

The 17 Great Challenges of the Twenty-First Century

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Historically, evolution has been in nature's hands. Now, suddenly, it is largely in human hands, but we need to be cautious, using our scientific know-how as responsibly as possible. The job of today's young people, or the "Transition Generation," will be to get humanity through the coming period of chaos, peril, and opportunity.

A massive transition is needed, and the agenda should be created for the generation that will bring about this transition. Much of what needs to be done is not happening. Today's computer models show that we are not adapting quickly enough because we are not thinking ahead.

There must be an absolute crusading determination to address the changes ahead. Today's young people will collectively determine whether civilization survives or not. We need to give them a foundation for making wise choices by helping them understand humankind's likely possible, probable and preferred futures. What can humanity become? Our future wealth will increasingly relate to knowledge in the broadest sense of the term.

Here are the 17 great challenges for us and for our children:

(1) Saving the Earth – A change in humans' capability to manage the Earth well is coming in micro-instruments that feed voluminous data to computer networks. We are beginning to gain vast amounts of information about the planet linked into computer models. This will help us learn to live with nature's trust fund. The planet's climate will change and we have to learn to live with changes.

(2) Reversing Poverty – While rich nations become richer, billions of people live in extreme poverty with short, brutal lives. In his book "The End to Poverty," Jeffrey Sachs lays out nine steps for solving global poverty. They are: commit to the task, adopt a plan of action, raise the voice of the poor, redeem the U.S. role in the world, rescue the International Monetary Fund and the World Bank, strengthen the UN, harness global science, promote sustainable development, make a personal commitment.

(3) Steadying Population Growth – Extreme poverty can be tied to population problems. There are now non-oppressive ways to lower the birthrate. Population declines

in countries where women can read and full women's liberation is in effect. Population also declines when GDP rises. Improving lifestyles equates with controlling population growth.

(4) Achieving Sustainable Lifestyles – All of the people on the planet cannot have affluent lifestyles in 20th century terms and still sustain resources. We need high-quality lifestyles that don't strain the environment.

(5) Preventing All-Out War – All-out war in the 21st century could end everything. Nuclear and biological weapons are a threat. This century contains more threats from more weapons of mass destruction than ever before.

(6) Dealing Effectively with Globalism – The planet is "shrinking" and bandwidth is increasing, but globalism should be designed to allow local cultures to thrive and be protected. The right balance between global and local should be achieved. Failing nations must be helped to become developing nations. **(7) Protecting the Biosphere** – We are losing species of plants and animals. Many endangered species can be protected by identifying and preserving "hot spots" – those places with a high density of endangered species. Today, 90 percent of the edible fish in the oceans have been caught. Well-designed marine protection areas can help begin a slow recovery. Laws are needed to replenish depleted oceans.

(8) Defusing Terrorism – The age of terrorism is rising with the availability of weapons of mass destruction that are becoming increasingly less expensive and easier to access. It is vital to address the reasons why people want to become terrorists and to achieve cooperation among potentially hostile cultures.

(9) Cultivating Creativity – Technology will lead to an era of extreme creativity. Exciting jobs will develop and rich countries will help young people around the planet to become entrepreneurs. New supply chains and electronically connected businesses will bring value.

(10) Conquering Disease – We must thwart the rapid spread of infectious diseases that could kill many millions of people, as has happened already many times in history. We now have sensors that can detect the existence of a dangerous virus in the air and we are creating medical procedures to prevent illnesses from spreading. Bird flu and other pandemics require preparation, and we must do more to be ready for them.

(11) Expanding Human Potential – Most people today fall outrageously short of their potential. A goal of the 21st century should be to develop the capability latent in everybody by harnessing powerful technologies that accelerate learning potential.

(12) The Singularity – Sometime decades from now computer intelligence that is quite different from human intelligence will feed on itself, becoming more intelligent at a rapidly accelerating rate. This chain reaction of machine intelligence is referred to by many as *the Singularity*. Humanity needs to discover how to avoid being overwhelmed

by accelerating change that is totally out of control and harmful. Technical controls will be needed to ensure that our machines act in our best interests. The Singularity will enable many different self-evolving technologies to become "infinite in all directions."

(13) Confronting Existential Risk – This type of risk is one that could terminate Homo sapiens, including such possibilities as the release of a dangerous genetically modified pathogen. In his book "Our Final Hour," Marin Rees describes such risks in detail and gives humanity only a 50 percent chance of surviving this century.

(14) Exploring Transhumanism – This is the first century in which we will be able to radically change human beings, and this fact alone gives it special meaning. Technology will enable us to live longer, learn more, and gain the ability to connect to nanotechnology objects in or on our skulls and to supercomputers or to connect our brains to other external devices. Transhumanism will be highly controversial. It will raise major ethical arguments. We might lose some of the qualities we now see as making us "human." There will also be extreme differences between those who have the technology and those who don't. We need to make changes without suffering overall-negative consequences. Transhumanism can lead us to build a civilization far more advanced than today's.

(15) Planning an Advanced Civilization – Sooner or later machines will do all the work and there will be a major increase in real wealth. What we do with our leisure will be a big issue. Because of transhumanism and the Singularity, changes will be more extreme than most people can understand. We need to be asking ourselves now, "What kind of civilization would we build if we could do anything?"

(16) Modeling the Planet's Systems – Because we need to be sure we do not go beyond the point at which global warming cannot be reversed, earth system science must be meticulously modeled and monitoring must be precise. We can't push Gaia so positive feedback causes it to become unstable or to change to a different state.

(17) Bridging the Skill and Wisdom Gap – A serious problem right now is the gap between our skill and our wisdom. Science and technology are accelerating furiously, but wisdom is not. Today, deep reflection about our future circumstances is eclipsed by the rush to build faster, cheaper, smarter, more-efficient gadgets that will increase corporate profits. The skill-wisdom gap is enlarged because skills offer the ways to get wealthy. Society's best brains are saturated with immediate issues that become ever more complex, rather than reflecting on why we are doing this and what the long-term consequences will be.