

# POVERTY ALLEVIATION A ROLE FOR TECHNOLOGY AND INFRASTRUCTURE?

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Speech

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My topic is connectivity as a human right. And all human rights are free, so you say “connectivity as free”. And I’ll tell you what I mean.

What I’d like to point out is that in this morning’s discussion there was always the mention of business and philanthropy as if those were the only two options. But there are actually other options, one of which is called ‘civil society’, which isn’t business or philanthropy. And then within the business world there are, of course, non-profit entities that are private. And so you don’t have to be a donor or an entrepreneur: you can also be a civil servant,. I felt this morning that there was somewhat artificial division and what I would like to do is fill the middle space.

And also, by way of introduction, I thought I’d share with you a few credentials.

I went to MIT in 1961 and never left, which is both good and bad. I was a user of the Internet in '69 –when it wasn't called like that – and I knew everybody on it. There were only three machines connected. And so I've been doing this for a very long time.

When I talk about the subject of connectivity, very often people around the table don't know the difference between the last billion and the next billion . The next billion people who will be connected is an easy problem: regulatory changes, pricing changes will get the next billion. But the last billion don't have electricity, they're illiterate, you have an entirely different set of problems for which I will argue technology provides, in fact, the only solution. And that, you could connect the last billion people in less than five years for a cost that is less than what the United States spent in one month in Afghanistan, which happens to be \$8-billion. I am going to divide my presentation into three parts.

One which probably doesn't need that much talking about, but it's sort of the basis for doing this: *why do you want to connect everybody?* The second is: **how do you do it?** And then, the in-between one (if you will) is: **the technology, which I'd love to talk about for hours, but I will only talk about for a little bit.**

My motive for connecting everybody is learning. I believe that society really needs (we heard a Mandela quote this morning), really needs to look at education – not just as schools and institutions, but as the process of learning, life-long learning, learning in places where there aren't schools. Not that I'm advocating you shouldn't have schools. And of course there are primary health reasons, there are job and wealth-creation reasons, and actually most of that I've learned from Jeffrey. So I remember a speech of yours at the World Economic Forum early on, where you said "...the three things you need for development are telecommunications, telecommunications

and telecommunications”. And that affected me. I’m going to say it was eighteen/twenty years ago, but it was (I thought) really bright on.

Now the history of telecommunications. Most people don’t realize that the word BIT didn’t exist before 1949. It was a word created in 1949. When people were putting in telecommunications systems before that, they were not information delivery systems. In fact, long-distance phone calls was for the rich! And so when you went to Africa and you made a long-distance phone call, which might have been calling from Ethiopia to Kenya, it would cost \$50 a minute and you’d have a lousy connection because the theory was (a little bit like tobacco and alcohol), you know, you get the people who consume this stuff to pay for what you might need (which would be local calls). And the Internet was not commercially available before 1986 – zero! It was illegal to use the Internet if you were a corporation. And one of the reasons I know the numbers so well is that when the Media Lab started, it turned out you could be legal to use it if you were a sponsor of the Media Lab. And so we, for a couple of years, used that loophole.

And while the cell-phone structure of the world, which is fantastic, and has an extraordinary reach – it is not data-centric. It’s a land-based rollout, it’s a national rollout But in telecommunications something has happened very recently, that’s going to change that landscape. It’s not a very recent technology in the sense that it didn’t exist before. But it’s the concept of Low Earth-Orbiting satellites. And without going into a lecture on the subject, these are satellites that aren’t at 22,500 miles, which happens to be the magic number where the rotational speed of the satellite is equal to the earth and so it looks to us as if it’s stationary. These are satellites that are much lower. And so they move, depending on how low they are, at pretty good speeds. It might take ninety minutes to go around the earth – some less, some more. And once you have many of them going around, whichever orbits you

choose, and let's use polar – you have many of them going around polar orbits – you have a phenomenon that is exactly like the cell-phone grid. Except you're stationary and the grid moves.. And because it's a grid, if you need more bandwidth – throw up another satellite! You need more bandwidth in Rome for your cellular – you put another cell tower! So it's a very expandable, rather low-cost... the satellites that I've seen that are in design range from about \$10,000 to \$500,000, they're not tens of millions of dollars.

So several of them are happening, there's been a certain amount of phenomenon in the press about it, but there's one thing that nobody mentions: they are by definition global because they're going around the earth. So if you happen to be in a remote rural area, or you're in downtown Lagos, that doesn't affect the system. It is everywhere. You're on a little remote island - you're served just as well. You're potentially served... now they may decide to turn it off in certain places. But the geometry of the technology is global access and you could, with a couple of the systems that are being proposed now, you could serve 100-million/200-million people quite easily. And there isn't a national footprint – it's a global footprint.

Now there are the issues of landing rights and so on and so forth, which we could get together and decide to help fix that. Now, one last comment is that even if you had all of these, how do you connect the people? How are people connected on the ground? Something I've done a fair amount of work on and you can literally create for probably as little as \$200 (I won't use the hundred number again), but you could build solar-powered terminals that are self-healing, self-disclosing, no instructions necessary, they could even be dropped out of airplanes. That's one of my favourite proposals and little cartoons are made of speeches I give with airplanes going and little computers dropping down in parachutes. But, it's okay, keep that in the back of your mind.

So the means, how do you do this? How do you actually see connectivity come about as a human right and maybe or maybe not use that technology? Well, just as an aside, when I wake up in the morning I ask myself one question: will normal market forces do what I'm doing today? And if the answer is "yes", then I say: "Nicholas, stop doing it. Let normal market forces do it". So I always feel that my personal responsibility is to do what normal market forces don't do. Now, think about it, maybe not in the Q&A, but think about it tonight. Discuss it with your spouse. Wake up the next morning. It's a great breakfast conversation. What thing do you value that normal market forces brought you? And I bet you it's a very short list. It may even be nothing. That most of the qualities of life don't come from normal market forces, they come from other things. And it's a very... just ask it.

Should telecommunications be a business? Now here's where I'm going out on the thin ice, especially for some of the great businessmen in this room. And one of the problems in telecommunications is that (let me use the United States as an example) you have Verizon who spends, I believe it's \$500-million a year on advertising, to take AT&T customers away. And AT&T spends \$500-million to take Verizon customers away. And it's usually an even swap at the end of the year. So that's a billion dollars that just didn't go into the telecommunications system and it went into something else which provides livings and wellbeing for people in the advertising agencies. And then you get some of the telecommunications systems in the developing world that have made very large amounts of money, maybe even 50% returns on the revenues. And a lot of, and in some cases most of that money leaves the system. So is Nicholas a roaring Socialist in suggesting that government should be doing these things? Yes, I am - which in the United States is considered an undemocratic position. That you're against democracy. And everybody says to me: "Well, governments don't work, they can't work". And I say: "Have you been on a

train in Switzerland recently?” And: “Oh, yes, it was wonderful!” “You know, if trains in Switzerland can work, you know, maybe government can”. It turns out in the area of education, which is (if you will) my primary interest, there’s an exam that you might have heard – called the PISA exam, which is administered by the OECD, to basically test 12<sup>th</sup> graders and to then place the countries vis-à-vis each other and the United States is always in the bottom 50% and England is in the bottom 50%. And the outlier, the outlier – the one that’s really at the top consistently, the consistent outlier – is Finland. And Finland (wait ‘til you hear this), Finland has up to 12, no homework, no tests, no tests, shortest days per year, shortest number of hours per day. And you say: “But wait a minute. We think that the way to fix education is to add more hours of school, to make more tests, to give teachers salaries based on tests”. And the other fact about Finland (and I won’t continue too much on the spiel for education) there are no private schools. The worst thing that has happened to public schools is private schools. It sucks out of the system the people who care, the people who would be able to do something: they’re just sucked out of the system. It’s like having a private police force. So let’s have no police, let’s just have a private police force.

So, how could we... even if you disagree with 60% of what I’m saying, 80% of what I’m saying... how could you execute on something? And I have an idea and a proposal. And I’ve never had an audience that is more appropriate to tell you my proposal. When I look at the United Nations, I see two organizations – FAO and the World Food Programme, both of them fantastic institutions for whom I have the highest regard. And FAO was represented this morning and World Food Programme’s coming this afternoon. And what is the difference between them? Sort of a naïve view is that FAO is on information, helps with regulation, helps with countries establish practices, research and so on related to food. And the World Food Programme are (lack of a better word) combatants: they’re in the field, they feed 30-

million people, several of them get killed each month driving trucks. I mean, it's almost a combat force and.... Well, guess what? In telecommunications we only have the FAO, which is called the ITU. Regulatory, information, helping countries... We don't have the combatants. We don't have people who will go in and solve things in remote areas, we don't have people who will run satellites, ... So call that, you know, the World Communication Organization doesn't exist. I don't want to be the Head of it, but I'd love to see something like that discussed. And it's a bit like a Peace Corps. One of the ways to staff it would be to get people who are in-between college and a job, like a gap year, and I think you could do that quite successfully.

So, my proposal is to do, or at least consider, a World Communication Organization and, I believe, the Cardinal is here. So... I'm finished. I'm actually finished! No, no, I don't have anything else to say. Romano, I'm at the end of my talk.

But before finishing I want to go back with a story about the Low Earth-Orbiting satellites because I was very much involved with it, Motorola launched something called Iridium and I was then on the Board of Directors. It was very premature, it was very phone-centric and it was losing lots of money. And very early on in my tenure I heard at a Board meeting, we were going to de-orbit it because it was losing..

But de-orbiting takes a lot of time, it takes about a year because you don't want any little piece of satellite to hit somebody's head as it comes back into earth and burns up. So, I said: "Give me two months to give it away". Because you can't de-orbit it, it's a perfectly working system, and we had 30,000 handsets in inventory – which was a secret at the time. And, you know, so I went to the U.N., Kofi Annan was there, and I said: "Take it, it's yours, free! You have a free Global Satellite System". He thought that was wonderful and then it got into the bureaucracy and it was turned down, sadly. And in the end, Jesse Jackson bought it. And I would have loved to

have partnered with him but I couldn't, I was conflicted. He gave a certain percentage of the capacity to sub-Saharan Africa and then they made lots and lots of money with it. So it's a technology that goes back to the early-Eighties, but it's only now that ... Richard Branson's is doing a system, Elon Musk's doing a system, and they all have Unfortunately they're all doing them only as a business and I said: "I'll work with you if you give me a certain capacity to give away free".

And on this note I want to make one last comment, and do let it be my last. And that is sort of a general remark about sustainability. I suggest that sometimes when you hear people talk about sustainability, keep in mind there are two (or at least I'm going to describe two).

One kind of sustainability, which I'm not against but it's only one kind, is if you launch a satellite and 50% of the satellite is commercial and the other 50% is philanthropic so that the commercial could in principle fund the other one. So it's self-sustainable, right, if you will, in the satellite or in the system. And it's that kind of sustainability. But there's another kind of sustainability, which fascinates me and I think it doesn't get enough attention. And that's the kind of sustainability where what you do elevates everybody. Elevates them, they become members of a very productive, creative society that – guess what? – after twenty years pay taxes. That's a much longer loop, but it's another form. And it's not that one's right and one's wrong, but sometimes we think too much in terms of the very short sustainability