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Riding the waves

TEXT Nathan Hegedus PHOTO Chris Maluszynski

– and understanding what hit us

When the stock market crashed and the global economy fell into a slump, we all wanted to know what hit us. Carlota Perez has some **good answers**. Advocating a return to heavier state involvement in the economy, she has **a growing audience** in both government and industry among those seeking long-term solutions for a **crisis-ridden world**.

IN DARK ECONOMIC TIMES, Carlota Perez offers a vision of a golden future, of a broad-based world recovery that harnesses the power of globalization, “green” values and, most importantly, information and communication technologies (ICT).

Perez, a professor of technology and development, says that the current economic crisis is but one phase of a centuries-old pendular rhythm of capitalism. She argues that the world has seen five great surges of development since the Industrial Revolution in the 18th century, with the first half of each surge marked by speculation and dominated by new technologies and financial capital; the second half is usually an economic and



Background check

- ▶ Perez is a graduate in interdisciplinary social sciences from San Francisco State University in the US, and the University of Paris VII in France.
- ▶ She is currently Professor of Technology and Development at Tallinn University of Technology in Estonia, and a research associate at the Centre for Financial Analysis and Policy (CFAP) at the Judge Business School at the University of Cambridge in the UK. She is also an honorary research fellow at SPRU University of Sussex and the head of her own consulting firm, Consultores Perez Perez, C.A.

Five technological revolutions in 240 years

1771 The 'Industrial Revolution' (machines, factories and canals)

1829 Age of Steam, Coal, Iron and Railways

1875 Age of Steel and Heavy Engineering (electrical, chemical, civil, naval)

1908 Age of the Automobile, Oil, Petrochemicals and Mass Production

1971 Age of Information Technology and Telecommunications

20?? Age of Biotech, Bioelectronics, Nanotech and new materials?

By "green" Perez means a wider change in lifestyles, production and transport methods. The "American way of life" for the entire world would require seven planets, she says.

“Today’s modern companies – using **the flexible paradigm** enabled by ICT – have network structures with highly empowered units following major guidelines with a high degree of autonomy. **How many governments have fully understood this fundamental change?”**

► social “golden age” led by production capital and a more active state.

But Perez does not advocate a return to old-style government. She says that regulation must become more flexible and cooperative, both more local and more global. Above all, it must fit modern needs in a modern way, a shift she says that has taken place in each previous “revolution.”

“Anybody, be it business or government, who tries to behave the way they did fifty years ago is going to fail,” Perez says. “Today’s modern companies – using the flexible paradigm enabled by ICT – have network structures with highly empowered units following major guidelines with a high degree of autonomy. How many governments have fully understood this fundamental change?”

FROM LONG WAVES TO GREAT SURGES

Perez is a leading proponent of neo-Schumpeterian theories. Joseph Schumpeter was an early 20th century economist who argued that both growth and crises in the capitalist system were the result of technological innovation. He identified “long waves” of upswings and downswings in growth caused by the clustering of innovations during technological revolutions. Schumpeter argued that the “creative destruction” of these ups and downs was necessary for long-term growth, no matter the short-term consequences.

Perez has pursued this idea of technological revolutions but has questioned the notion of “long waves” in GDP. She has focused instead on new technologies themselves and on the impact of their diffusion across the economy and society. She says the business climate shifts with each technological revolution and calls these shifts “great surges of development.”

There have been five such great surges since the dawn of the industrial revolution, Perez says. Each surge is broken into two periods, the first dominated by finance, the second by production. The finance-dominated period is marked by speculation, bubbles and a massive experiment in “creative destruction,” in which new technologies replace or modernize older ones. These bub-

bles are useful, providing capital for the infrastructures associated with that particular surge, even as they cause pain in other parts of the economy and society.

This era of high finance eventually gives way to production-dominated “deployment” periods, marked by prosperity, security and generally regarded as “golden ages.” But the transition – or “turning point” as Perez calls it – between the finance phase and the production phase has never been a smooth one. Instead it has been marked by panics, recessions, and political confrontations, with the Great Depression the starkest example.

Perez is in many ways an ideal person to examine globalization. Born in Caracas, Venezuela and the oldest child of a civil engineer and a painter, she spent parts of her childhood in both Argentina and the US. She then trained as an architect in the US, later shifting gears to study interdisciplinary social studies in Paris.

In the 1970s, after researching the technological impact of high oil prices, she served on several delegations to the United Nations. During this time, she says she had an insight that cheap microelectronics were about to replace cheap oil in shaping the direction of innovation. This “naturally” led her to Schumpeter and his theories on technological revolutions, she says.

“CASINO FINANCE”

Perez later worked as director of Technological Development for the Venezuelan Ministry of Industry in the early 1980s and has since advised multiple countries, companies and international organizations. She is also Professor of Technology and Development at Tallinn University of Technology in Estonia, a research associate at Cambridge University in the UK and an honorary research fellow at the University of Sussex in the UK.

She first stepped into the global spotlight with her 2002 book *Technological Revolutions and Financial Capital: the Dynamics of Bubbles and Golden Ages*. The book came out in the wake of the NASDAQ stock market crash, and Silicon Valley “techies” and venture capitalists wanted to know “what had hit them,” she says. Now in the

wake of financial scandals born of what she calls “casino finance,” people who advocate the return of a more involved state are flocking to her work.

“The intuition about what is needed is already in people’s minds,” she says. “I happen to express it with a causal explanation and convincing historical parallels. But the terrain is already fertile.”

REDEFINING THE STATE

Government action is essential to move the economy away from the short-term bias of the stock market toward a culture of long-term investments, Perez says. In a globalized world, this also means globalized regulation – at the very least, a basic level of regulation, or “floor,” in those fields with no physical frontiers, such as finance, the environment, and, yes, telecoms.

“There can be enormous variety from country to country, even down to regions and localities,” she says. “But globalization is unworkable without some degree of supranational monitoring and supervision.”

But local regulations are equally important, she says. Globalization allows businesses to identify the best locations for maximizing their productivity and profits along their whole value chain. Many businesses – especially in ICT – have also moved away from hierarchical, authoritarian structures towards a more lateral, consultative “network organization.”

Local, regional, and national governments need to recognize and respond to these shifts and adapt their own organizations in order to build a wide societal consensus on what kind of investments each region wants to attract.

Perez often calls for a new global “man on the moon” project to mirror the massive investments in space exploration in the 1960s. This new project would not send men to the moon but would help wean society off its dependence on high-carbon industries and products. But while the race to put a man on the moon in the 1960s was a centralized, national endeavor centered in the US and the USSR, this new project would reflect Perez’s ideas on newly resurgent states – decentralized, multi-level, innovative, experimental and, above all, consensus building.

Yet change does not have to come from above; it is equally possible on a small scale.

“You can have as many pilot projects as you want,” Perez told an audience at a Cisco Urban Connected Development conference in Amsterdam in 2008. “That is the huge advantage of network organizations. Local experiments can be replicated either nationally or locally.”

The goal of the pilot projects is to find different ways – whether by regulation, taxes, ►

“There have been many wasted opportunities in history, often for lack of **enlightened political leaders**”

▶ subsidies, contracts or agreements – to tilt the investment playing field in favor of more low carbon and low materials growth.

But governments are not limited to regulation; they can also build things. During previous technological revolutions, new infrastructures included canals, railroads, steamships, the telegraph, radio, telephony, electricity or highways.

Today, it is the internet. The government must help people get connected, Perez says. The exchange of information that follows low cost internet access for all is the “social and geographic frontier of the global market,” she says.

“Universal access creates the most gigantic space for market action for everybody,” she adds. “Companies can use this dynamic demand space.”

And governments must help create it, she says.

The vast technological changes of recent decades have caused a paradigm shift in organization – people work more flexibly and with a greater emphasis on innovation. So governments must not take new action, they must take action in a different way, Perez says.

BUILDING A CONSENSUS

Government, business and society should develop a common strategic vision, “abandoning the vestiges of top-down approaches that force separate interests to be reactive and self-centered,” she says. “The game must change from zero-sum confrontations to positive-sum negotiations.

“The practice of defining ‘vision, mission, values’ might have become in some (corporate) cases a simple ritual. But building a consensus towards a national vision might be an essential step towards a modern sort of ‘industrial policy’ and to getting the most out of globalization.”

Corporations must also change the way they do business, Perez says. And here, the concept of corporate social responsibility is the key to business leadership in the coming golden age, she says. A high level of corporate responsibility will help a company be successful in the wider market, in which environmental and social considerations play an increasingly large role. But a new responsible ethic should also inspire business executives, who, in essence, “can and should become social leaders,” Perez says.

“Given the transparency of the internet, it is no longer possible to hide, and a good name and a good reputation can do wonders for a brand,” she says. “Once corpora-

tions behave like good citizens, it is an easy step to join government and other social actors in formulating a vision and putting it into practice.”

COUNTERACTING BIG FINANCE

The golden age is not inevitable, Perez says. The state usually returns to prominence because the collapse of bubbles exposes fraud and scandals at the same time as many people lose their savings, pensions, houses and jobs. Public indignation then grows strong enough to counteract the influence the financial sector has gained over politicians.

In the previous swing of the pendulum, the Great Depression and World War II created strong social expectations for change, Perez says, while the Soviet Union represented an external existential threat. This made structural changes – such as the development of the Welfare State and the Bretton Woods system – fairly easy to push through, and these changes were crucial to the post-World War II “golden age,” she says.

Today, structural changes are equally substantial and difficult to push through. But the equivalent threats driving the shift – worldwide recession, climate change and global terrorism – are not as strong as those of the 1930s and 1940s.

“There have been many wasted opportunities in history, often for lack of enlightened political leaders,” she says.

Yet Perez remains hopeful, utopian almost, in the long-term. She believes the current ICT revolution is just the first in a series of technological revolutions that will eventually lead to a “real knowledge society,” one in which many demographic, health and climate change problems will have been solved.

“These first 40 or 50 years will be the most difficult,” she says. “I feel, however, that the generations that have played Nintendo (video games) and that communicate over the internet and with mobile phones as citizens of the world are willing and able to confront the challenge with courage.” ●

What are your plans for the future?

▶ **AT PRESENT**, I have three areas of work to pursue. I am **finishing a book** on the special nature of major technology bubbles, I am developing a strategy for development in Latin America, based on combining technology with natural resources and, obviously, I want to keep up my work on the “turning point” and on how governments and companies can get the best out the ICT revolution, the environmental challenge and globalization.

As time and events move on, **the relative weight of those three areas will change** and they are likely to be modified. **I do not plan to ever retire**. I am convinced that creative work keeps you alive or, rather, that it makes life worth living.

There is no set path out of the world's economic crisis, Perez says. "New policies will have to be invented," she says. "It has to be a social process."



Moving away from a gambling economy

► **If the world is to enter a new golden age, Carlota Perez says we must overthrow a tyrant – the stock market and its fixation on short-term profits.**

A FOCUS ON finance is characteristic of the first, or “installation,” period of any technological revolution, according to Perez’s neo-Schumpeterian theories. Free-flowing capital is necessary to give new companies using new technologies a chance to compete in a world dominated by old established giants. It also attracts enough investment to develop the new infrastructures necessary for that era’s new technology – whether it is canals, railroads, electricity or the internet – to reach “full coverage” across society.

However, such high levels of easy money can create major economic bubbles, and bubbles eventually burst. This sets the stage for the state to re-regulate and for the economy to move away from “casino finance” and towards full deployment of the new technologies.

BUT THE FINANCIAL power brokers are “deeply embedded in government, and they can steer action in their favor, even as it looks like they are being regulated,” Perez says. “At

present, the money flowing into the economy with an almost zero interest rate and super-abundant liquidity is going straight into the hands of the same financial agents that set up the ‘casino.’ The fact that (the financial sector) no longer fears losses because they can count on a bail-out makes it even more dangerous for society. The table might be set for another financial boom and bust.”

PEREZ SAYS THE real question is whether politicians and the public can muster enough will to truly change the rules of the economic game on both the national and global levels.

“If the whole fiscal and regulatory structure were made to favor dividends and to discourage short-term capital gains, the pressure would shift to strategies that guarantee the profitable long-term future of a company rather than the value of the stock every quarter,” she says. “This is particularly important when it comes to infrastructure projects related to globalization, to major ICT projects such as fiber to the home, to new technologies like biotech and nanotech and, above all, to fostering new environmental industries and revamping of old ones.” ●