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OUR FUTURE: Projections of Work and Life

Helen Harkness, Guest Editor

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Chapter 3

JOBS and CAREERS on the FRONT LINE of the FUTURE

by Gary Marx

Twenty-One Trends for the 21st Century.

It's not just a change. It's a reset. What gets our intellectual and emotional juices flowing? What triggers our imaginations? What turns hindsight into foresight? It's the anticipation, the restlessness, and even the opportunities that spring from the virtual certainty of uncertainty. Like an anthem, Bob Dylan's ageless alert echoes across the world— "*The times...they are a changin'.*" Too often, we ignore that reality. We try to apply shopworn solutions that once helped us endure but are no longer up to dealing with today's problems. Some of us, by choice, prefer to ignore, refute, or even hide from a cascade of realities driven by the convergence of massive trends. A few dig trenches deep enough to protect themselves from the stimulation and rush of a world in constant motion. Their hope? If we can hold out long enough, life will return to what it was before high-speed computers; before robots; before an array of mobile, handheld, wireless devices; and before the incessant presence of social media. Fully committed to the status quo or what we remember as better times, we lose touch, sometimes by choice. One day, fully entrenched, we notice that battle cries from above have gone silent. Peering from the rim of our sanctuary, we discover that the world has gone on without us. We've been left behind, the smallest of islands floating in a mammoth sea. Rather than simply peering from the tops of our trenches, we need to move toward higher ground. Seriously considering trends can jolt our fixed concept of the horizon. It can also fuel our foresight as we explore and shape a world of possibilities that might just be beyond our imaginations.

In Touch...or Out of Touch?

If we understand trends and issues, people will likely say we're in touch. If we don't understand trends and issues, they will likely say we're out-of-touch. Our new book, *Twenty-One Trends for the 21st Century: Out of the Trenches and into the Future* focuses directly on helping us stay in touch. Working with a distinguished international Futures Council 21, we've tried to lay out the signals of forces in society that, in one way or another, have implications for every education system, business, community, country, and every one of us. We protect ourselves from the reality of these forces at our own peril. We are, after all, of this world, not separate from it. "*We haven't inherited this planet from our parents. We've borrowed it from our children.*" ~**Jane Goodall, British Primologist and Anthropologist.**

Career Development on the Front Line

Show me a person who is committed to career planning and adult development and I'll show you a person on the front line of the future. These thoughtful professionals not only know about massive and often exciting changes taking place in society but they are among the first to see their

impact on real live people. We make clear in *Twenty-One Trends* that, “Across the developed and developing world, communities and countries are trying to put people to work. Unemployment and underemployment, wherever they exist, can increase instability, not only in our homes but also in our communities and nations, even among nations. At its very heart, a strong and stable economy depends on the opportunity for people to work—to find suitable jobs.”

All of us know the challenges: globalization that has both opened markets and led to both outsourcing and offshoring; the shift in traditional manufacturing jobs from one part of the world to another; the onset of streamlined production, automation, and a virtual torrent of new technologies; the advent of 3D printing and a realization that it could decentralize manufacturing; and the demand for quarterly profits that has too often trumped loyalty to seasoned employees.

A rule of thumb, according to Thomas Frey, jobs editor for *The Futurist* magazine, published by the World Future Society, is that “60 percent of jobs ten years from now haven’t been created yet.” In one sense, that’s a threat. In another sense, it’s an opportunity to imagine, invent, innovate, and both discover and use our entrepreneurial skills. Yes, that means each of us might carry the seeds of a whole new industry or cluster of jobs.

Whenever I visit with Millennials, and that’s often, the word “entrepreneur” keeps coming up, often because many face paying off college loans and simply can’t land a traditional job that pays enough for them to launch a pursuit of their dreams. Some even venture a complaint that, because some people have to work well into *retirement*, they aren’t moving over to make room for freshly minted members of tomorrow’s workforce who are searching for opportunities. Some Brain-Gain Communities, Cities, Metro Areas, and Countries see the whole situation as an opportunity. They are building their economic futures on what economist and author Richard Florida calls “*the creative class*” or “*knowledge workers*.” These workers are generally earn more, pay more in taxes, support cultural institutions, and build overall economies for the future. Headed into the Great Recession, in about 2006, Florida points out, as unemployment in the overall workforce escalated, it hovered at about 1.9 per cent for knowledge workers.

We’ve seen monumental changes in the percentages of people employed in three of the primary sectors of our traditional economy. The agricultural sector is expected to shrink from 69 per cent in 1840 to 1.2 per cent projected by 2020. Part of that shift can be attributed to the exceptional productivity of the people who work in that sector as well as a tendency to move into urban settings. The industrial sector, which employed about 35 per cent of the U.S. workforce in 1950, is expected, even with something of a comeback, to reach about 11.9 per cent in 2020. As for the services sector, it’s grown from about 17 per cent in 1840 (when people had to do a lot of things for themselves) toward an expected 79.9 per cent in 2020. Don’t forget that, even today, we have a growing do-it-yourself (DIY) and makers movement.

Then, there is the global dimension. Because of high-speed transportation and instant communication, growing numbers of people are willing to pursue opportunities across political boundaries. It’s not just a concern about our country or community being brain gain or brain drain. We’re entering an era of brain circulation. As a member of the *Twenty-One Trends* book’s Futures Council 21, Superintendent Damian LaCroix of the Howard-Suamico School District

in Green Bay, Wisconsin, said, “Creativity, critical thinking, problem solving, innovativeness, communication, collaboration, and citizenship will emerge as more vital than natural resources, such as coal, oil, natural gas, and lumber.” He believes that situation will lead to shift in power “toward countries that esteem education and invest in education.”

Our aging population has made three current occupations among the fastest growing, according to the U.S. Bureau of Labor Statistics (BLS)—personal care aides, home health aides, and registered nurses. Those existing occupations projected to see the greatest decline between 2010 and 2020 include shoe machine operators, postal service workers, switchboard operators, and many categories of textile workers.

But then consider other hot prospects for the future: data analytics; neuroscience; superconducting technologists and electro-chemists (who will help us multiply battery power and build a smart grid); energy inventors, entrepreneurs, and technicians; robotics engineers, inventors, technicians, and ethicists; and nano-, bio-, and forensic scientists and technologists. Frey asks us to think about the need for 3D printing engineers and octogenarian service providers. In fact, look at any of the Twenty-One Trends and ask, “*What are the implications for jobs and careers?*” Cynthia Wagner, editor of *The Futurist*, suggests, “One of the easiest ways to begin thinking about future careers is to focus on what may be a problem in the future and invent a job that solves it.”

Our jobs and careers trend goes like this: Pressure will grow for society to prepare people for jobs and careers that may not currently exist.

Career Preparation, Employability and Career Adaptability.

What are the implications for career and jobs professionals? For our education systems? For our future? All of us, as individuals, businesses, professions, education institutions, and countries need to seriously address those questions. Consider, for example, another question, one we ask nearly every child or young adult, “*What do you want to do when you grow up?*” We should probably be asking, “*What do you want to become?*” Then, we could perhaps match their talents, abilities, and aspirations with jobs and careers that exist and even entrepreneurial directions they might want to pursue as they shape their and our future.

A Glimpse of Other New Realities from *Twenty-One Trends*

Before we share a list of those 21 trends, let’s take a brief glimpse at even more society-shaking evidence of a perfect storm. We are facing a convergence of new realities that should command our attention, wherever we are and whatever we do.

- **In the U.S., non-Hispanic Whites** are expected to fall **below 50 per cent** of the population by about 2043. For those 18 and under—by 2018. For those age 1 and under, the shift began in 2011; for those 5 and under, in 2013-14. Majorities are becoming minorities.
- Beginning in 2011, **Baby Boomers (born 1946-1964)** began hitting **age 65 at a rate of about 10,000 a day**. That’s the handwriting on the wall, and the cycle will continue for about 30 years.
- In 2012, members of the **Millennial Generation (born 1982-2003)** started **turning age 30 and will be assuming leadership** that will be no less than revolutionary for society and every one of our institutions.

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- As **growing numbers of Millennials** upsize by downsizing, they **will insist on quality, style, collaborative leadership, service, and results.**
 - **Big data and the cloud**, coupled with **super- and quantum computers**, will lead to **revolutions in everything** from education to health care and raise **even greater concerns** about **identity and privacy.** Computer speed, capacity, interactivity, and mobility will increase exponentially.
 - **Lifelong education** will move toward being available anywhere, anytime, and any way. The same expectations for service will be true for many other industries.
 - While **school curriculum** will continue to be aligned with goals, pressure will grow for goals to be more **aligned with individual students' strengths and the needs of society.**
 - **Leadership will become increasingly horizontal** with an emphasis on listening, engagement, collaboration, making sense, and developing a unifying sense of direction.
 - Look for a **revolution in energy generation, distribution, storage, and efficiency.** Renewable energy harvesters will become more commonplace.
 - Scientific instruments, beginning in 2013, detected that carbon dioxide levels in the atmosphere had reached 400 parts per million, a level not seen on earth for three million years, long before the roughly 8,000 years that humans have occupied the planet.

Converging...in the Streets

And then, there is convergence. Of the dozens of possible examples, here is just one. Anyone who stays in touch with broad societal trends might have known that people would take to the streets in several parts of the world. Converging into a kind of perfect storm are forces such as—a generation of young people, largely Millennials, who want to solve problems and deal with injustices; soft economies and a lack of jobs; a questioning of authority; and social media that can energize and bring people together at a moment's notice.

Systemic Innovation, A Gift That Keeps On Giving

Economic recovery and sustainability will depend, in part, on systemic innovation. The harnessing of electricity and the fragile, simple-looking light bulb led to power plants, distribution lines, metering, generations of appliances that seem to have no end, and legions of factory workers. The automobile eventually led to better roads, gas stations, repair shops, and jobs for highway patrol officers. Now, drivers are topping off their electric vehicles at networks of charging stations. The silicon chip, a gift that has truly kept on giving, has spawned one invention after another. Nearly every one of them has increased the pace of change. Inventors have blossomed along with a seemingly endless supply of apps, gaming technology, a deep well of information, and a vast array of social media that connect us with people and ideas. Artificial intelligence and augmented reality, in their many forms, help us make it through the day. Big data and the cloud, along with concerns about identity and privacy, are a reality, along with terabytes, petabytes, and exabytes. We have computer, biological, medical, communication, instructional, aeronautical, space, military, administrative, financial, assistive, and a host of other technologies. Flash Gordon lives again, his movies firmly implanted on our flash drives. All of these systemic innovations are dynamic. Non-stop research has led to an expectation of quantum leaps. We've faced with new generations of more energy-efficient light bulbs and other forms of lighting. A move is on to put what some are calling driverless cars on the road, using vehicle-to-vehicle communication. Particle physics, including nanotechnology, is preparing us for the day when the sili-

con chip hits a wall and is no longer capable of doubling computer speed and capacity every 18 months or so. Look for the rise of the qubit as quantum computers become even more practical. In fact, the quest for viable quantum computers, spurred by theoretical physicist Richard Feynman, has led to a virtual tag team race among scientists and nations. The implications are off the charts.

These are just a few examples of multiple forces that are having a profound impact on nearly every aspect of society and hatching new generations of systemic innovation. It's happened before. It's happening again. To dig out of any major economic depression or recession, we need to bite a very large caliber bullet, namely the transformation of our physical and social infrastructure. That means everything from transportation and manufacturing to lifestyles and education. For a lot of us, hunkering down and defending the status quo might seem easier. We can even run in the opposite direction, but we can't hide from that stark, historic reality. No one gets a free pass. In 2008, we were being hit by the first waves of the Great Recession. Economists and pundits stoked our hopes and fears. On the one hand, they looked to the sky, gestured broadly, and warned that we were on the edge of another Great Depression of the 1930s...maybe something like The Panic of 1893. On the other, a slightly different breed of cultural warriors, in the calmest of tones, assured us that it was just another adjustment in the economic cycle? Stepping into the firestorm, General Electric CEO Jeff Immelt declared, "*The economic crisis doesn't represent a cycle. It's an emotional, social, and economic reset.*"

Social observer and author Richard Florida looked closely enough at history to find a pattern. He observed what had happened following each significant economic downturn. One of his conclusions: Among other things, our technologies and preferred lifestyles had outgrown existing infrastructure. It's happened again, in our own lifetimes. Push has come to shove. Call it a dilemma—like trying to squeeze a size 12 foot into a size 8 shoe.

Our Infrastructure: It's Physical and Social

Sure enough. When the American Society of Civil Engineers (ASCE) issued its **2009 Report Card on American Infrastructure**, the average grade turned out to be a solid D. ASCE was looking at physical infrastructure, such as aviation, bridges, dams, drinking water, energy, hazardous waste, inland waterways, levees, public parks and recreation, schools, roads, transit, rail, solid waste, and wastewater, all symbols of our built environment. We are still trying to develop a renewed economy and civil society on an often outdated, sometimes crumbling and dangerous foundation.

Hope springs eternal. However, if we truly do hope to build a more promising future, we had better expand the list to include our social infrastructure. Consider the need to develop: education that is broad, deep, personal, and purposeful; an ability to tap human imagination, creativity, and ingenuity, while we encourage innovation and entrepreneurship; and preparation that helps us become both employable and good members of a civil society. Think about our need for...a sustainable environment; an even more reliable and affordable telecommunication system; and computer speed and capacity that will support and propel possibilities for the future. That includes faster download speeds. Whether we are able to transform our physical and social infrastructure depends largely on whether we are willing. Are we willing to move beyond acute

roadblocking polarization and toward putting an even higher value on ethical behavior? Are we committed to helping our fellow human beings overcome poverty, wherever it exists in the world, and to ensuring equal opportunity...a more level playing field for all? Are we willing to demand a sense of urgency about the need for emotional and physical well-being for ourselves and everyone else? Can we get past our quarterly report mentality and deal with issues that demand a multi-generational commitment? Just a few of those multi-generational issues include adequate clean energy, the environment, food and water, health, and education. Let's face it. Our Industrial Age mentalities, habits, biases, misunderstandings, and sometimes just plain denial have run squarely into Global Knowledge/Information Age realities. "We can't do that because..." Fill in the blank with anything you'd like, from a lack of funds to a shortage of know-how. However, foresight is the new fundamental, and we need to persist. Let's not slam on the brakes whenever we run into short-sighted excuses and single-minded, sometimes self-serving rants from the trenches. We need to learn from what we hear, engage even more thoughtful people in the process, and search for solutions. However, our sights should always be set on an even brighter and more just future for people, our planet, and our future. Wherever we are, we're all in this together. Another thought. When people tell us what is impossible and give us their reasons why, we need to ask, over and over again, "What are we going to do about that?"

Our Twenty-One Trends

Let's take a look at trends that have emerged from years of observations and research. Each one has earned a full chapter in our latest book.

Twenty-One Trends for the 21st Century

- **Generations:** Millennials will insist on solutions to accumulated problems and injustices and will profoundly impact leadership and lifestyles.

GIs, Silents, Boomers, Xers Millennials, Generation E (Equilibrium)

- **Diversity:** In a series of tipping points, majorities will become minorities, creating ongoing challenges for social cohesion. Majority/Minority Minority/Minority Diversity = Division Diversity = Enrichment Exclusion Inclusion. Worldwide: Growing numbers of people and nations will discover that if we manage our diversity well, it will enrich us. If we don't manage our diversity well, it will divide us.

- **Aging:** In developed nations, the old will generally outnumber the young. In underdeveloped nations, the young will generally outnumber the old.

Younger Older Older Younger

- **Technology:** Ubiquitous, interactive technologies will shape how we live, how we learn, how we see ourselves, and how we relate to the world.

Macro Micro Nano Subatomic Atoms Bits

Megabytes Gigabytes Terabytes Petabytes Exabytes Zettabytes (ZB)

- **Identity and Privacy:** Identity and privacy issues will lead to an array of new and often urgent concerns and a demand that they be resolved.

Knowing Who You Are Discovering Who Someone Thinks You Are.

What's Private? What's Not?

- **Economy:** An economy for a new era will demand restoration and reinvention of physical, social, technological, educational, and policy infrastructure.

Industrial Age Mentality Global Knowledge/Information Age Reality

Social and Intellectual Capital 21st Century Products and Services

- Jobs and Careers: Pressure will grow for society to prepare people for jobs and careers that may not currently exist. Career Preparation Employability and Career Adaptability

- Energy: The need to develop new sources of affordable and accessible energy will lead to intensified scientific invention and political tension.

Energy Affordability, Accessibility, Efficiency Invention, Investment, and Political Tension.

- Environmental/Planetary Security: Common opportunities and threats will intensify a world-wide demand for planetary security.

Personal Security/Self Interest Planetary Security,

Common Threats Common Opportunities

- Sustainability: Sustainability will depend on adaptability and resilience in a fast-changing, at-risk world.

Short-Term Advantage Long-Term Survival Wants of the Present Needs in the Future

- International/Global: International learning, including relationships, cultural understanding, languages, and diplomatic skills, will become basic.

Isolationist Independence Interdependence

(Sub-trend: To earn respect in an interdependent world, nations will be expected to demonstrate their reliability and tolerance.)

- Personalization: In a world of diverse talents and aspirations, we will increasingly discover and accept that one size does not fit all.

Standardization Personalization

- Ingenuity: Releasing ingenuity and stimulating creativity will become primary responsibilities of education and society.

Information Acquisition Knowledge Creation and Breakthrough Thinking

- Depth, Breadth, and Purposes of Education: The breadth, depth, and purposes of education will constantly be clarified to meet the needs of a fast-changing world.

Narrowness Breadth and Depth

- Polarization: Polarization and narrowness will, of necessity, bend toward reasoned discussion, evidence, and consideration of varying points of view.

Narrowness Open Mindedness Self Interest Common Good

- Authority: A spotlight will fall on how people gain authority and use it.

Absolute Authority Collaboration Vertical Horizontal Power to Impose Power to Engage

- Ethics: Scientific discoveries and societal realities will force widespread ethical choices.

Pragmatic/Expedient Ethical

- Continuous Improvement: The status quo will yield to continuous improvement and reasoned progress. Quick Fixes/Status Quo Continuous Improvement

- Poverty: Understanding will grow that sustained poverty is expensive, debilitating, and unsettling.

Sustained Poverty Opportunity and Hope

- Scarcity vs. Abundance: Scarcity will help us rethink our view of abundance.

Less More What's Missing? What's Possible?

- Personal Meaning and Work-Life Balance: More of us will seek personal meaning in our lives in response to an intense, high tech, always on, fast-moving society. Personal Accomplishment Personal Meaning.

These trends were identified by Gary Marx, and published in *Twenty-One Trends for the 21st Century: Out of the Trenches and into the Future* (2014). The basics of this article for Career

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About the Author



Gary Marx has written a series of trends books and has done presentation in all 50 U.S. states and on six continents. His most recent book, *Twenty-One Trends for the 21st Century: Out of the Trenches and into the Future* (2014), includes observations from a distinguished international Futures Council 21. Gary Marx is also the author of *Sixteen Trends...Their Profound Impact on Our Future* (2006); and *Future-Focused Leadership...Preparing Schools, Students, and Communities for Tomorrow's Realities* (2006). He served for nearly 20 years as a senior executive for communication for the American Association of School Administrators (AASA). He was an administrator for the Westside Community Schools in Omaha, Nebraska, and the Jefferson County Public Schools in Colorado. Previously, he was a television and radio broadcaster. He is a member of the National School Public Relations Association, the Public Relations Society of America, and the American Society of Association Executives. For nearly two decades, he served as a member of the National Teacher of the Year Selection Committee, and is a founder of the National Superintendent of the Year program. He served on national advisory boards to commemorate the Bicentennial of the U.S. Constitution and restoration of the Statue of Liberty and Ellis Island. In his native South Dakota, he has been a member of the Boards of the Laura Ingalls Wilder Memorial Society and the Harvey Dunn Society. He received the Distinguished Service Award of the American Association of School Administrators. He was given the President's Award by the National School Public Relations Association. Contact him as follows:

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