

bill gates

by jeff goodell

You grew up in the 1960s, when the future was very much a part of America's public imagination. Now we're living in that future we dreamed about. How does it stack up compared to what you imagined when you were a kid?

Overall, it's pretty fantastic. When I was curious as a kid, I read the World Book Encyclopedia in alphabetic order, trying to figure out what was new and changing. For a curious kid pursuing those same things today, what's available is mind-blowing – they can get videos, the latest articles, the greatest lectures out there. They can get on bulletin boards, talk about things. The basic idea we grew up with – that technology could be used by individuals to entertain themselves, to learn things, to organize with people in other locations about things they care about – that's become a reality. The kind of empowerment that exists is pretty much what the dream was all about.

What would you say the dream is today?

To make computing as pervasive as electricity. You no longer just see the computer on every desk – it's in every pocket, it's in your TV, it's in your car. But there's still a lot missing from computers – they can't see, they can't listen, they can't read your writing. Before long, when you walk into your living room, the computer will see you're there and put up a show you might be interested in or a game your friends want you to play with them. Even in a ten-year time frame, things like that will be commonplace. Things like speech recognition turned out to be harder than people expected, but they're very solvable. We're starting to see the emerging edge of this natural interface, where speech and ink and motion and touch all become part of the experience, and the computer sort of disappears. We're just at the beginning of the impact it's going to have.

What led you into computers?

I was thirteen when I first got to use a computer, and that was the key event. I said, "Wow, what can this thing do – what can't it do?" I wanted to understand how it was built, who wrote the software. That became a dominant obsession. I still got good grades and everything, but I put a lot of time into computers, and I had friends like Paul Allen who got involved. We'd read a lot of the same science fiction, and we were pretty open-minded. That's the beauty of youth. People in the computing field had this fixed notion about what the computer could do and what it would cost. But because we were young, we took exponential improvement as a given. We said, "OK, let's think about computers that are infinitely cheap and infinitely fast." We got to build the computer that we ourselves wanted to use.

Do you believe that this technology revolution you helped unleash has made the world a better place?

Absolutely. When you see how people can reach out to their friends at a distance or learn something . . . just the curiosity of the kid. In the past, a blind person might only be able to get Braille books a few years after they came out. Now, with speech readers on the PC, they can get information at the same time any sighted person can. So the empowerment of these devices is really phenomenal. The richness of the dialogue they create, the ability to learn, the ability to stay in touch – there was nothing even close to it before.

But there's another side to this empowerment – friends can share information, but so can terrorists. What do you see as the dark side of this revolution?

Any new technology is going to be used for whatever human pursuits there are – pornography - ,-crime,-you-name-it.-Criminals-are-using-cars-nowadays,-they're-driving-around.-Who-invented-that-thing?-This-has-been-terrible-- -they-used-to-have-to-walk-[laughs]!-The-ratio-of-bad-things-about-cars-to-the-good-things-is-kind-of-like-computing.-

When you look beyond technology, what do you see as our biggest problem?

The saddest thing is the grave inequity in the world, the difference in the lives of the 1 billion who are the poorest versus the 1 billion who are the richest. It's very, very extreme, and it's not very visible. When you get up in the morning and drive to work, you don't see the poorest billion. There are a few places where you get that juxtaposition. In South Africa you can feel like, "Wow, I'm in the United States," and then you go three miles and think, "Wow, I am in a township you could not find today in the United States."

Capitalism, on its own, doesn't always do that much for the poorest people on the planet. That's a real tragedy, and it makes me all the more interested in how you can supplement capitalism in a way that brings that inequity down. About 10 million children a year die from curable diseases. Yet the amount of energy being devoted to prevent that, either by inventing new things or delivering existing things, is tiny. To me, that's the greatest problem.

As one of the richest people in the world, how do you feel when you go to Africa and see such poverty?

It galvanizes me to share that experience. It's searing to see a mother with a dying child and know that a modest intervention or a focus on inventing some new things would save that child's life. You could take, say, the research on baldness and put it into malaria, and you'd save a million children a year.

In your commencement address at Harvard this year, you said, "The barrier to change is not too little caring, it is too much complexity." That suggests you see issues like poverty as an engineering problem.

It doesn't sound too good, does it? But it's true-- these are complicated problems. If you go to somebody at a cocktail party and say, "Hey, \$200 will save this person's life-- it's that simple," you'd raise the \$200 in a second. But if you go to that party and say, "Let's talk about foreign aid. Did you hear about this dictator who built a palace?" Ev

everyone goes, "Yeah... but is that really about saving lives, or is that just about stupidity?" So you go home and say, "Hey, I just want to look up how much money we're devoting to foreign aid, where it goes, where it has worked and where it has not worked. Now you're into some real complexity of money flows and measurement. It's hard to develop a view of how all those pieces come together. Complexity holds people back from acting because they don't know which action will have impact."

But isn't it also an issue of compassion fatigue – people getting so weary that they simply tune out?

Only when the complexity comes in. If you kept hearing messages about, "Hey, you sent \$200, here's this person who was saved," you'd send the next \$200. I don't think people say, "Eh, I've saved enough people for one life. I'm done. What next? Let's go bowling."

Part of the goal of my foundation is to hire real experts and understand, "OK, where are the places where we can stop malaria? What research isn't being done in AIDS?" You ask yourself, "Are the big pharmaceutical companies doing as much as they should to help out?" That's a complicated question. You've got to have a pool of experts who can engage these companies. It's not the simple dialogue of either (a) don't do anything or (b) give all your drugs away. Rather, it's the dialogue of "Hey, have special pricing for these drugs in developing countries, or be willing to put some of your best people on this disease."

Has your work in Africa and other places made you more cynical about politics?

No, it's made me less cynical. The need for global organizations like United Nations is a hundred times clearer to me than before I got into global health. It's easy to say, "Yeah, a bunch of ambassadors in New York get to park wherever they want and bang their shoe on the table when they give speeches." But with cross-border things like epidemics or global warming or terrorism, where the lowest denominator country can have a big effect on everyone else, you realize how critical global organizations are going to be.

You've focused on children's health and poverty but have not been as engaged in climate change. Do you see global warming as a serious threat?

We clearly are causing planet wide heating, and we need an energy paradigm that is both cheaper than today's energy and doesn't emit CO₂. Fortunately, there are many approaches that could deliver it. Take solar power: At any moment there's 10,000 times as much sunlight delivered to Earth as the amount of energy we actually use. Whether you capture it through solar-electrics or solar-biological, there's tons of ways to do it. When oil was twenty dollars a barrel and people weren't worried about CO₂, the IQ of the world wasn't focused much on new energy paradigms.

Take the problems of nuclear. How many people were really working on that ten years ago? Almost none. Now, with oil at eighty dollars a barrel, with a stronger awareness of global warming, the whole field of energy has really drawn in academia and start-ups and big companies. There's a lot of thinking about tons of new approaches to energy – high wind, low wind, geothermal, synthetic algae, new solar-panel designs.

It would further supercharge all this to have a clear, thirty-year commitment to a carbon tax of fifty dollars a ton. A big carbon tax, even if it's only in the rich countries, helps energy technologies that need a lot of R&D and a lot of infrastructure for them to roll out.

The world has switched its energy paradigms many times before. It's not the end of civilization. It's a problem that should be dealt with by sending the right signals to cause the innovation to take place.

So you don't see the changing climate, especially predictions of drought and rising seas, as a big threat to the poor nations in Africa?

Between now and 2100, how many people in Africa are going to die of malaria? Just do the numbers. Helping them avoid an eleven-inch rise in the water in 2100, we could

do it and we should do it, we will do it. But in terms of relative priorities, if you want to help the poor, this is not the issue to be focused in on.

How optimistic are you about America's future?

I'm such an optimist about global health. The improvements in medicine, in robotics, in the understanding of genetics – the pace of improvement is much, much higher today than ever before. So you can say with great certainty, the amount of advance in the next twenty-five years in all those areas will be more than in the last hundred. As you get more brilliant minds devoted to this, including minds in China and India, your rates of discovering medicines or basic ideas about science go up, and we have the Internet to share all those things.

Over the last sixty years, America's share of wealth has been unbelievable. When most people are poor – 4 billion out of 6 billion – our relative share of the world's wealth has been at a high. Yet in 1945, we emitted over half the world's CO₂ emissions. Was that a good thing? No, it was a terrible thing. It's been kind of unique to have five percent of the world have such a disproportionate share of the wealth. But in the next fifty years, to our benefit, we will share more with the rest of the world. There will be universities in Asia, like Tsinghua University in Beijing, that are as good as our top universities, and people there will invent things that are good for the world. We'll have more of the world's minds educated and doing great things. If you believe in equity, that is a good thing.

That doesn't mean there aren't serious problems. Terrorism is a serious problem, and keeping political backing for the world trade system is a problem. Getting society's resources focused on the right issues in the right way, that's always a big challenge. The future is always scary, and you could have something like a terrorist getting ahold of a nuclear weapon.

But the daily progress in tools that make us healthier and more empowered is a pretty phenomenal story. Not many people want to go back to when the average lifespan was thirty-eight. How were the rights of women a hundred years ago? How were the rights of blacks? You want to go backward? OK, you're welcome to it. I'm pointed in the other direction.