UABDIVULGA
BARCELONA RECERCA I INNOVACIÓ

25/01/2019

"Technology makes it possible but is never overdetermining"

Interview with Juan Antonio Cordero, professor at the École Polytechnique de Palaiseau, Paris. His talk "It's a brave new world! Opportunities, risks and security Threats in an EU Digitized society" at the Universitat Autònoma de Barcelona formed part of the activities within the Jean Monnet EUPOL Chair of the UAB directed by Ana Mar Fernández Pasarin.

Juan Antonio Cordero holds a PhD in Telecommunications from the École Polytechnique (France) and a BSc in Mathematics (UPC). He was a postdoctoral researcher at the Université Catholique de Louvain and is currently professor at the École Polytechnique de Palaiseau, Paris.

He talked about how the development of the internet has accelerated within the past decades making us a digitalised society, and how this process has not only changed how we interact with the world, but also created new emerging worlds around it. All of this causes new problems such as cybersecurity.

Where are we going as a society with this technological acceleration?

That is a good question, but I prefer talking about where we come from because, paradoxically, it helps us understand what the future may look like. Technological acceleration consists in the

reduction of time in which a heavy technological change takes place, the accommodation to it, the appearance of new structures that consolidate, amplify and take advantage of the given opportunities and finally, stabilization until a moment of standstill.

We are heading towards a dynamics in which these kinds of changes are going to be quicker and this explains our feelings of uncertainty and insecurity, which in fact are not new. The periods in which these processes happen tend to become shorter. In other words, these technological changes are produced in a human life period which tend to become longer. All of this explains the anxiety linked to the acceleration process. Where are we headed? Actually, all kinds of speculations can be made. Evidently, there is always a catastrophist approach. However, history shows us that in the end the worst rarely happens, even though at this moment it is very easy to envision it. The vertigo feeling we are having is mainly because we do not know the limit of these technologies which we are just starting to use such as the internet, artificial intelligence, algorithms, etc. So, generally, we have a better capacity to anticipate pessimist scenarios than foreseeing the positive potential evolution that can happen as well.

Moreover, we have already known this vertigo: it happened in processes such as industrialization, the appearance of machines, and migrations to the city. There has always been this anxiety and the fact that it has always been there but it has not always materialized gives me hope. In fact, I always propose a fun exercise which consists in seeing how the future was imagined 30-40 years ago. Now that we are living in that future, we can see that the ideas that people had do not match with our current present. It is easy to anticipate "Black Mirror" scenarios, but usually evolution is driven towards less spectacular sites which are easier to handle.

What does "The Internet of Things" represent in a digitalised society?

The "Internet of Things" is one of the basic technological elements that activates digitalization. When we talk about the "Internet of Things" we are referring to a world in which production of sensors and actuators of devices with built-in intelligence is cheap and easy to extend to a massive scale. The part of "things" can be defined as devices with reduced cost, measures and enough capacities that allow us to observe the environment and act on it. However, these things on their own are not new, the sensor/actuator is extremely old, the part that changes, with the Internet, is the scale. We can have a billion sensors displayed in red and coordinated by the internet, which allows not only to observe one aspect, like the temperature (this is a thermometer) but to observe the temperature all over the city, take public political actions and then integrate them in real time.

The "Internet of Things" is one of the elements that enables this change but there are others. For example, data processing and everything related with data science and big data, the analytics and development of learning and of artificial intelligence algorithms, which allow us to absorb the information coming from the Internet of things connected via internet, process it, learn it and finally, act/react on it automatically as well.

In your talk, you used the concept "Brave new worlds". What are they and what are the risks involved?

I used the "Brave new world" concept for two reasons. The first is because of the feeling I had when I read the final comment from a Calvin Hobbes comic strip. Calvin (a 6-year-old kid who has a stuffed tiger as his adventure partner) makes this comment: "It is a wonderful world, let's go explore it". This is the feeling we have when we hear talk about digitalization, the Internet of Things, the appearance of algorithms that control our activities and how they relate to our daily activities, etc. It is an enthusiast lecture: there are billions of things we can do, let's go explore them. And this vision is absolutely necessary. It is necessary to know the things we can do to produce around these technological capacities. Our imagination is often ahead of science and technology. In fact, at some point technology achieves to produce what human dream about.

The second reason was that "Brave new worlds" is literally the title of the dystopian novel by Aldous Huxley. If we compare this novel to a more dystopian novel such as "1984", by George Orwell, it can be problematic since "Brave new world" is a dystopic novel, but its society lives placidly. From the inside, it is a harmonious, pacific system where things function reasonable and rationally. However, when we examine it from the outside, the antihuman or dystopian component of the social approach is clear. And this is a risk that exists: the transhumanist technological utopias, or those which can be kept with technological developments, admit a vision of society that we do not want to be in, even if it a vision of a stable, possible society.

And here is another debate that goes beyond technology and that is neither technological nor scientific, but political. It is not worth using technology to justify decisions or social models that are of a political nature. For example, when I hear in France (in Spain less but I would not be surprised to hear it at some point) that the algorithms are producing a neoliberal or individualistic society (you can choose the "severe" adjective you like) or that social networks are isolating us from one another, I hear a techno-phobic discourse.
Technology is never the problem. The problem is that technology is an instrument that can be used in multiple ways which allows different evolutions and a technological element or a specific technological advance which can lead to different worlds. And that decision is political, not technological, nor scientific, nor can it be subtracted from the public debate.

What we, as researchers, do in the engineering schools or in the research departments is not political. We have an objective that epistemologically speaking is very clear: increase knowledge, understand how things work and see what is possible. Now, what is desirable among all that is possible? This is a political discussion. And I insist on this because to me it seems to be one of the great risks of the current moment in Western or European societies: by forcefully wanting to eliminate political decisions by labelling them as technical (since it is an easy way to eliminate them: there is nothing to talk about because this is a technical issue that the experts have already decided upon and it has to be done that way), they eliminate political matters and do not permit them to be discussed, tested, worn out.

First of all this is not true. There is a political component that must be later given a technical, scientific or technological concretion. And second, in the long run, and that is what we can start seeing in the populist movement, there will be a social distancing from what it is perceived as a scientific or technical imposition that is not open to discussion. And in fact, these decisions are neither scientific, nor technical nor objective. Then we find ourselves with a problem linked to contempt for the experts and scientific advances because in the end, what is actually political is being sold as science. And in fact, in some matters, that is true. We would have to see what type of social model we want and when we define it, intervene at the appropriate levels so that

technology is at the service of that social model. This is the approach: technology makes it possible but is never overdetermining.

Is our society ready to face a new way of interacting in this emerging technological world?

Society is always ready because there is no choice. Historically speaking, society has always been ready, has managed and has learned to manage all the technological changes which have occurred. They are more or less difficult or traumatic changes, but historically speaking it has happened. For instance, the invention of the steam engine or urbanisation (which is one of its related consequences) triggered important social convulsions. Is society ready? My optimistic prevision is that society will learn how to handle these changes like all others.

Who should be the ones to address the risks and benefits of these technological changes and to integrate them into the public debate?

There are scientific teams who have devoted part of their lives to studying sciences, history, technological processes, etc. This knowledge is absolutely precious and one of the issues that I miss is a closer relationship between society as a whole (also politics, which is one of its emanations) and the university, academic and scientific world... The world of what is happening right now.

I think we would all win if the visibility of this "expertise" was more present because we are in a hypertechnological world where it is important that all people have at least a minimal understanding of the world around them. This is a key point. The world is changing, it has already changed when compared to the previous generation and will continue to change, and in fact, with regard to your earlier question, we might install ourselves in a time where there is no stabilization, hence no institutional consolidation. In short, there will be stability within the change. So all this effort is more necessary than ever. Now, we have seen that the academic world has its role, work and expertise. However, there is also a citizenship which should participate based on the implications of some of the decisions made. This citizenship's role should not be restricted to experts, philosophers or the wise. This interaction is necessary in order for the citizenship to be conscious of the living world and the kind of path we are heading towards. That way the citizenship can make decisions, deliberate, build new proposals and take appropriate decisions through political channels.

There is no specific group that "should address the risk and benefits of these technological changes", this is a process involving us all. I am here as a professor of the Ecole polytechnique of Paris but also as a citizen. I can talk as an academic on very few matters. However, in the vast majority, I will be listening and participating as a citizen. And that is the role of every single one of us.

Nowadays, services such as Uber depend on these new internet-based technologies. However, could they work without internet?

It is a recurring question and in fact, it explains part of this vertigo. It is a question I often ask myself: if Internet was no longer there, how would our lives be and how much would it cost us to

adapt to it?

We could adapt because we have already done it, even though it would be undoubtedly complicated. A common element of all technological change, which adds complexity to this one in particular, is that it does not appear from nothing or remain isolated, but it also creates a new world that depends on these technological changes. Nowadays, for logistical reasons, it is difficult to imagine the type of cities we live in without the provision of public services such as electricity, water, cars, public transport, etc. And this example illustrates the world built from scratch around these new technological possibilities. What would happen if all of a sudden this was not possible? It would be possible to survive because it has already happened, we already knew how to function before because we came from other worlds, but it would actually be very complicated.

I believe that the same thing happens with the internet. Yes, we could live without it, but it would be very traumatic because we are building a daily life experience around it, although not everywhere and in the same way. In fact, there is a distinction that is emerging in the political debate between the type of life in the big metropolis and the type of life in other more rural territories or small cities. But in any case, by taking the most extreme element, we are building a metropolitan life model that depends strongly on the internet. What would happen if this were to end? I tend to be optimistic and think that human evolution explains above all its ability to adapt. Of course, it is always easier to anticipate risks, catastrophes, what we would miss, etc. and there is a tendency to underestimate the ability to adapt to very difficult conditions because, obviously, you do not know how one will act until decisions have to be made. But that capacity for adaptation is there. There have been very traumatic regressions in society, for example, after wars, after extremely bloody political processes like China's Maoism or Stalinism. However, life, social organization and even happiness have found their way. So, I have no doubt that, if the internet were to end, life would continue.

In short: could we live without the internet? Yes, but it is better if we do not have to do so.

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