Notes from the Edge

Insights into an Evolving Future

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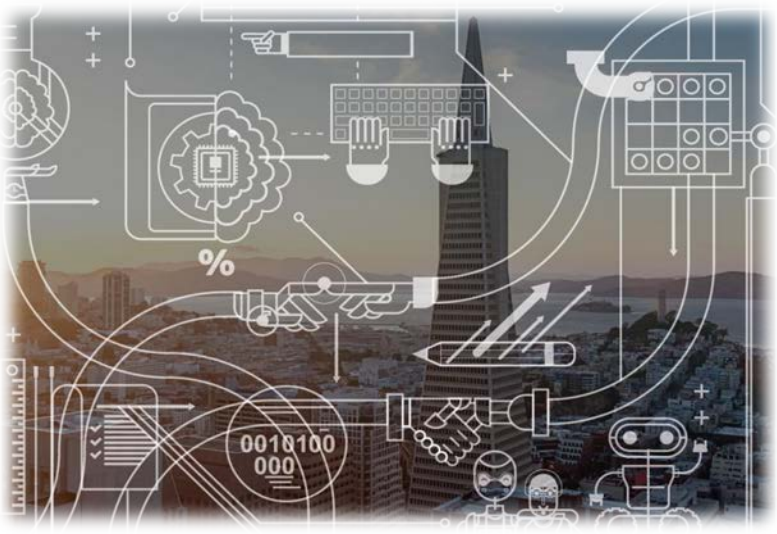

ARTIFICIAL INTELLIGENCE

Waze for War: How the Army Can Integrate Artificial Intelligence. While many commercial applications of artificial intelligence are based on identifying patterns and trends using big data, most military applications focus on autonomous systems. The U.S. Army needs to develop a strategy for integrating narrow artificial intelligence applications into the force. Existing Department of Defense investments in artificial intelligence tend to emphasize future autonomous systems such as tanks, robot soldiers, and planes that can operate with minimal human input. An alternative approach is to experiment with predictive models and big data to increase the combat power of the current force. **Waze for War**

In Search of the Optimum Level of Trust between Human and Machine. It might seem counter-intuitive, ridiculous even, to discuss matters of trust between human and machine; but a relationship of trust between people and the automated systems they use is often a critical factor in making these systems safe and efficient. Trusting that an automated system can handle the more hum-drum aspects of its assignment with a minimum of human interference frees up its operators for tasks that are more deserving of their attention that might require more human skills such as problem-solving, improvisation and ingenuity. **Human-Machine Trusting**

Study Examines how AI Might Affect Urban Life in 2030. A panel of academic and industrial thinkers has looked ahead to 2030 to forecast how advances in artificial intelligence (AI) might affect life in a typical North American city - in areas as diverse as transportation, health care and education—and to spur discussion about how to ensure the safe, fair and beneficial development of these rapidly emerging

technologies. Titled "Artificial Intelligence and Life in 2030," this year-long investigation is the first product of the One Hundred Year Study on Artificial Intelligence (AI100), an ongoing project hosted by Stanford to inform societal deliberation and provide guidance on the ethical development of smart software, sensors, and machines. **AI and Urban Life in 2030**

TECHNOLOGY

First Gene-edited Meal Served up from CRISPR Cabbage. It's not often that two people sitting down to dinner marks a huge step forward for science, but that was the case when two men in Sweden tucked into a meal of pasta and fried vegetables recently. The historic ingredient? Cabbage that had had its genome edited with CRISPR-Cas9, making it the first time such a plant had been grown, harvested, cooked, and eaten. **CRISPR Kimshee**

6 Disruptive Trends in Technology for 2017. According to the author, 2017 will see some of the most innovative and evolutionary technology disruptions we have seen thus far. There will be more connection, more automation, and more significant impact in business and investment than ever before. The innovations coming to fruit in 2017 are poised to redefine business and connection as we know it: Finance will be automated, big data will get even bigger, the Internet of Everything truly begins, mobility will continue to dominate, space exploration will become increasingly affordable, and marijuana tech will thrive (in the US). **Disruptive Tech Trends 2017**

Russia Working on Railguns with Space Launch Speed, Robot Avatars, Exoskeletons,Smart Bullets, and Killer Robots. In a series of laboratory tests the Russian railgun prototype has fired its projectile at a whopping 6.25 kilometers per second. A weapon capable of firing at a speed like this renders useless all existing means of ship, plane, or tank protection. A new robot-avatar, designed to have functions comparable to those of a human being, was revealed to Russian President Vladimir Putin at the Central Institute for Scientific Research in January 2015. The human-like robot made five shots with its gun and drove a quad around the training area. Special sensors, attached to the robot's limbs, allow an operator to drive the robot remotely. Additionally, Russia has allocated substantial resources in its 2016-2025 state armament program toward the development of robotic systems. By 2025, 30 percent of all military technology in the Russian Armed Forces is expected to consist of robotic hardware, according to Russia's defense ministry.
Russia's Military Tech Investments **Russian Killer Robots**

ECONOMICS

The Economic Toll of the New Age of Terrorism. For many countries, terrorism does not have a meaningful impact on economic growth or foreign direct investment (FDI); however, following very large terrorist events, or for countries with very high levels of terrorism, there can be very notable economic impacts. **Economics and Terrorism**

DEMOGRAPHICS

Here Come the Young: The Next World Population Boom. The largest youth population in human history is coming of age in a steady, unstoppable wave. How well these young people transition to adulthood — and how well their governments integrate them economically, politically, and socially — will influence whether their countries thrive or implode. **The Next Population Boom**

GOVERNANCE

To Avoid Another Brexit Let's Stop Treating Citizenship as a Birthright. [*This is an opinion piece, worth reading because the way we view national and trans-national identities in the future may be very different from the way we view them today. -Editor*] One immediate casualty of Brexit has been the

notion of lifelong citizenship, most easily observed by a dramatic surge in applications for advantageous passports from countries like Ireland—part of the British Isles but not the UK, therefore remaining in the European Union. While national identity is still a more complex notion, how that identity moves across borders is becoming more fluid. **The Future of Citizenship**

The Radical Plan For A Global Identity System For A World With Shifting Borders. Some 1.5 billion people lack a legal identity. The lack of official IDs has compounding effects. Refugees can be shut out from social services or denied access to financial funds sitting in their home nations. Host governments have to issue new documents, which is expensive, takes time, and is open to fraud. And, for refugees, stuck in ad hoc accommodation, no identity means, in effect, that they are not only homeless, but, in a sense, anonymous. The blockchain technology that underpins bitcoin could be the answer.
Bitcoin for Identity

Study: Ethnic groups' government influence and internet access go hand in hand. The internet may be a great source of empowerment for the disenfranchised - if they're allowed to have it. A new study that examined the internet access of excluded ethnic groups within countries found that groups subjected to political exclusion were significantly less likely to have internet access. The findings published in the journal Science show that internet access, like other valuable resources, can be controlled politically and distributed unfairly. **The Disenfranchised e-Citizen**

ENVIRONMENTAL STRESS

What Would the Earth Look Like if All the Ice Melted? National Geographic has produced a series of maps which show the world as it is now, with one difference: All the ice on land has melted and drained into the sea, raising it 216 feet and creating new shorelines for our continents and inland seas. There's still no oceanfront property in Arizona, but you may want to rethink that Florida retirement home.
The Rising Seas

FUTURING

Ray Kurzweil's Four Big Insights for Predicting the Future. How we eat, work, play, communicate, and travel are deeply affected by the development of new technology. But what is the underlying engine that drives technological progress? Does technological change progress at a steady rate? Can we predict what's coming in 5 or 10 years?
Kurzweil's Four Big Insights

We Need To Spend More Time Questioning Our Technology-Driven Future. From AI to genetics to the internet of things, technology is moving faster than ever, creating all sorts of wonderful possibilities. Self-learning networks could cure cancer. Robots could do the dirty work humans don't want to do. Within years, we may have boundless renewable energy, and batteries that go a week without charging. But what of the unintended consequences? As a society, we tend to lionize technology as the solution to everything, while barely considering the ethical, political, and social implications.
Technology and the Future

The 10 Most Critical Problems in the World, According to Millennials. These insights come from the World Economic Forum's annual 2016 Global Shapers Survey which surveyed more than 26,000 millennials from 181 countries to gauge the priorities, concerns, and attitudes of millennials around the globe. According to the respondents the three most serious issues affecting the world today are climate change, followed by large-scale wars and religious conflicts. They trusted the responsibility to fix the issues plaguing the world belongs to international organizations and themselves.
10 Most Critical Issues for the Future

ART OF THE FUTURE PROJECT

The Atlantic Council's *Art of the Future Project* (formerly *Art of Future Warfare*) seeks to cultivate a community of interest in works and ideas arising from the intersection of creativity and expectations about how emerging antagonists, disruptive technologies, and novel warfighting concepts may animate tomorrow's conflicts. The Project partnered with the Futures Assessment Division to host a Science Fiction Futures Workshop in which published authors Max Brooks (*World War Z*), Charles E. Gannon (*Caine Riordan* series), and August Cole (*Ghost Fleet*) worked with 18 talented science fiction writers from across the services, with the goal of bringing the ***2015 MCSEF*** future worlds to life. Look for the stories to be published soon.

Art of the Future Project

This newsletter is intended to highlight issues and ideas which may prove significant in the evolving future. In keeping with our focus on both alternative futures and analysis, items in this bulletin will generally be of an alternative nature, or drawn from atypical sources.