

Survival in the Age of Complexity

by Klaus Schwab* (published in [The Daily Telegraph](#) and [LiveMint.com](#))

The advent of technology has fundamentally changed our lives, but one thing is for sure: The velocity of technological change will accelerate in an exponential manner with significant ramifications for all of us. Just imagine: over half of the scientists and engineers who have ever lived are alive today. China adds about 6.5 million graduates every year, half of them engineers and scientists. It is not only the sheer number of “innovators” who will push the boundaries of science, technology and ultimately life-change but also the greater degree of interconnectivity which accelerates the generation of knowledge and creates a much more entrepreneurial environment for innovation and change.

What is particularly striking is this dimension of change. Today’s technological evolution no longer solely affects what we are doing, but also who we are. Of course, the Internet is in many ways still a tool, but it has also become part of our DNA. This is true for governments (just think of Wikileaks), for businesses and for individuals. In some way, we are “outsourcing” parts of ourselves--and this raises the question: Who owns our ‘inner most’ self--our desires or our mobile phone records, capturing where we are going and with whom are we meeting. Is it technology companies, our local phone providers, or is it still us?

This new dimension of technological progress and societal change is in its infancy. The other waves of forthcoming technological evolutions in genetics, in stem cell technology, in nano-technology, in neuroscience, will all provide opportunities and threats of “alteration” of our selves. As an example, a recent piece of cognitive research published in The Journal of Neural Engineering reported that scientists have designed a brain implant capable of restoring lost memory function and strengthening information recall in rats --a critical first step in showing that the cognitive function can be improved with neuroprosthetics and one which raises profound moral and ethical issues.

Global cooperation is only feasible if underpinned by shared values. After World War II, and with the establishment of the United Nations, a principal framework for shared values was created with the Universal Declaration of Human Rights. But time has shown how fragile this consensus is, particularly with the rise of ethnic, religious and other tensions. The new dimension of innovation, which further explores the essence of human nature, the relation between moral reasoning and moral intuition, and the underpinning of modern institutions, will likely intensify conflicts in values and undermine the establishment of shared values for the new reality.

It is not only the velocity and nature of change, but also the increasing multiplicity of actors which characterizes the world of today and tomorrow. Ten years ago, the Group of Eight countries (G-8) represented more than 60% of the world’s economic power. Today, much more than half of the world’s economic growth is produced by so-called emerging countries. This multiplicity of actors not only highlights the geographic expansion and the extension of multi-stakeholder impact, but it also underscores the fact that power is shifting from the top down and from the centre to the periphery--leaving almost 7 billion people who want to have their say and the capability to do so.

The geoeconomic and geopolitical power shifts taking place will fundamentally change our lifestyles--equally, so too will the cultural seismic shifts that are occurring. Going forward, prevailing Western values will have to increasingly accommodate Asian values, and vice versa. By 2025, four of the five largest economies in the world will be non-Western and close to half of the Fortune 500 companies will originate in emerging countries. This will have a direct impact on all of us in terms of new brands, new lifestyles and new industrial ownership structures.

All of these accelerated trends--velocity, multiplicity, interconnectivity--are creating a completely new world in which the mastering of complexities will be the key challenge. Of course, the more complex the system is, the greater the risk of systemic breakdowns.

When we look at our governance systems, above all global governance, we see the stress symptoms of leaders who are having difficulty in coping with the complexities of today ' s world. The sub-prime and Euro economic crises are primary examples of the unintended consequences resulting from actions taken in unchartered territories. Today, the whole world, inclusive of the Group of Twenty (G-20) countries, is consumed by fire-fighting rather than fire prevention and mitigation. But there ' s a tipping point where velocity, interconnectivity and complexity become so pervasive that the whole system collapses, regardless of whether certain elements at the surface of the system are fixed. We may not have the foresight and collaborative spirit to shape our global future, but at least we should have the survival instinct to move from pure urgency-driven risk management to much more collaborative efforts aimed at strengthening our risk resilience.

This implies a multistakeholder effort by governments, business, science and civil society to create a much more appropriate global rules-bases system. This should at best guarantee that the complexity of the system is not exploited for the individual gain to the detriment of global society.

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