

Alec Ross on The Industries of the Future
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MR. EDWARDS: Hello. I'm Bruce Edwards and welcome to this podcast produced by the International Monetary Fund. In this episode author, Alec Ross, on how technology is shaping the industries of the future.

MR. ROSS: Ninety percent of the world's data has been produced in the last two years. And, in fact, if you take the sum of all of the information produced by humankind, from the first recordings of humankind, literally paintings on cave walls to the year 2003. The sum of that data we now produce every two days.

MR. EDWARDS: Alec Ross presenting his new book to IMF economists earlier this month. Ross has led technology policy efforts for U.S. presidential campaigns and served as Senior Advisor for Innovation to the U.S. Secretary of State.

In his presentation, Ross said the degree to which digitization and the rise of the internet

defined and shaped the last 20 years is what prompted him to right *The Industries of the Future*.

MR. ROSS: And so the question that I've become obsessed with and which I try to answer in this book is what's next? What are going to be those forces, those scientific and technological forces that are gonna shape the next 10 to 20 years?

Thesis Number 1. Land was the raw material of the agricultural age. Iron was the raw material of the industrial age. Data is the raw material of the information age. He who owned the land and controlled the land during the agricultural age had the economic power and the political power. He who owned the factories and controlled access to the natural resources during the industrial age had the economic power and the political power. He or she who own the data, control the data, or can harvest meaning from the data are those that are creating the industries and businesses of the future.

MR. EDWARDS: But some would say that this dramatic change is happening too fast. How do you see

it playing out, you know, in a world with a rapidly growing labor force and a shrinking job market?

MR. ROSS: Yeah. So I think that the trick here is that the agricultural age and the industrial age sort of unfurled over the period of hundreds of years, in the case of the agricultural age and decades in the case of the industrial age. Sort of this was the period of, you know, sort of gestation and early development.

By contrast, the changes brought on by digitization are happening at a disorientingly fast pace, and so this is really the trick. In part because human beings are more difficult to upgrade than software. I mean, we just can't plug ourselves in the wall and suddenly be reskilled in an hour in a way that makes us economically viable. And the kind of transitions in labor markets that previously would have been done over a period of several decades. You know, the migration of families off the farms and into cities as mechanization came to the farms.

These things are happening much faster now

and so, you know, for me what this really calls for is a new social contract. The relationship between state, capital, and labor has to adjust. Because there simply isn't a way in which we can massively reskill hundreds of millions of people who are already mid-career or late career and who simply cannot grow up to become computer coders or who cannot grow old becoming computer coders from ground zero.

MR. EDWARDS: Talk to me a little of some of the examples that you give in the book, you know, of countries that have harnessed technology effectively and, you know, who are propelling their or have transformed their economies.

MR. ROSS: Yeah. I mean, one example that I do focus in on the book is Estonia. So, you know, Estonia and Belarus had roughly equivalent GDPs after the collapse of Communism. There were bread lines in Tallinn and there were bread lines in Minsk. And they effectively chose opposite economic models. Where Belarus chose what was effectively a neo-Soviet model, Estonia -- you know, before the mass internet, you

know, in 1992, 1993 decided that it was going to rebuild its economy based on high tech.

And it is now -- it now has the highest per capita GDP of any former Soviet Republic. Every student in Estonia's schools learns computer coding. They have turned themselves into this little reservoir of incredibly competitive knowledge-based skills coming from where there were bread lines as recently as 20 years ago, 25 years ago.

And what's interesting to me is to see a number of their strategies being adapted by far larger states. So Estonia, for example, was the first country in the world to come up with an electronic national identity program. That, in many respects, is now being replicated by India with 1.2 billion people. So I think that Estonia is a country that I would point to among the best doing this.

MR. EDWARDS: And what about the macroeconomics behind all these changes? You know, do you see the traditional financial institutions like, you know, the one that you're sitting in right now.

Do you see them potentially slowing down this process or do they still have a role in, perhaps, you know, helping countries navigate the change?

MR. ROSS: Oh, goodness. No. I think that the expertise and capital resident in large multilateral institutions like the IMF is as important as it ever was. In part because, you know, we're getting into a world where globalization is making us, if anything, more -- there's more competition between states.

You know, for a period of 20 years while there was enormous competition between states I think there was a near consensus view that working within a framework of a global economic system was a net good for all states measured against traditional economic measures of well-being. What I do think we're seeing now is a little bit of a backlash against that.

And so I think that in an environment where a lot of the premise of the virtue and value of globalization is being questioned I think that institutions like the IMF, their expertise and their

capital assisting states transition is more important than ever.

MR. EDWARDS: That was Alec Ross, author of the *Industries of the Future*, and distinguished senior fellow as Johns Hopkins University.

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