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Her future will be tougher than my past

by *Carson Booth* 🔗

We humans have always dealt with new technologies, and for the most part, we have welcomed them because they have made our lives easier, better, longer, healthier, more enjoyable…. But 17 years into 21st century, the sheer *pace* of techno-logical change is absolutely dizzying – and only likely to accelerate even more, causing disruptions and upheavals in every part of our lives. Perhaps more than ever before, tech driven advances are changing our economic structures, politics, and even society as a whole. Where is it all going? To bring this year's edition of The Hotel Yearbook to a fitting close, Carson Booth shares his thoughts on this fascinating – if not a little intimidating – question.

In October 2016, I wrote a short LinkedIn article about the rise of Artificial Intelligence (AI) and the empowerment it will bring to hospitality guests and associates. With the recent announcements of AI taking center stage in both the iPhone 8/X and Pixel 2, the article seems to have been quite timely, however, in hindsight and with other recent developments around AI, the article now seems rather quaint and innocent.

Following this article, I have continued to reflect on current major milestones in my life: leaving my corporate job, turning 50, and having my 6-year old daughter start school. This culminated in a short Facebook post in the summer of 2017, which contemplated the future of work and how to best prepare my daughter for what lies ahead as she starts school. These thoughts continue to intersect and evolve, and frankly, her future will be tougher than my past.

"It begins…" so tweeted Elon Musk, Tesla's outspoken CEO on 4 September 2017. This was in direct response to an article published by Russia Today on 1 September, also known as "Knowledge Day", which quoted Russian President Vladimir Putin saying to science students, "Artificial intelligence is the future, not only for Russia, but for all humankind…It comes with colossal opportunities, but also threats that are difficult to predict. Whoever becomes the leader in this sphere will become the ruler of the world." This quote reflects the reason for concern that Musk and others have continuously raised – and no wonder they are nervous. We should all be.

The world has witnessed a handful of modern-era technology revolutions, starting with agriculture in the 18th century, paving the way for steam and mechanization of the industrial age, followed by electrification and mass production factories, and finally, electronics and information technology processing. One central tenet in Daniel Šmihula's theory of waves of technological

innovation is that the time-spans of technology innovation waves are shortening due to technological progress. This recursion is exemplified in the rapid evolution of ubiquitous mobile computing over the last fifteen years, having been built upon the PC-to-internet revolution from the previous thirty. Like mobile computing, many forms of the next wave of post-information technological advancements are rapidly emerging, including biomedicine, nanotechnology, machine learning and artificial intelligence.

These advancements are blurring the lines between digital, biological, and physical realms, and more concerning, they are permanently shifting wealth and income inequality, redefining work itself, and, referring to Putin's quote, weaponizing information and AI.

Weaponizing AI

The top AI concerns expressed by researchers are not that machines or computers will turn evil, becoming malevolent, but rather the level of competence of AI's super-efficient ability to reach its goals. Therefore, the most important task at hand is to ensure AI goals adopt and constantly reflect our own goals as humans. These undefined parameters, including binding regulation, are exactly why Musk, Mark Cuban, Stephen Hawking and others have raised the AI alarm. The frenzied dash to AI is well underway and both government and private organizations have a multitude of reasons for rapid investment to help its rise.

2010's Stuxnet malware worm is credited as the first weaponized information tool – highly sophisticated, very stealth, government-backed and very successful at disrupting the centrifuges in Iran's uranium enrichment program. Stuxnet however was not AI driven, but what if it were?

"Lethal autonomous weapons threaten to become the third revolution in warfare." So wrote Musk and a group of AI researchers in their August 2017 call for a global ban on robotic weapons. In the open letter, the researchers expressed a concern to prevent an arms race and "protect civilians from their misuse and the destabilizing effects of these technologies" which will "permit armed conflict to be fought at a scale greater than ever and at timescales faster than humans can comprehend." The short letter concluded with the ominous warning, "We do not have long to act. Once this Pandora's box is opened, it will be hard to close."

Putin's comments on Knowledge Day is a public disclosure of the state-sponsored escalation of weaponized AI and information tools – essentially announcing that a cold war AI race has begun. Musk furthers his concerns though recent successive tweets specifically stating "all countries" competing for the best AI will lead to the potential for AI to launch a preemptive strike, either against a nation or a competing technology, and ultimately could trigger World War III. Thusly machines targeting machines without competence and lacking alignment with humanity's goals. ("*Shall we play a game?*" anyone?)

Weaponizing information

Information, and specifically disinformation, has been an effective tool throughout history – from government propaganda through manipulating stock prices. However, with relatively recent advances in technology, it is now very easy to deploy bots and algorithms in a weaponized information format, leveraging shared personal data to manipulate and reinforce a person's point of view at a speed and efficiency never before seen.

It is strongly alleged that the outcome of the UK Brexit vote was a direct result of leveraging big-data in targeted disinformation campaigns against citizens by formerly-named SCL Elections Limited and billionaire-owned Cambridge Analytica. Similarly, the world continues to watch the unfolding events in the United States, additional areas in Europe, and beyond, on how hacking election and e-mail systems and manipulating social media can have dramatic impacts on societies and democratic processes.

Companies like Google, Facebook, and Twitter are caught in the intersection of programmatically generating relevant wall feeds for their users, fostering social communities, and enabling global "free speech", versus their profit-motivation of clicks for revenue. While we enjoy their free products, define ourselves though "Likes", and abandon our privacy, it is their algorithms that suggest the news we read, the clothes we buy, the paths we walk, the friends we invite into our inner circles – all of which have a dramatic effect on lives.

Recent studies have shown that social media have not necessarily reduced the quantity of news and information sources we receive, versus the television nightly news of past generations, but rather, have shown a reduction in the quality of information received. This is a result of a user's need to reduce news sources to manageable consumption levels and the subsequent development of a strong and well-defined community around the news they support. Significant danger arises when weaponized bots and algorithms manipulate these information channels through geographically and/or demographically targeted campaigns in order to maximize the effect of fake news and further inflame division on social-political wedge issues. Furthermore, governments, private institutions, or their staff, propagating fake news conspiracies to create doubt in democratic institutions or to erode the trust in scientific communities or mainstream media, weakens the state, no matter what position one holds.

In response, companies are responding and seeking ways to address the "bot cancer eroding trust on their platforms" which in itself will add to the AI race in a cat-and-mouse chase. Ultimately, technology companies have a social responsibility to their users and society, and must be held accountable to take steps to help prevent or eliminate the spread of fake news and disinformation. If they will not self-regulate, then it is incumbent upon government to regulate these for-profit activities and enterprises. Likewise, society, governments, and educational institutions must be held to an increasingly higher standard when it comes to educating their citizens on fact checking and learning how to think critically.

Cornerstone to today's post-information age, these social media echo chambers reinforce a user's confirmation bias, which has a corrosive effect on informed critical thinking, and has the potential to shred the social fabric of society – ironically, the exact opposite of the original intent of the Internet. (You really need to read this article from UK's The Guardian.)

Redefining work

In 2013, Oxford University published a study stating, "47% of total US employment is at risk of computerization" in the next 25 years. It is easy to foresee impacts to blue-collar jobs with driverless taxis, delivery trucks, and drones, but computerization risks will affect white-collar professions as well.

For example, since the mid-2000s, engineers have turned to AI and evolutionary computation (algorithms based on evolutionary biology with inputs such as selection, inheritance and randomness) to generate designs for 'evolved' space antenna, cars, and
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to build AI itself. The adoption of AI design and engineering tools will continue to accelerate as more products come to market to support engineering efficiencies. Google's AutoML has been labeled as "AI's Inception" and is one example of AI coming to the market. Another example, Autodesk's Dreamcatcher, allows designers to "input specific design objectives, including functional requirements, material type, manufacturing method, performance criteria, and cost restrictions, and then using these requirements, the system searches a procedurally synthesized design space to evaluate a vast number of generated designs for satisfying the design requirements."

Similarly, medical industry professions are at risk with AI's potential to enhance surgical-robotics and current ability to efficiently search vast amounts of new and existing genetic, metabolic and clinical information for diagnosing disease, and probing biological systems to uniquely identify how a drug will impact a patient's particular cells or tissues, or creating new drugs altogether. Other examples of at-risk white-collar professions are lawyers (contract review platforms Beagle.ai, jEugene Compass), professional pilots due to enhanced auto-pilot and pilot-less flights, journalists (bot-writers), and even movie stars (regardless if dead or alive).

Nearly every industry will be impacted by AI/robotic implementation due to its pay-back cost dramatically declining over the course of it use, contrary to that of human labor with its tendency to increase over time due to salary increases, medical costs and similar. Furthermore, in an increasingly capitalistic world, management has very few economic arguments to convince shareholders not to compete in the drive toward greater efficiency, speed and optimizing marginal costs. As a result, early indicators of future problems are materializing.

Although these changes will not happen overnight, a great disparity exists in the skills required for jobs of today versus jobs of the near future – you cannot retrain a mall shopping assistant into an AI coder or data scientist overnight. Furthermore, evidence of these trend lines are found in analyzing the struggles of millennials to find work and grow wages, which impacts their ability to repay student debt, buy a home or get married. Recent US census data reveals that one third of US Millennials are remaining at home into their early 30s for "economic security".

Additional early economic indicators are found in governments struggling to address shortfalls in pension and social security programs due to lowered birth-rates and reduced job growth, which respectively are the results of increased education, lifestyle choices associated with economic affluence and women in the workforce, and of increased market productivity driven by technology efficiency. One way governments are seeking to prop up these social programs is by increasing the retirement age – which provides longer employment tax revenue per worker and a decrease in total benefit valuations. However, these policies do not address the underlying problems of an aging population and technology efficiency driving jobless growth.

The industrial revolution evolved over many decades and caused significant social impacts and unrest. The current impacts of AI and computerization are happening much faster, across nearly all industries and economic levels in a more tightly wound global economy. It is very evident that governments and economies are not prepared for these impacts to come and only now are starting to discuss regulation and policy positions with little dialog on who should bear the social cost of these changes. Google's woefully underfunded $50M "Future of Work" investment as "creator and controller of potentially job-threatening technology" is at least a start in the private sector of "acknowledging its role in changing the way humans fit into future workplaces and actively trying to understand and implement viable solutions."

Two potential answers to automation lie in the concept of Universal Basic Income and an automation tax. Kenya, Finland, Switzerland, and The Netherlands are leading UBI discussions through pilot programs, and an automation tax could either fund UBI or directly support traditional social programs and job re-training.

Furthermore, the value of higher education has come under fire against the backdrop of increasing costs and diminishing returns against a redefinition of the future of work. Education institutions at all levels need to re-evaluate current education tracks and job re-training programs and begin to adjust their curriculums and entrance acceptance criteria to meet the coming reality. New students starting today will face a dramatically different future from generations past.

What is clear is that unrestrained AI-empowered capitalism is going to further exacerbate the reduction of jobs and force the redefinition of work as we know it today, and time is running out to find a solution. On the other hand, perhaps, could we be at the cusp of a permanent reduction in the need for human labor and the utopian future of spending our time on more noble pursuits?

Shifting Wealth and Income Inequality
In 2017 the World Economic Forum has listed rising income and wealth disparity as the top trend affecting global developments. Additionally, it is interesting to note income inequality ranks ahead of climate change (#2), but also the related technology impacts of polarization of society (#3) and rising cyber-dependency (#4). (Ageing population ranks #5 in the list.) Furthermore, when listing the most important risk interconnections, unemployment and underemployment's potential to cause profound social instability ranks #1.

Why does income inequality matter? Income inequality can be a strong indicator of the level of individual opportunity and persistent disadvantages of particular segments of society. According to the IMF, widening inequality can "concentrate political and decision making power in the hands of a few, lead to a suboptimal use of human resources, cause investment-reducing political and economic instability, and raise crisis risk." Furthermore, according to the IMF, high levels of income

inequality can entail large social costs including significant undermining of an individuals' educational and occupational choices, and potentially leading to the diversion of their efforts toward securing favored treatment and protection, resulting in resource misallocation and corruption, and ultimately, losing confidence in institutions, eroding social cohesion and confidence in the future.

In August 2015, the US Securities and Exchange Commission adopted the CEO Pay Ratio rule that requires public companies to disclose (i) CEO compensation; (ii) median employee total annual compensation; and (iii) the ratio of (i) to (ii). These rules are broadly in line with existing European disclosure rules and attempt to provide a consistent metric and drive scrutiny of executive compensation policies by employees, shareholders, government, and the public. This is the result of a concerning trend of CEO pay increasing by 997% which has significantly outpaced regular worker compensation of 10.9% growth over the last 40 years. (Note: CEO compensation has doubled the performance of the stock market in the same period).

The wealth of technology leaders has also risen dramatically during the same 40-year period. Behind the facade of digital altruism lies a very clear profit motivation. Whether it is decreasing the transaction time of high-frequency stock trading which creates an unfair advantage over retail investors, exploiting sharing-economy labor through technology platforms like Uber and AirBnB, or making Amazon.com so darn convenient, you do not shop at the malls anymore. "The ultimate aim of the tech evangelists is often to create monopolies which are the quickest ways to profit. Free social tools are concentrating wealth in the hands of a few programmers and investors. In search, that's Google (revenues $75bn). In social media, that's Facebook (1.65 billion users, sales $5bn). In online retail, it's Amazon (last quarter profits of almost $900m)."

Of the 170 signatories on 2017's Gates-Buffet sponsored Giving Pledge (a billionaire's pledge to redistribute a majority of their wealth to philanthropic causes), 25% come from the technology sector (banking/investment is largest at 26%). Forbes' 2017 rank of the top 15 wealthiest people include six technologists, four of whom are in the top 10 (#1 Gates, #3 Bezos, #5 Zuckerberg, #7 Ellison), and only Bezos has yet to commit any of his estimated $72 billion to the Giving Pledge.

The relentless pace of innovation will not subside. Like the narrowing of jobs towards higher-skill levels and the concentration of wealth that comes with it, the political influence of these organizations and leaders will continue to increase. History shows the struggles of free-market self-regulation; therefore, governments and industry need to work closely together to correlate and address the concerns of facilitating technology-for-profit innovation while managing the impacts of income inequality and the broader wellbeing of society.

Her future will be tougher than my past

There are some leaders, including Gates and Zuckerberg, who have a brighter view of the benefits of AI and technology to come, and that the "control problem" is not as imminent as Musk and others warn. However, they are careful to not ignore the hard questions that must be addressed.

Furthermore, in May 2017, McKinsey Global Institute released an in-depth study on the future of work, which states that while technology is replacing some jobs, new jobs are being created in ways never imagined, and that one-third of new jobs created in the United States did not exist 25 years ago. The study highlights that through digitization, significant opportunities will arise to address the "large disparities" among big companies, entire industry sectors and the significant variances among countries themselves.

New students of today will inherit a vastly different economic, technological and job reality than generations prior. The steady career, trusted information sources and incremental changes of the past are being disrupted by technology at a dizzying pace. The future is very concerning and exciting just the same. New careers will be born among the ashes of others, and innovations will dawn as science fiction inspired the past.

In conclusion, it is incumbent upon us all – as parents, policy makers and education systems – to work together to balance the tools and effects of technology on our children and their future. We must diminish the importance of defining oneself by the number of "Likes" received. We must cultivate and celebrate critical thinking and foster a natural curiosity by continually questioning "Why?" We must help our children to be resourceful and agile. Most importantly, we must nurture a strong sense of society, social and environmental responsibility and a pursuit of making a difference, not only to themselves but for the greater benefit of society.

This is a tough time to become a first grader. ■

Carson Booth *has over 25 years' experience in the hospitality industry and is a consultant and mentor in the vibrant hospitality technology startup sphere. Carson began his career in Las Vegas and has previously served as General Manager, Starwood International Licensing Company SàrL (SILC) and Global Vice President Property Technology, both for Starwood Hotels & Resorts Worldwide Inc. His extensive international experience includes the managing of intellectual property and development operations (SILC), a global team of technology professionals, guest- and brand-technology strategy, information security and privacy, and a diverse set of property and corporate technology operations. Carson serves on several industry boards and most recently served as chairman of HFTP's Advisory Council for the inaugural HITEC Amsterdam 2017 conference and will rejoin this role for 2018. He holds a Bachelor's degree in Computer Science from the University of Nevada at Las Vegas, and is a frequent speaker at industry events.*
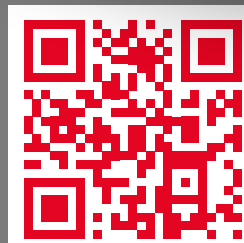
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