

Economy in transformation: sustainability, development and technologies



Carlota Perez

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Lecture presenter:

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Abstract: In this lecture, Perez talks about old technological revolutions, looking for learning points in such past experiences. She talks about economic, social, and institutional changes toward a transition to a sustainable economy through learning from past experiences and exploring the role of the state in promoting growth and sustainability policies.

Keywords: technological revolutions, sustainable economy, sustainability



ADRIANA: Good afternoon everyone! Welcome to another panel of Innovation Week 2021. In the midst of stagnating production and consumption, new crises, and increasing inequalities, the economy is a key piece for transformation. New technologies. Decentralized finance. Changes in the energy matrix. Sustainable markets. Green economy and a broader vision of development emerge in the international debate as central themes to catalyze this transformation. What are the possibilities for our economy? In this panel, we will hear from distinguished researchers to inspire us and execute changes aimed at sustainable development. Now I am pleased to invite Dr. Carlota Perez who will bring us a look at old technological evolutions and what we can learn from these past experiences.



CARLOTA: Well, thank you very much for the presentation. I am sorry I cannot speak in Portuguese. Well, I'm going to talk mainly about the big picture. That is, how we can do development.

Once we have development, it is easier to distribute, it is easier to end poverty, it is easier to improve health. Of course, it is not certain that it will be done, but in fact the Brazilian miracle did not necessarily reduce inequality.

Inequality in Brazil, unfortunately, remained for a long time, during this period of great, great boom. So now the idea is to be able to make a leap in development, but making sure that we also have good distribution. By the way, the intention, the good intention of distributing, if you are not generating wealth, it doesn't work.

So, I'm going to talk about the relationship between technological revolutions and development opportunities, specifically for Latin America. The first thing that is important to understand is that development opportunities are a moving target in the context of global capitalism. In fact, what happens in the global north defines much of what we can do in the south.

It is important to recognize the opportunities in order to take advantage of them. Latin America took very well the opportunity of import substitution in the 60s and 70s, but missed the opportunity used by the Asians in the 80s and 90s. When South Korea, Taiwan, Singapore and Hong Kong made the leap, Latin America did not.

However, the results of what I would call the great success – even if many people don't see it that way – of import substitution were important and still left us with a legacy that allows us to take advantage of new opportunities. Let's see what was the combination of factors that allowed industrialization by import sectors in Latin America in the 1960s and especially the 1970s. First of all, the so-called First World had saturated markets, they could not sell any more automobiles, refrigerators or anything else, because the market was already saturated and Latin America, of course, was interested in producing and importing all these things. At the same time, the technologies that mass-produced those products were mature and highly transferable.

That created the opportunity for import substitution. What did Latin America have? Well, it had an educated middle class with solvent demand and a State with an income from exports, because we were all exporters of raw materials, but generally in the hands of the State. So that made it possible to finance the process. On the other hand, the State had the possibility and the willingness to massively protect the industry in each country. Protection of 60%, 70%, 100%.

I must warn you that the United States, at the time when they were an underdeveloped country, in the 19th century, in the 1860s, 70s, 80s and 90s, they also protected their industry 60%, 70%, 50% in order to catch up with England, which they succeeded in doing. So, these two conditions allowed us to make assemblies for the domestic market, and it is very important that we understand that this is one of the things that made it difficult to take advantage of the next opportunity, because we were working mainly for the domestic market with very high prices.

Therefore, we were not competitive when we tried to do export promotion in subsidies, they had to be huge. Meanwhile, Korea was achieving real competitiveness, even with some subsidies at the beginning. So this was an opportunity well taken.

Latin America grew at an average of 4% on a regular basis for almost 20 years. The middle class grew and a large working class was formed, infrastructure was put in place and an entrepreneurial layer developed, particularly in Brazil. What happened in Brazil was called The Miracle, because it was indeed a very significant leap in development. Experience was also gained in the construction and process industries, and the process industry is very important, because the opportunity we have now requires capacity in the process industry. What is the combination that creates the opportunity now? On the one hand, we have a globalized economy with segmented markets, needing natural resources. And Latin America is highly endowed.

On the other hand, there is access to generic technologies. Generic technologies are those that apply to many sectors and these are ICT, information technologies, digital technologies, biotechnology, materials science, etc. And we also have access to information and trade via the Internet.

This generates very different conditions in terms of export possibilities, even of small things and specialized products for very restricted markets. So this creates the current opportunity. What do we have? We have the legacy of import substitution in the process industries, as I was saying, in the process industries such as chemicals, steel processing, the agro-industry.

Also in services and qualified personnel we have qualified many people, even studying in the developed world, and we have that, unlike other underdeveloped countries, which do not have it. In other words, we do have a difference in that sense.

We have, on the other hand, that the world and ourselves, our country is segmented markets of all sizes and we have access to global networks and of course there are growing requirements for climate change and biodiversity. So what the market is asking for has to do with things that we could provide. So what is the opportunity? Natural resources, more technology, more inclusion for environmentally and socially sustainable development. This is the opportunity.

And notice that it is not the manufacturing of, I mean, we no longer understand by technology the manufacturing of assembly, the manufacturing industry, we are greatly expanding the range of what can now be developed. From raw materials to services, all can be elevated in their competitiveness, in their conditions, in their possibilities with the technologies that are available today.

Therefore, with appropriate policies, it is possible to create a profitable, sustainable and innovative economy, with a high quality of life for the entire population, both rural and urban. This is the possibility that we must take advantage of. One of the things I would like to talk about is the issue of hyper segmentation of markets. It is very important to understand this because this is one of the conditions that makes it possible for innovation to be directed specifically to new possibilities that exist in the market and we have to abandon a little bit the ideas we had before.

Conditions are changing. We lived in a world where we moved between commodities with price competition and a certain level of custom-made adaptable issues, with competition in adaptability, where in general we had construction and I always say that among the things we custom-made were wedding dresses and bridal cakes, because almost everything else was mass production, all identical products and therefore trying to lower the cost and not necessarily raise the quality.

In fact, we were lowering quality, but now with specialty niches becoming more and more numerous, we are moving from a time of high volume, narrow profit margin and basic qualities to a world of high profitability, small quantities, specialty qualities, and technology. This world up here is a very special world and also you can go head-to-head with small, medium, large and giant companies, because that whole world has infinite variety and can be much more profitable.

And the competition is less fierce and you are innovative enough. And this is happening equally in inputs, meaning raw materials, manufacturing and services, and in every single activity of the value chain, because now the value chain tends to break up into pieces and, in different countries, it is produced in different parts.

Of course, now with the pandemic we have learned that globalization has gone too far and we are redesigning forward. There is a redesign of globalization that we can take advantage of. I'm going to give you some examples of positioning to give you an idea of what I'm talking about. Let's look first at commodities. Well, iron, meat, soybeans, televisions, which are already super-cheap commodities. It is almost no business. Hard disks, for example, and beach tourism. Wherever has sand, caipirinha and palm trees is perfect. But all over the world many people have that.

On the other hand, if we go to the special ones, we find organic food, gourmet fruit, like açai, biomaterials, and certified wood. If we could have anti-termite wood that would be wonderful. Things like that. Specialty steels, high fashion, electric flying vehicles. I understand you guys are producing electronic chips, adventure tourism. All these special things are adventure tourism, very different from beach tourism, because it requires qualification, conditions, training, and a lot more complex things. And people pay much more for that than going to the beach. Adapted. Well, meat, Halal or kosher, for example.

Tailored materials, remote data interpretation, personal services. Each one is different in each case. Health tourism. In India they are doing hip surgeries for a whole plane of English people who need hip surgery. They take them to India, do the operation, do the exercises, take them there as tourists and send them back. And the cost is less than what it would be to do it in private medicine in England. And the time, of course, you don't have to wait as long as you might expect. In other words, they took advantage of that window of opportunity and made tourism adapted to health conditions.

Oh, and the only large buildings such as the Beijing stadium, the Beijing pier; or complex infrastructure projects, logistics services; the Panama Canal, for example; the unique instruments for bio and nanotechnology. Of course, these end up happening here and there, because it depends.

Things start out as special and may later become common. Ecotourism in the jungle or in the Iguazu Falls. Because the Iguazu Falls are unique and because the Amazon rainforest is unique, it is something that people come to see especially. So that's another one. What does one do? Well, they try to achieve advancement through proper repositioning, relying on what has been learned and on the advantages already built. It's not like you make up that you're going to go do a specifically new thing, if you haven't acquired prior capabilities to be able to succeed at that. So what would a strategy that takes advantage of the opportunity I described – which has to do with natural resources, technology and inclusion; social inclusion – look like?

We are at a time when it is changing; we are already at the moment when the paradigm of the information revolution is in its moment of splendor, let's say, where it is going to be deployed throughout the world and definitely change what were all the habits of the world of mass production of the previous revolution. But we are also close to the possibility of game-changing opportunities with the technologies of the next technological revolution.

So what do we do? Make a breakthrough now based on the window of opportunity that is created by globalization, the threat of climate change and the ICT paradigm.

By the way, the pandemic also forced reconstruction and an understanding that the state had to become active again. And that helps to make it possible for this opportunity to become even greater. And, of course, it is an opportunity for the holders of natural resources and to expand biodiversity. But this allows us to prepare for the leap into the next technological revolution, developing local and global capabilities, companies and networks in the sectors of the future, which are probably going to be bioelectronics, biotechnology, personalized medicine, nanotechnology, materials on demand.

That's where it is very likely the next massive revolution will be in 15, 20 years. And this is what Asia did with the ICT revolution without having planned it. They were actually the first assemblers of electronic issues, because they happened to enter a little bit later, but we are not going to discuss that now. So the question is: does the state do it or does the market do it?

Look, successful national projects have a common pattern: they start by recognizing the opportunity consciously or by good luck. Then you need adequate institutions of promotion and support, raising the technical capacity of the State. By the way, import substitution trained thousands of personnel for the Latin American public sector in Chile, ECLAC and an institute whose name I do not remember. These institutions and the high technical capacity of the State, because a competent State is extremely important.

They identify the great objective projects. What Mariana Mazzucato is now calling missions, which is much more concrete. This requires human, business and technical resources at various levels, and technical and commercial alliances. In other words, this is the production sector. Then financing, clear and favorable policies and a stable consensus: this is very important.

If we do not manage to ensure that the political sectors of the country – even if they have differences as to how to do it – have a clear idea of the direction that development is going to take, whether it is stable or not, every time the government changes, the direction changes. Because one can achieve little with a pure free market without the help of the State, but if at least one goes in the same direction, it is more likely to be successful. So neither the State alone, nor the market alone, but both aiming at a consensus direction. These are times for institutional innovations, not just technological innovations. We need appropriate institutional innovations and the creation of shared visions. And to have a shared vision, we also need institutional innovations to build consensus. In the 60s and 70s we had the very successful protectionist state. In the 80s until now we had a non-interventionist state, the free market not exactly too successful in my opinion.

Some will think otherwise. And from now on we need a promoter, active and innovative state. The pandemic is ushering in a new era. The post-Covid destruction, like World War II, will accelerate change in production methods and sustainable lifestyles. Both have to be transformed. Let's seize the opportunity. Brazil can be a world power in innovation, in natural resources, in everything we do. Let's seize the opportunity! Thank you very much!



ADRIANA: Thank you very much. Thank you very much, Dr. Carlota. What a pleasure to listen to you and even ending on an optimistic note, we could really use some optimism. I thank you very much and it is really interesting how we can look at history sometimes when we are in a crisis and we forget that history has a lot to teach us, that today we can look at the past, what worked, what didn't and build new things sometimes by putting parts together.

