model presented as a form of technological determinism. The wealth creating potential of a paradigm defines a very wide range of the possible, for those social forces that might want to take best advantage of its possibilities. Each society then seizes this potential and shapes it towards its values and its ends. How successfully it achieves them depends on whether it consciously or intuitively interpreted that range correctly and on a multitude of other factors, very different from technology.

## **E. Post -neo-liberal globalization: Some thoughts for conceiving a North-South positive-sum game**

In this first decade of the third Millennium, the world is at the Turning Point recession of the fifth surge. Financial capital is still in power, with its short-term interests; the stock market is still watched as the thermometer of the world economy. But the structural tensions underlying the recession surface in multiple ways. “Recoveries” achieved by superficial means can last a few months, but are essentially fragile and cannot improve the unstable “fundamentals” of the some of the main countries nor lift the world economy out of trouble. Aiming at national policies in an

essentially global economy sorely misses the target. Stable solutions need to be found that face the structural problems to be overcome and are coherent with the current techno-economic paradigm.

The three basic problems are: the decoupling between paper and real values, which still creates distortions for the real economy; the premature market saturation, which hinders the potential expansion of the key ICT industries; and the violence and governance tensions, stemming from the critical situation of great portions of the world.<sup>8</sup> To properly face these problems a changeover of power has to take place, turning the helm of the economy from financial to production capital. This means favoring long-term over short term investment, aiming at innovations for true market expansion and not for little doubtful projects, inducing the search for profits from real production and not from manipulating money; in short, favoring the real economy vs. the paper economy.

Much of this is usually solved by proper regulation.<sup>9</sup> However, this section will concentrate on discussing the need to overcome the problems arising from the polarized income distribution: premature market saturation and world governance, taking into account the specific nature of the paradigm.

The bottom row in Table 2, section B, briefly summarized the main features of the current paradigm, shaped by the requirements and the potential of the Age of Information and Telecommunications. As tends to be the case, they are a coherent set of mutually reinforcing principles. *Knowledge capital and intangible value added facilitate heterogeneity, diversity and adaptability*, which in turn lead to -and interact with- the *segmentation of markets and the proliferation of niches*. *Globalization* leads to the *interaction of the global and the local*, both in terms of comparative advantages for production and innovation decisions and in terms of adaptability of global products to local markets. Production is then conceived in a complex range that may go from “mass customization”<sup>10</sup> achieving *economies of scope and scale* to multiple niches geared to attaining *economies of specialization*. These complex production and market profiles are achieved through *decentralized integration* and *network structures*, which characterize the organization of giant global firms across the planet. Such complexity is made possible and efficient by the ease of *instant global communications*, allowing *instant contact and action*.

Still, the question may arise as to why globalization should be inevitable. The answer is that reaching for giant global markets is a natural consequence of applying the potential of information and telecommunications technologies (ICT). Intangible products, not only recognize no physical frontiers by traveling instantly and invisibly through communications channels, but also have no marginal cost (or it is negligible) and no structural limit to market growth. Yet they often have high research and development investment. Moreover, the greater the number of users

---

<sup>8</sup> In previous surges such tensions were experienced in the national space of the core countries. It is the global character of this paradigm that made the global divide part of the problem.

<sup>9</sup> Louis Gerstner, the CEO who modernized IBM, suggests in *Who Says Elephants can't dance* that introducing high taxes for capital gains from selling stocks in the short term and no taxes for those who sell them after five years would make investors act like owners again and worry about the future of the companies.

<sup>10</sup> Davis and Pine



of a particular network or product the greater its value and the lower the price can be, while maintaining growing profitability.<sup>11</sup>

In terms of the size of firm they can accommodate, ICTs go well beyond the maximum size that the old international or transnational corporations were able to achieve with their pyramidal structures. Not only is it possible to guide, monitor and control a truly giant organization when it is networked, but territorial coverage and organizational complexity are relatively easy to handle with ICT and are likely to become much more so with further adaptive innovation. The technology itself is all-pervasive and can be incorporated into the most sophisticated processes for biotechnology, nano-technology or space travel as much as into the most traditional production systems, from global positioning of sheep<sup>12</sup> to information about fishing conditions for small fishermen.<sup>13</sup>

But the maximum size of market for the intangible products is defined by the possession of the hardware and the existence of the communications links. This means that hardware and telecom networks penetration are the true market frontiers for the ICT industries, rather than the “invisible” territorial ones.

Regarding the size and scope of global firms, the logic of the potential leads to assessing the whole planet for comparative advantages and estimating production and transaction costs “as if” the economic space were unlimited. But the truth is that increasing poverty and the concomitant spread of violence and disease increases such costs and creates such risks for expatriates that the planet is becoming smaller and smaller, constraining globalization strategies. Retrenching at home accepting a real constriction of market potential is no longer the attainment of a safe haven either, due to global terrorism.

Hence the continuing economic problems of very large parts of the globe, including major countries such as Russia, Brazil, South Africa, Indonesia and Argentina, constitute a major frontier for the healthy growth of the industries that would be engines of growth of the North. Something similar can be said about the critical poverty in most of Africa, parts of the Middle East, Latin America and other regions. Both the insecurity that leaves them out of globalization and the desperation that moves people to migration, political upheaval and resentful violence are becoming serious obstacles for peaceful growth.

This is where the requirements of the paradigm for full market expansion and the interests of the developing world join hands. It is also the space where those that seek market expansion and those that seek a decent world with increasing global equity find a common ground.

The neo-liberal version of globalization applied up to now can be said to have accomplished the “destruction half” of institutional creative destruction. Perhaps that was unavoidable given the differences between the mass production paradigm and this one and the need to dismantle much of the institutional framework set up for the previous. Even the collapse of the Soviet System can be seen as partly a consequence of institutional rigidity in the face of paradigm change, if compared with the Chinese flexibility. But, a new global framework adequate to the new paradigm has not been put in place. It is not clear that the present mode of globalization is

---

<sup>11</sup> These changes are the real nature of the “new economy” and not an everlasting bull market. See Luc Soete about the new economics of the new economy and Kevin Kelly in a more managerial style on the “new rules”.

<sup>12</sup> Find source

<sup>13</sup> ICT4P Indian case

sustainable, though. Up to now, capitalism has managed to establish a regulatory framework enforceable over the same territory that is occupied by the economic space. If the economic space overflows the range of action of the overseeing institutions, the inevitable result is chaos.<sup>14</sup> The present world context is partly that and, of course, chaos is one of the possible futures. The question is how to avoid it and construct and establish sustainable options.

The ‘other’ globalization, fully compatible with the paradigm and capable of unleashing a worldwide steady expansion of production, markets and well being, is waiting to be formulated. It would be production-centered and led; pro-growth and pro-development; with dynamic, locally differentiated markets, enhancing national and other identities. Following the principles of the paradigm, it would need a multi-level structure of government, with a regulatory framework going from the global and supra-national, through the national, to the local, recognizing a common regulatory framework at the world level and increasingly adaptive diversity in descending levels. In short, the State would tend towards a complex combination of strong enforceable regulation and flexible coordination of diverse agents, including the private, the public and the emergent “third sector”.

If it all sounds utopian, the reader might make an effort to imagine how it could have sounded if someone in the midst of the 1930s depression had suggested designing a Welfare State with full employment and with workers earning sufficient salaries to own a house full of electrical appliances and an automobile at the door.

Opportunities are a moving target and action has to be designed for the conditions of tomorrow and not those of yesterday. There are three tools that can help visualize possible future directions and help viable design: understanding the process of assimilation of technological revolutions; grasping the logic of the techno-economic paradigm and, finally, searching the world for successful experimentation already underway.

China and India today are examples of what productive foreign investment can do in a few years to mobilize the economy of a catching up country in a globalized world. Successful UN intervention in high conflict areas shows the viability of supranational institutions, even in extremely thorny matters. The European Union, and the successes achieved in some of its smaller member countries show what can happen when favorable conditions and income transfers boost an economy that is ready to flourish.

But not all that is feasible and beneficial for all becomes a reality. Ideology and politics are in the end the guiding forces in the range of the possible. The neo-conservative forces are involved in attempting to bring back the casino economy and in trying to solve complex socio-political problems with war. The left is resisting globalization, in general, assuming it is necessarily neo-liberal. This is understandable given the catastrophic results in much of the world, where dozens of countries have fallen back to their 1960 per capita income levels and where the very modest Millennium goals against poverty seem unattainable.

The weight of recent history is what is guiding both the nostalgia of the bubble times and the anger of the anti-globalizers. A parallel could be made with the reception given to Roosevelt’s New Deal in the 1930s. Since up to then, the main examples of “national statism” had been the

---

<sup>14</sup> Soros, a powerful player in the world of finance and a staunch defender of the open society and the market (though not of what he calls ‘market fundamentalism’), sustains that global finance cannot function without global regulation and warns of the threat of a breakdown in the system. See Soros first and second books.

Soviet Union (1917) and Mussolini (1922), the private business sector could only understand State intervention in the economy as communist or at least not-capitalist. Today, globalization is mainly seen as the Washington consensus liberalization of trade and financial flows, with its devastating consequences in innumerable countries. Very few see the European Union as a form of Globalization. The risk is very high that the democratic forces, bent towards a socially responsible sort of world, might be found with no viable alternative to put forth for the future, but merely looking backwards to obsolete models from a previous paradigm.

According to the interpretation proposed, this Turning Point is the time when the shape of the next two or three decades is defined. Multiple socio-economic and political pressures will determine whether it will be a golden age or a gilded age.

Stock market instability; further collapses there or in the housing markets; major bankruptcies in banks, insurance or production companies; uncontrollable deflationary pressures and continued premature market saturation of the ICT sectors are all in the cards. These will determine the depth, extension and length of the recession (or depression?), which will in turn influence the disposition of the leadership of the core countries to consider truly radical measures.

Continued deterioration and poverty in a great number of countries, the intensity of South-North migratory flows, the extension of violence and terrorism, the spread of “new wars”<sup>15</sup>; the increasing danger for personnel connected with global investment; the occurrence of bankruptcies or debt defaults in some peripheral countries are also in the cards and could lead to considering solutions favoring development rather than containment policies and wars.

Yet, unless the progressive forces of today face the task of conceiving the ‘other’ globalization, capable of leading to a decent world for both North and South, that option will not be on the game board.

Obviously, the growing national and global political resistance to neo-liberal globalization will have some influence in reducing the capacity of its proponents to prolong it, but only the existence of viable programs for alternative modes of globalization, will create a real possibility of a change in a better direction for all.

## **Bibliography**

To be added, together with the references in the text.

This draft is based on:

Perez, Carlota (2002), *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*, Edward Elgar, Cheltenham

---

<sup>15</sup> Mary Kaldor