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OUR FUTURE: Projections of Work and Life

Helen Harkness, Guest Editor

- **The Future**
 - **The End of Work as We Know It**
 - **Jobs and Careers on the Front Line of the Future**
 - **Silicon Valley and the New Rules of Work**
 - **Training Challenges Facing Education and Training and Career Development in the Future**
 - **Old people are people too, so let's act accordingly**
 - **Crisis of Human Capital in Aerospace: It's All About the STEM**
 - **College for All – Reality or Flawed Myth?**
 - **Our Jobs: The American Workforce and Economy in Crisis**
 - **The Future Has Arrived: The Future is Now the Present**
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OUR FUTURE: Projections of Work and Life

Looking Ahead with the Journal, by **Steven E. Beasley**, Managing Editor4
Introduction to this Issue, by **Helen Harkness, PhD**, Guest Editor5

Chapter 1: The Future, by **Leigh Ellen Key**8

Chapter 2: The End of Work as We Know It, by **Andy Hines**10

Chapter 3: Jobs and Careers on the Front Line of the Future, by **Gary Marx**20

Chapter 4: Silicon Valley and the New Rules of Work, by **Gary A. Bolles**28

Chapter 5: Training Challenges Facing Education and Training
and Career Development in the Future, by **Timothy C. Mack**40

Chapter 6: Old people are people too, so let's act accordingly, by **Aubrey de Grey** 47

Chapter 7: Crisis of Human Capital in Aerospace: It's All About the STEM
by **Deborah Westphal**51

Chapter 8: College for All – Reality or Flawed Myth? by **Helen Harkness**54

Chapter 9: Our Jobs: The American Workforce and Economy in Crisis, by **Ed Gordon**65

Chapter 10: The Future Has Arrived: The Future is Now the Present, by **Helen Harkness**77

Other Information

Guidelines for Authors81

Obtaining Back Issues of the Journal83

Joining the Career Planning Network85

Foreword

Looking Ahead with the Journal

Nine Futurists have contributed articles to this special issue of the Journal, through the leadership and guidance of our Guest Editor **Helen Harkness** of Garland, Texas. Helen is herself a well-known futurist. **Our Future: Projections of Work and Life** gives us a wide view of coming developments affecting ourselves and future generations. We send a sincere thank you to Helen and these thoughtful authors for their contribution of this Journal issue.

Here is what we have planned for future issues of the Journal:

Corporate Career Development, with co-Editors **Rich Feller** of Colorado State University and **Ruth Pankratz**.

Personal Search Engine Optimization, with Guest Editor and our Newsletter Columnist **Susan Joyce** of Marlborough, Massachusetts.

Career Counseling Approaches with Clients Having Asperger's Syndrome, Autism, ADHD, Dyslexia, or Learning Disability, with Guest Editor **Abiola Dipeolu** of the University at Buffalo, The State University of New York.

The Connection between Career and Mental Health, with Guest Editors **Seth Hayden** of Wake Forest University and **Debra Osborn** of Florida State University.

Job Search 6.0 with Guest Editor **Marie Zimenoff** of Fort Collins, Colorado.

Book Reviews 2016, with our Book Reviews Editor **Maggi Kirkbride** of San Diego, California.

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INTRODUCTION TO THIS ISSUE

When approached to select futurists for this publication, *Our Future: Projections of Work and Life*, for the *Career Planning and Adult Development Journal*, my first thought related directly to the Tofflers.

I remember well my introduction to **Alvin Toffler** and future thinking in early 1970. I was rather ineptly trying to keep freshmen awake in their MWF 1:00 pm English class. Giving up on Shakespeare, and trying to be relevant (the cry of the 70's), I dashed out and bought a stack of paperback copies of Toffler's *Future Shock* (after only reading a review). I don't know how it affected my students, but it hit an extremely important life-changing "*aha!*" for me. His definition of "*future shock*" as total disorientation, shattering stress and overwhelming unexpected change parachuting us alone into a chaotic world where Toffler's predictions of 3-5 career changes seemed ludicrous in the early 70's. A college degree was touted as the major magic key! But yet, though a college teacher with many degrees, I knew I could not rear three children on my faculty salary. I could never excel in a first-rate university because of the 15 years I had taken off for time with my young children. This book settled me on my purpose for life!

Future Shock, (1970), sold over 7 million copies – an unbelievable number since it didn't deal with Hollywood, sex, quick-fix motivation or a get-rich-quick formula. However, it left us with a new term, *future shock*, which entered our vocabulary and frankly now describes our current, chaotic world we find ourselves experiencing daily. Millions are in what I call *career shock*, a painful splinter of future shock!

Toffler's, *The Third Wave*, (1980), though extremely analytical and scholarly, became an international bestseller, breaking many records. Toffler again deals with change – it's speed and direction – synthesizing information from highly disparate fields and providing startling ways of viewing our world. In this book, the Toffler's actually predicted that career countless of us are following today. He said that "*life organizers...a cadre of professionals*," would be needed to provide practical assistance for structuring one's life under the high social and technological turmoil and over-choice. He said that we probably need fewer psychotherapists, burrowing mole-like into id and ego, but people to help us pull our daily lives together – provide a framework of order and purpose in our lives. Toffler stressed that people need meaning beyond their own – this is the Holy Grail that my clients seek!

In *Previews and Premises*, Toffler says, "*What we need is a massive effort to re-deploy labor through training, retraining, and still more training...And again, I don't mean for specific mechanical job skills, like keypunching. I mean something we don't do very well: helping people transition to wholly new ways of life.*"

The Tofflers thirty years ago forecast much happening in our current work world. They discussed retraining and retooling the mind instead of moving workers unequipped into retirement. Whether training was done by the private sector, the education system, military, media, with any

or all of the above, they said more was needed than simple occupational skills: New values, attitudes, and lifestyles are essential. It's a cultural jump, not merely a change in job skills. Retraining, according to the Tofflers, is very complicated and expensive but cheaper than throwing employees "into a slag heap and subsidizing permanent retirement."

To summarize what I discuss with my career design clients, remember we must:

- Know what we want: internal & external – see a future image of it
- Ask for it effectively – confident that we will receive it
- Know that we deserve it
- Become first rate at it

This is what this edition of *Career Planning and Adult Development Journal* is all about.

Helen Harkness, PhD, Guest Editor

Introduction to our authors

I asked one of my career clients to share her views on the future. **Leigh Ellen Key** is decades younger than I am and also confirmed as a Futurist by Marcus Buckingham's *Standout*.

Andy Hines, PhD, is Assistant Professor and Program Coordinator for the University of Houston's Graduate Program in Foresight and is also speaking, workshopping, and consulting through his firm Hinesight. His 24 years of professional futurist experience includes a decade's experience working inside first the Kellogg Company and later Dow Chemical, and consulting work with Coates & Jarratt, Inc. and Social Technologies/Innovaro. He is author of four books on the forcing creating countless changes in the workplace. His book with Peter Bishop, *Teaching about the Future*, won first prize in the APF's Most Significant Futures Works awards.

Gary Marx, CAE, APR, is president of the Center for Public Outreach, an organization he founded in 1998, which provides counsel internationally on future-oriented leadership, communication, education, community, and democracy. He is an international keynote speaker, workshop leader, author, and consultant. During his professional career, Marx has combined his knowledge and expertise in education and communication to become an international leader in both. He has been called "*an intellectual entrepreneur, who constantly pursues ideas,*" and "*a deep generalist.*"

Gary A. Bolles, based in the San Francisco Bay area, is co-founder of eParachute, Inc., and creator of Jump to help young people generate ideas for areas of study and work. He lectures regularly on the future of work education. He has served as consulting producer for numerous events for client such as Google, Yahoo, TED, Guggenheim Museum, L'Oreal and the London Business School.

Timothy C. Mack is the former President of the World Future Society (2004–2014) and Executive Editor of World Future Review. His previous experience includes research and analytical work with the John F. Kennedy School of Government at Harvard; the National Academy of Sciences, the U.S. General Accounting Office; and WPP Ltd. (the largest business strategy firm in the world). He is now Managing Principal at AAI Foresight. AAI projects have included: marketing strategy and marketing audits; mission development, planning and execution; competition research; strategic planning; training management in numerous organizations to identify

technological, human resources and legal trends; development of secondary education curriculums in math, history, and the sciences; and extensive market research in the financial services and electric power arenas.

I contacted **Aubrey de Grey** after reading about his presentation on aging at the World Future Society in Canada. Perhaps the basis of my interest was that at my current age (well into my 80's), I was also searching out how to successfully prolong my years. Aubrey de Grey is Chief Science Officer at SNES Research Foundation and works on the development of medical innovations that can postpone all forms of age-related ill-health. His main focus is on rejuvenation, the active repair of the various types of molecular and cellular damage which eventually cause age-related disease and disability. He is chief science officer of SNES Research Foundation, a California-based 501(c)(3) charity that undertakes and funds research. He also is editor-in-chief of Rejuvenation Research, the highest-impact peer-reviewed academic journal focused on postponing aging.

Deborah Westphal is a member of Toffler Associates who combine diverse skills, creativity, and a passion for change to create extraordinary results for their clients. Their consultants are similar in their own ability and commitment to tackle complex problems. They purposely seek out professionals from all walks of life who can bring to bear diverse work, life and educational experiences. Toffler Associates consultants uncover perspectives and connections that result in more comprehensive recommendations, more practical plans, and stronger organizations.

Helen Harkness, PhD, is an entrepreneur, a former public school teacher, college professor, academic dean, futurist, avid researcher and author of four books: *Best Jobs for the Future*, *The Career Chase*, *Don't Stop the Career Clock* and *Capitalizing on Career Chaos*. As founder and president of Career Design Associates, Inc. (CDA), she is a pioneer and teacher focusing on problems related to career/work life. Her unique qualifications include 40 years experience of research and focusing on careers and the workplace. She has the foresight to spot the pressing need for the career related services and the determination to take effective action to accomplish career success for her clients. In 2012 she formed Career Design Foundation (CDF) www.careerdesign-foundation.org, a nonprofit, to provide effective career service for middle school and high school students to develop a career focus. An upcoming publication for teens and parents will be translated into Spanish.

Edward E. Gordon is the author of *Future Jobs: Solving the Employment and Skills Problem* (2013) as well as many other academic and business titles on adult learning and workforce development issues. For 20 years he taught at several Chicago universities including DePaul, Loyola, and Northwestern. He is the founder and president of Imperial Consulting Corporation in Chicago.

Chapter 1

THE FUTURE

by Leigh Ellen Key

Tribalism will not be defined by geography but by an affiliation based on ideas. Ethnicity will play less and less of a role and instead people will affiliate across borders, ethnic groups and economic status to create change through ideas. Idea momentum will be globally shared but actions will be increasingly local. Loyalty will be defined by ideology. The value of safety and security will be redefined as safety through understanding rather than might. *Us and Them* begins to fade as understanding increases. Eventually opportunity will replace fear as a motivator.

Education will become a combination of remote and technological and extremely hands on and experiential. Philosophy and practice will merge and become integral at all levels of education – traditional higher learning and trade education will become equals and this will allow education to become more differentiated – more general and more specific at the same time. Each will carry equal power and weight. The liberal arts and applied trades will at once become more pure and yet more integrated.

Intimacy in relationships, particularly in friendships, partnerships and professional endeavors will become much more important even as technology becomes more widespread. We will be brought together by technology but kept together through intimacy.

Family life will become increasingly diverse. We will return to community-based responsibility for child rearing and development. Birth rates will decrease dramatically in the developing world, and women will become significant thought leaders and political leaders. Power definitions will change as a result. Influence will replace Might, with manipulation rather than physical dominance as the shadow side.

Wealth definition will become more egalitarian, and classes will be defined by their viewpoint rather than socio-economic status.

Life span will increase and health care will become a personalized medicine endeavor. Tailored and targeted procedures and drugs will become the norm as genomic medicine dominates on the one hand and low-tech preventive lifestyle medicine on the other hand. Big Pharma will die. Boutique medicine, genomics, nano-medicine, and coaching will prevail.

In fact, Big Anything will die. Corporations, Infrastructure, Governments. A networked nodal model will take over connecting smaller entities such as cities, small businesses, and local organizations to solve systemic problems. Infrastructure will become dispersed and repetitive rather than big and systemic. These local nodes will connect to facilitate communication rather than transportation. Massive urban infrastructure will slowly be replaced by non-infrastructure dependent technologies and ways of relating.

Religion will become more community-based – less formally organized, and less patriarchal. It will still be important.

Shared ownership will become popular in living and transportation situations. Urban development will become increasingly village-like such that urban neighborhoods and rural villages will have more in common than not. The same technological and governmental systems and best practices will apply to both.

Success will be redefined and a more personal pursuit. Generations will be more distinctive because the pace of change will increase and intergenerational sharing of knowledge and wisdom will become more valuable and valued.

Corporate structures will be more diverse and low-return for-profit models will become popular investment options. Meaning over money will become popular and as the social benefits play out, a more common mainstream investment option, even over philanthropic giving. As such, there will be significantly more funding internationally from private sources rather than public ones.

About the author



Leigh Ellen Key is changing the career paradigm from one of frustration with “finding a job” to enthusiasm and determination in “designing your career.” She is currently launching a business based out of Dallas-Ft. Worth that will directly impact how young adults choose and manage their careers over their lifetime and how universities and other institutions deliver career services. As a non-profit executive, she has designed and managed adult experiential education programs and services at an internationally acclaimed yoga and holistic health educational retreat. These programmatic experiences and trainings directly assisted clients in changing their lifestyles and self-limiting beliefs in order to transform their lives. She also has assisted nonprofit Boards in developing and managing their mission, organization, programs, and fundraising. Before finding this career path, she had extensive deal structuring and marketing, strategic planning, and financial analysis experience in the energy industry.

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Chapter 2

THE END of WORK as WE KNOW IT

by Andy Hines

This article argues that work is going through a transformation. It makes the case by analyzing three key assumptions about the role of work (1) work is central to individual's identity (2) work structures daily life, and (3) work is the primary source of income. Three driving forces are challenging those assumptions -- the rise of automation and machine intelligence, shifts in individual values, and the rise of a new economy -- are described. The conclusion is that challenges to these assumptions are indeed underway and at varying stages of maturity. The implications for career development suggest a dual approach of maintaining a short-term focus on careers and gradually expanding the notion of career development into a more integrated, holistic approach of life planning.

Career advisors are continuously challenged with providing guidance that balances the short-and long-term interests of clients. This special issue focuses on the long-term, and this article explores the long-term future of work, suggesting that transformation change is ahead. My interest in the topic as an educator is that I am concerned that students are being prepared for the past rather than the future. In particular, efforts to make higher education more practical and oriented to providing good jobs may actually be misaligned with the long-term future. This article attempts to make a plausible case for how the future may be different, such that career development can start planning for a transition to this future.

My first project on the future of work was back in 1990 as a researcher for Joseph Coates' Future Work. Rarely has a year passed that I have not had some occasion to engage the topic, including reading several provocative pieces, such as Jeremy Rifkin's *The End of Work*. I became convinced that a goal of our economic system and policy-making of full employment was the exact opposite of what it should be -- namely full unemployment. Reversing the full employment assumption opened up a huge range of creative possibilities for imaging how the future could be different, and exploring for a more preferable future. Nonetheless, to use the scenario planning parlance, until recently it remained a key uncertainty.

Three years ago, the Houston Foresight program had a day long-conference "After Capitalism" which discussed potential organizing principles for a new economic arrangement. The supporting researching suggested that a new economic approach in which jobs were no longer central to its functioning was no longer an uncertainty, but rather a question of timing. It shifted from *if* to *when*. It brings to mind the lesson of scenario pioneer Pierre Wack that a first set of scenarios identifies the uncertainties -- the famous example being the rise of OPEC and the Arab Oil Embargo, and that the second, having become convinced of the inevitability of the uncertainty, becomes a question of focusing on timing.

Thus, this article takes the position that *the end of work as we know it* is no longer an uncertainty, but a question of timing. *As we know it* is saying something different than the end of work, period. It suggests a transformational change in the nature and purpose of work – not that it’s going away completely. It’s transformational because three core assumptions about what work provides are being challenged. Work is central to individual’s identity. *So, what do you do?* is the most common question one receives after giving their name. Work is a significant component of who we are. Work structures daily life. It provides a structure or organizing principle for the day/week, etc. Our schedules are typically organized around our work. Work is the primary source of income. It serves as the primary mechanism by which the economy distributes wealth. These assumptions are being challenged on many fronts, described in the next section.

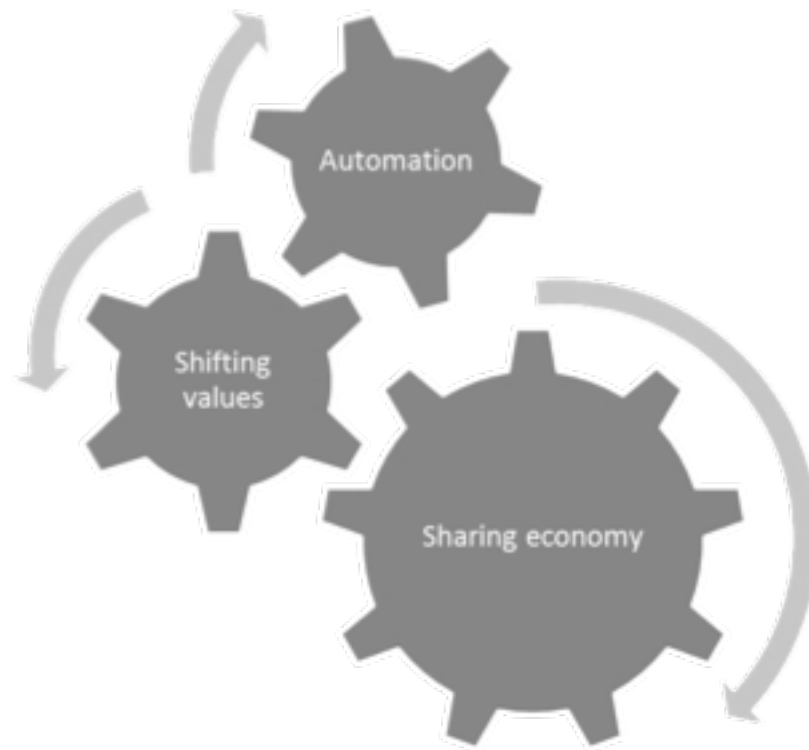


Figure 1. Three forces driving transformation

Forces driving transformation

In teaching aspiring futurists at the University of Houston’s Foresight program, we suggest that when indicators or signals of change are coming from multiples sources, sectors, and directs, we should pay strict attention. Indeed the notion of changes in the nature of work is coming from lots of places. Let’s focus on three big ones. See **Figure 1. Three forces driving transformation.**

Rise of automation and machine intelligence

Volumes have been written about this topic and it is the subject of much debate and discussion today. The mainstream view is aptly summed up in the opening to a Pew Report *AI, Robotics, and the Future of Jobs*: “Experts envision automation and intelligent digital agents permeating vast areas of our work and personal lives by 2025, but they are divided on whether these advances will displace more jobs than they create.”

The group most clearly affected in the present is the middle class. Demand for jobs is bifurcating into those for highly educated workers who excel in abstract tasks (which intelligent machines cannot yet do) at one end, for manual task-intensive jobs — like food services, cleaning and security at the other.

Perhaps the most cogent argument for how job creation could outpace elimination comes from Brynjolfsson and Macafee's *Race Against The Machine* and *The Second Machine Age*. But it won't be easy. They suggest 19 steps for "accelerating organizational innovation and human capital creation to keep pace with technology," ranging from changes in education, encouraging entrepreneurship, infrastructure investments, and policy changes in laws, regulations, and taxes.

A more radical outlook on the potential for automation and machine intelligence comes from futurist Ray Kurzweil's notion of the singularity, which forecasts that machine intelligence will surpass human intelligence within the next few decades. But he also envisions that more jobs will be created than destroyed. I more or less agree with the position that current economic system could be capable of creating enough jobs to keep pace with automation, but it's not the right question --at least for the long term (and I think the authors above might agree with this caveat, as they are talking more about the transition from here to there).

The changes from automation and machine intelligence combined with values shifts and changes in the economy, described below, are decreasing the central importance of jobs as the principal factor of social and economic life. The jobs could be created, but moving into the future, our current conceptions of jobs will have morphed to a degree where it's not the central question that it is today.

I arrived at the position on the changing nature of jobs during research that I carried out with a team of 20 students, faculty, and alum of the Houston Foresight Program took on exploring *the future of student needs relating to higher education*. Six teams looking at various aspects of student life worked independently on their forecast and came to share their results. In all cases, the impact of ICT/AI/Big Data/ predictive analytics/sensors/ automation was a huge driver. The teams challenged themselves, but try as they might, simply couldn't come up with a plausible alternative barring economic collapse.

Another concept, the blurring of student life, is depicted in **Figure 2. Blurring of student life.**

For our purposes here, let's say that the capabilities for automation are going to be quite dramatic and will infiltrate into knowledge work. As the context of the future changes, racing against the machines will be seen as the wrong game to play.

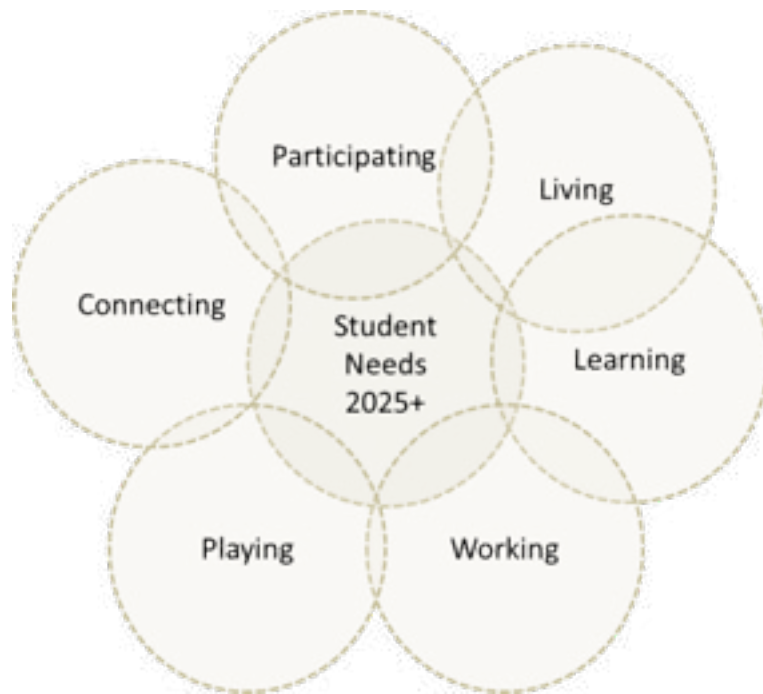


Figure 2. Blurring of student life

Shifts in individual values

Another stream of research I’ve been pursuing over the last couple of decades is shifts in individual values. The basic argument is that there is a long-term shift in values toward postmodern and integral values ranging from 25-30 per cent of people in affluent countries today that will increasingly mainstream over the next generation. **Figure 3** summarizes the **Four Types of Values**.

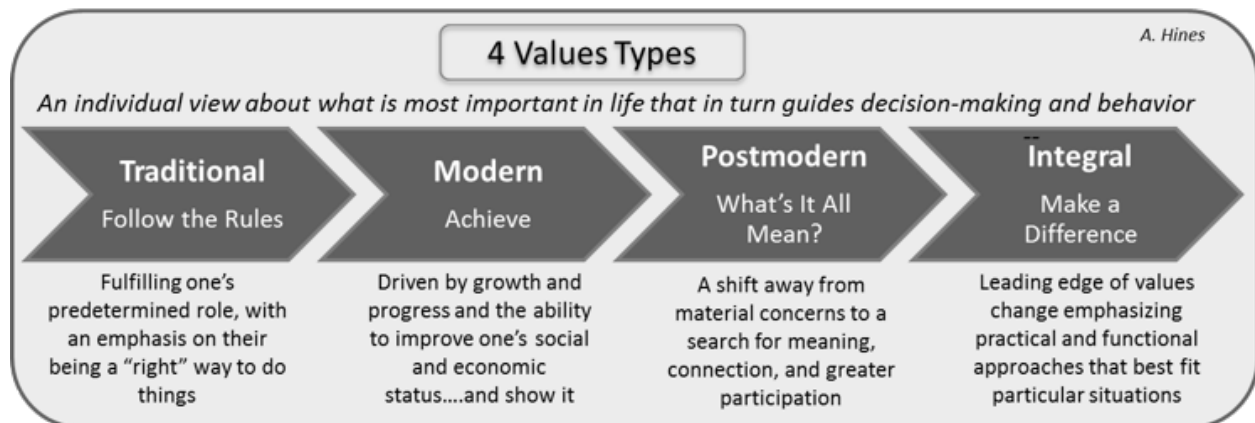


Figure 3. The Four Types of Values.

As people with postmodern and integral values become the leaders and the mainstream of the future, their priorities will create a different landscape that will in turn shape views on the question of jobs. The following changes are relevant to views on work and jobs. Perhaps foremost is that it indicates a changing relationship between consumers and consumption. At its simplest, the postmoderns/integrals are questioning whether they really need to own something or can they just access it when they need it. In values terms, the modern values holder wants to possess goods to demonstrate their belonging and status. The postmoderns, and especially the integrals, are less concerned with their status – having felt they have achieved it, and thus less concerned with collecting goods and possessions. Note, I’m saying *less* concerned, not unconcerned. So the postmoderns/integrals look at sharing as an interesting option – “do I really need to own that?” “Do I need to have my music physically on my device, or am I willing to pay for a subscription and have it streamed?” Perhaps the prototype of sharing is ZipCar, built on the idea in the urban areas, where parking is scarce and expensive, possession is actually a pain!

This disenchantment with consumerism, along with the relative affluence of postmoderns/integrals, are leading them to be increasingly willing to trade off money and material goods for time to enjoy experiences and invest in relationships. This is not necessarily extreme, e.g., recycling underwear—they appreciate the need for goods and services—but rather a sense that the consumption relationship needs to be reoriented such that consumption is not the end, but a means to various ends.

A second shift is the desire for greater *connection*. Life feels out of control. Many have the desire to get reconnected with what is really important in their life. The busy-ness of daily life and the need to *keep up* has reached a point where people feel they’ve lost touch with their priorities. Thus they are seeking to scale back, focus, and enjoy those activities they are involved—and not feeling like they are always rushing to the next thing. They want to spend more time with family and friends, get more involved in their community, know who their neighbors are, and who they do business with—in general they want to become more re-engaged with their daily lives.

A third shift is toward self-expression. Disillusionment with modern life and consumerism has led individuals to turn inward and reassess the meaning of their lives. There is a sense of emptiness from adding yet another material possession—and the data shows that having more money and goods—beyond poverty level—adds nothing to one’s happiness. Thus, there is a search for deeper purpose in one’s life. This pursuit is seen as a worthy one that has intrinsic value, and people want to tell the world about it.

The shift is from a passive to an active orientation; they want to express their views, their values, their purpose, and their creativity. Thus, the flourishing of social media—an ideal conduit for self-expression. And the emergence of *identity* products that tell the world who they are and what they’re about. They buy hybrid vehicles to show their support for the environment. They buy fair trade coffee to show their support for that cause. Self-expression is taking many forms – it’s not showing off, but sharing, in hopes of influencing, because they believe in what they are doing.

Finally, this rethinking of priorities could be summed up as *enoughness*. Think of enoughness as voluntary simplicity with a bit of an edge to it. Whereas voluntary simplicity suggested a benevolent, altruistic adoption of a simpler lifestyle, enoughness gets to a similar end point, but only partly from choice, as necessity in the form of the Great Recession is mixed into the equation.

The recession has forced people to confront their consumption patterns.

People are accepting and even embracing a need limits—*maybe growth can't continue forever?* There is a sense of *having enough* or being fed up with the status quo. It goes beyond material goods to the real precious resource of the next decade: time! People feel their lives are getting out of control, and they want to take back that control and set limits. The recession has provided the *perfect* opportunity to experiment with doing with less—stuff and activities. It may turn out in hindsight, that this is the most impactful of the five thematic changes in the consumer landscape.

These values shifts suggest a re-prioritization about what is really important in life. They suggest an opening for reconsidering the central importance of jobs, and a desire for a more balanced life. Of course, this will happen as taking a voluntary vow of poverty, but should the nature of the economy change, such that having a job is less possible or important, these value shifts are in perfect alignment.

The economy is transforming

There is a growing literature describing ideas of what the next economy is going to look like. Underneath these attempts to describe what's next is an assumption that the current economic system, which served us well in the past, is no longer working so well in the current and emerging context.



Concepts for the next economy

I have identified roughly three-dozen names or *concepts for the next economy* (some of the **main ones in the figure above**). The common thread is the rise of *sharing* as a central principle.

New models such as open source, peer-to-peer (Lending Club and Prosper, the two largest P2P lenders in the US, issued \$2.4 billion in loans in 2013) and crowdsourcing are emerging with Zipcar, Kickstarter, Uber, and Air BNB the poster children that hint at what's coming.

The sharing concept is extending into how organizations are operating. Frederic Laloux's *Reinventing Organizations* profiles a dozen organizations embracing integral values as the foundation of how they run their organizations. A striking characteristic of these organizations is that they operate using self-management in which peers share responsibility without the need for hierarchy.

In addition to sharing, sustainability and the triple bottom line are central as well. The key shift is away from a single-minded focus on economic growth to a more balanced approach that considers social and environmental well-being as equally important. Less emphasis on economic growth suggests less emphasis on jobs.

An important note on this emerging economy is that less emphasis on growth does not necessarily suggest rising scarcity. While certainly there are resource issues to be addressed, the overall picture suggests a growing ability to produce wealth –albeit with an accompanying need to produce jobs. The notion of abundance is aptly captured by former *Wired* editor Chris Anderson in a post *The Tragically Neglected Economics of Abundance* and more recently by Peter Diamandis' *Abundance*. The challenge is not one of creating wealth, but distributing it – without relying on jobs to do it.

Implications for work

Let's return to the three foundational assumptions about work and see how they fare in the context described above.

Challenges to work is central to individual's identity

The assumption that jobs will continue to be the central focus of one's identity is already being challenged. Work does not become unimportant, but assumes a more equal role among other components of one's identity. The values shifts in particular suggest that individuals, in rethinking priorities, are already wrestling with the notion of what's really important in their life. The postmoderns/integrals are in the process of attaching less importance to jobs for their sense of self. The declining importance of jobs to identity is a relative one. In exploring student needs, we identified a *blurring* trend. We divided student daily life into six aspects: living, learning, working, playing, connecting, and participating [in civic life]. We found that the boundaries between all these aspects were blurring. It is increasingly difficult to pin down whether one is at play or working or learning. For instance, during a class we played a MOOG game exploring options for improving R&D in the future. We were learning (being in class), playing (having a lot of fun), working (client was using our input), and connecting (we met dozens of other players among the thousands playing). In the future, we are increasingly going to experience these moments where it's hard to classify or explain what we are doing. This is going to challenge traditional approaches to accounting for time – should one *punch in* while playing an online game that may provide ideas for an innovation project at work. There are less clear distinctions between our activities – the days of going to work and focusing 100 per cent on it are already gone for many. One might argue that the talk about work-life balance misses the point as it assumes separation between work and non-work is possible. Rather than separating them, the postmoderns/integrals

in particular will seek to integrate them into a more holistic approach to their daily life.

Challenge to work structures daily life

The assumption that work will continue to structure daily life is already blowing up. As work shifts out of the workplace to the home, coffee shops, and virtual spaces, our daily routines have become less stable. A common, and perhaps conservative estimate is that 40 per cent of the workforce will be contingent, that is part-timers, freelancers, temporaries. The free agent model is emerging for workers with skills in demand, in which they move from project to project rather than making a long-term commitment to a single organization. As the traditional eight-hour workday at the office disappears, our schedules have become less certain. This *death of the schedule* trend is being driven by technological advances that are driving a shift in our orientation to time and our lives. The coordinating and logistic capabilities are moving us to a just-in-time world that operates around the globe and around-the-clock. Traditional schedules are increasingly crumbling. In a previous piece for this journal, I explored *retirement as an obsolete concept*. The key argument was that Boomers at or approaching retirement age are thinking about what to do next -- and the answer is not *retiring*. They are not following the traditional lifestage schedule of school->work & family>retirement.

Challenges to work is the primary source of income

The assumption that work will continue to be the primary source of income is perhaps the most robust of the three assumptions being explored. While there are signs that this assumption is weakening, it will likely take the longest to be reversed. The exponential growth of computing and communications power along with advanced in AI, predictive analytics, and other information technologies promise to increase the productive capacity of the economy while likely reducing the numbers of people and jobs required to do it. Within the paradigm of the current economy, committed to economic growth and full employment, this will be seen as bad news. Within a new economic paradigm, this will be seen as an opportunity to shift wealth distribution away from jobs. A new organizing principle for distributed wealth has not yet emerged. Ideas about a new economic order have yet to adequately address the key need of how to decouple wealth distribution and jobs. Put simply, the issue is how to distribute wealth without jobs. New models are emerging in how people get paid already, such as the move to project-based work. And the *gift economy* concept relies on people to voluntarily pay for goods and services that they feel have provided value for them. Several years ago, the band Radiohead provided an early indicator of this trend by releasing an album for download and asking those who did so to send money if they felt it was valuable to them, netting an average of \$6 per download. A more recent indicator is that the Swiss are considering a referendum on providing a guaranteed basic income of about US\$2,800 per month. Idea of paying citizens a yearly stipend is gaining support in Switzerland. Supporters suggest that a basic income is a better way to distribute wealth than jobs. For instance, in France there are three million people who don't have a job, and five million who work too much.

Implications for career development

The principle of using a balanced approach to client's short- and long-term needs remains a reliable strategy. The changes suggested here are still in their stages, thus it would be foolish to suggest that clients quit their jobs or stop planning for a future career.

That said, there is some advice to be provided to clients to prepare them for this emerging future.

Perhaps the single biggest implication is to expand the notion of career planning to life planning. The notion of career may come to be seen as limiting. Rather than preparing for a job or career, help clients prepare for life, of which work is one piece. In the transition to the end of work, clients are likely to experience more frequent and extended periods where they are out of work. A balanced approach to life planning could provide opportunities for these times to be useful and fulfilling. If they are financially prepared for these times, they may use them to pursue other interests or develop skills in new areas.

There will continue to be a need to help clients learn and prepare for *work* in the sense that we will still do activities traditionally thought of as work, but those activities will be done as a source of fulfillment or contribution to the greater good, rather than the source of a paycheck. Career advisors should be monitor the pace of developments to the *end of work*. The most challenging development suggested here -- shifting the basis of the economy -- merits special scrutiny. A new economic order could use automation as the lever to shift wealth distribution from jobs, thus accelerating the move to the end of work. As long as the existing economic order lasts, it is likely policymakers will desperately search for ways to create jobs, ultimately a losing battle, and a lost opportunity. In closing, it's critical to remember that the end of work as we know it does not mean that people will run out of useful things to do, but rather that they will not require jobs in order to be useful.

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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

Planning and Adult Development Journal first appeared in a 2014 issue of the World Future Society's The Futurist Online during 2014. Sources of Items in this Article: U.S. Census Bureau, Bureau of Labor Statistics, Environmental Protection Agency; The Futurist/World Future Society; GreenBiz.com, Nov. 8, 2008; The Great Reset by Richard Florida, Harper, 2011; "Report Card on American Infrastructure," American Society of Civil Engineers; and *Twenty-One Trends for the 21st Century*, by Gary Marx.

About the Author



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Chapter 4

SILICON VALLEY and the NEW RULES of WORK

by Gary A. Bolles

People in hi-tech companies are re-inventing how they work. Soon we'll all be working in similar ways. Not many young people are given the opportunity to become career counselors in their early twenties, so it's an understatement to say that I considered myself lucky to be trained in the family business, by the author of *What Color Is Your Parachute?* Back then, in the late 70's, I also was fortunate to know Dick Knowdell as he was kicking off the Career Planning and Adult Development Network, mimeographing copies (back when there were mimeographs) and stuffing envelopes (back when there were envelopes to stuff). After a few years of counseling people in their 40's and 50's who had spent decades in what they thought of as dead-end jobs, it's hard to avoid one takeaway: Do what you love.

What I found I loved was hi-tech. So I moved to Silicon Valley in the early 80's, and from that point worked in a range of roles at companies big and small, including training manager, event producer, head of marketing, chief operating officer, serial (and sometimes) parallel entrepreneur, and strategy consultant. I've had the privilege of collaborating with talented clients at a variety of well-known companies, including Google, Cisco, HP, Yahoo, and Singularity University. And I've learned that Silicon Valley organizations - especially the relatively new breed of Internet companies - are the canaries in the coal mine for new ways to work.

Why Does Hi-Tech Matter?

"*Silicon Valley*" isn't limited to the San Francisco Bay Area: Hi-tech companies are found around the world. And it's not limited to the producers of software and hardware: According to Vinnie Mirchandani, author of *The New Technology Elite*, every company today is a technology company. Silicon Valley businesses are inventing new rules because the people in them are rapidly changing how they work. And it's not just the employees of big companies: Startups, independent workers, and small tech businesses all are following the same rules. And many of those rules are fueled by speed. High-tech businesses have unique challenges. Most start extremely small, then expand at such breakneck speed that the management of that rapid growth becomes its own challenge. As they *scale*, these companies need to continually define many of the things that mature organizations often take for granted, like hiring processes, management policies, and operational disciplines. What kind of management environment is needed to allow a company to double or triple in size in a single year, yet still have any hope of making happy customers? What allows these companies to create and maintain cultures that prize speed, agility, quick decision-making and rapid execution? Many companies have separately devised their own rules. But because of the constant flow of workers between these companies, increasing transparency from posts on public Web sites, and the proliferation of books like Eric Ries' *The Lean Startup* and *How*

Google Works by Eric Schmidt and Jonathan Rosenberg, Valley companies are increasingly using similar approaches to encouraging consistent worker behavior.

It's easy to dismiss descriptions of these fundamental changes in the nature of work as Silicon Valley techno-babble. But I've seen wave after wave of tech-driven disruptive change over the past three decades: For example, after I configured a corporate PC-based email system in 1985, it became clear to me that every single person would soon have access to email, changing the way we work and live. And I believe that many of the ways we will work in the future are being defined today. Job-seekers, career changers, and career counselors and coaches all need to understand these New Rules of Work, and decide what they can learn from these new approaches - even if they don't think they'll ever actually work in a hi-tech company.

Rule #1: Know What You Love to Know

If you had the pleasure of knowing Sidney Fine, the “father of the *Dictionary of Occupational Titles*,” you're one of the lucky ones. Sidney wasn't just a brilliant researcher and theorizer: He was also one of the sweetest people to walk the planet. And he offered a fundamental insight: As we all know from our career counseling history, Sidney defined three categories of skills: Special Knowledges (or Work Content); Transferable (or Functional) Skills, and Self-Management skills (often thought of as Traits).

As preparation for work in a variety of fields, our schools and colleges are designed primarily to develop our Special Knowledges, with the assumption that much of the information we harvest will still be useful to us later on. Get your degree, and the big chunk of learning in your life will be over. And, in the past, this was somewhat true: Many traditional organizations prized Special Knowledges over the other two kinds of skills. For many professions, the more information we had crammed into our heads, the more valuable we were seen by employers in our field.

But for many roles in Silicon Valley companies, the emphasis is shifting from what we already know, to what we can know, in a short period of time. In a Valley company, you are judged less on the knowledge you have at any particular moment, than on your ability to go find (or create) an answer quickly.

In Silicon Valley companies, the emphasis is shifting from what we already know, to what we can know. How does this technology-enabled world change what we need to know? Take something as seemingly mundane as car repair. In the past, a mechanic would need to learn the layouts of a wide range of engines, and understand how to dismantle and repair every one of them. But the mechanic of the future will wear something very much like Google Glass - a computer melded into a pair of goggles - and that computer will instantly recognize the engine being repaired, and walk the mechanic through repair steps, making suggestions if an error is made. Of course, our antiquated, industrial-age educational systems are still designed to stuff information into our heads. But just as kids today are allowed to use calculators in math class, tomorrow they'll be allowed to use their Internet-connected cellphones to answer rote questions on tests. In a world where so much information can be sourced online, then, what's the role of Special Knowledges? There are two core attributes: To focus our attention, and to provide an anchor for the core part of our work at any given point.

Focus Our Attention: The first underlying importance of special knowledges is the set of topics that fascinate us. As new specialties arrive with changing technologies and work environments, the more aware we are of the subjects that fascinate us, the more pro-active we can be to find and create work opportunities that allow us to continue to pursue the topics we're passionate about. That relentless hunger not also increases the likelihood that we'll want to learn more about a field, it makes it far more certain that we will be able to learn about it more quickly than if we could care less about a subject. And Silicon Valley companies want people who are so passionate, they believe they can change the world. *"Pursue something so important that even if you fail, the world is better off with you having tried,"* says Tim O'Reilly, founder of O'Reilly Media, one of the most influential Silicon Valley publishers. Having one or more areas in which we're *deep* also serves to show that we're committed to mastering something, which demonstrates to an employer that we can indeed focus. In his book *Outliers*, Malcolm Gladwell famously suggests that 10,000 hours of *"deliberate practice"* in a subject is generally required for mastery. But it turns out that not only is such a time commitment not necessarily needed (or guaranteed), the increasing amount of information and the number of tools provided by technology has the potential to shorten the amount of time needed to achieve depth in many fields. *"Pursue something so important that even if you fail, the world is better off with you having tried."* - Tim O'Reilly, O'Reilly Media

Provide an Anchor for Our Current Work: We tend to be fascinated by a core area of interest that serves as an *anchor* for the work we're currently doing. Silicon Valley workers tend to be deeply knowledgeable in one or more areas, but generalists in many other areas. Tim Brown, the co-CEO of Silicon Valley design firm IDEO, calls these *"T Skills"* or *"T shaped people"* - those who are both deep (in special knowledge of a particular field) and broad (with the curiosity and learning capacity of a generalist), such as an accountant who understands sales business processes, or an IT specialist who knows the broad range of customer relationship activities.

T Skills

This kind of *"depth and breadth"* allows workers to maintain their depth of expertise in a specific area, while gaining a greater understanding of how their area of knowledge intersects with others. These *intersections*--such as a deep knowledge of social media, paired with a general understanding of, say, the developmental processes of young people--will increasingly provide new opportunity for workers. One exceptional example of T skills in action is Google's policy of *"20 per cent time."* Most employees are encouraged to find a *"passion project"* they can spend up to a day a week on - either an existing project or product, or a new initiative that fascinates them. This allows workers to continually find something outside their day job (a field in which we'll assume they're *deep*), to they can pursue a new interest (possibly outside their current field, or *broad*). This practice not only brings fresh ideas: It allows workers to *self-optimize* - finding the best ways possible to make great products and happy customers, rather than requiring a manager to tell them what work they should be doing. And, of course, it keeps ideas (and employees) inside the company that might have gone outside the organization to create a startup.

Rule #2: Know What You Love to Do

"You've got to figure out something you really love to do," says Dean Kamen, creator of inventions such as the Segway. *"And you've got to get good enough at something you love to do that*

you do it so well, that people will pay you to do it.” If Silicon Valley companies aren’t necessarily requiring workers to be deeply knowledgeable in an existing field, there must be greater emphasis on other skills - and in fact, for many roles, Silicon Valley companies value transferable and self-management skills over traditional credentials.

As Dick Bolles so accurately says, traditional employers try to predict future employee success by looking at their work histories - essentially trying to read the tea leaves of past activity. But as we all know, a resume is simply a piece of paper (or, today, a bundle of bits), and what really matters is what a person can accomplish. So hi-tech companies function as meritocracies: What matters is your ability to rapidly demonstrate what you can do. But an increased focus on self-management and transferable skills doesn’t mean you shouldn’t immerse yourself in a field and work to a level of mastery: Far from it. It’s critical to have one or more areas that interest you so much, you’re passionate about learning the most you possibly can. (This also demonstrates that you have the ability to focus and to dive deeply into a subject.)

This increased focus on transferable and self-management skills is good news for career changers, since companies are far more likely to consider people with non-traditional backgrounds. But it requires workers to be deeply knowledgeable about their own abilities, to seek out the kinds of working situations where they can be productive. Think of it this way: The needs of people are constantly changing, as are the needs of the organization. If people self-optimize, they will be continually developing new skills, and continually focusing on new projects that contribute to the company. Conceptually, it looks something like this: By having the current workforce of the company (1) focus on new things needed by the organization, existing employees not only reduce the need for future hires (C), they keep their skills current - and keep their own job satisfaction high.

Rule #3: Know Your Own Values - and the Organization’s

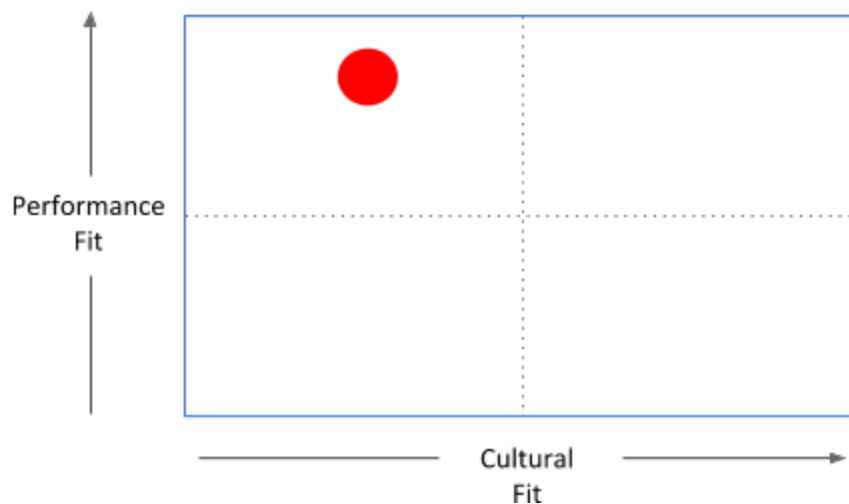
If values are beliefs put into action, then many Silicon Valley businesses have codified their beliefs, and told the world what they value - so that people with similar values will *self-select* by applying to work at companies they feel are a match. For the most part these aren’t the traditional top-down, command-and-control HR policies of traditional companies. In most cases, these New Rules are suggested by founders and honed by employees.

New Rules are often arrived at by first being put into practice, and then iterated repeatedly. (Each new practice may not even be written down, or enforced in a traditional manner: As Bill Murray says in *Ghostbusters*, “*Actually, it’s more of a guideline than a rule.*”) But that doesn’t mean their cultural guidelines are hidden: An increasing number of hi-tech companies actually post information about their cultures online, publicly, for all to see. Netflix in 2009 published a ***Culture Book*** presentation, which has been viewed over nine million times on SlideShare. LinkedIn offers its “*cultural tenets*” online. Hubspot, a popular developer of marketing and sales software, calls its Culture Code “*...the operating system that powers our organization.*” Valve Software, publisher of popular video games on the Steam platform, provides perhaps the most complete description of any company’s cultural guidelines, posting their entire HR manual online. Valve’s ***Handbook for New Employees*** is a case study in transparency, describing what it takes to be successful at the organization. Though each company’s specific set of values is unique, you’ll

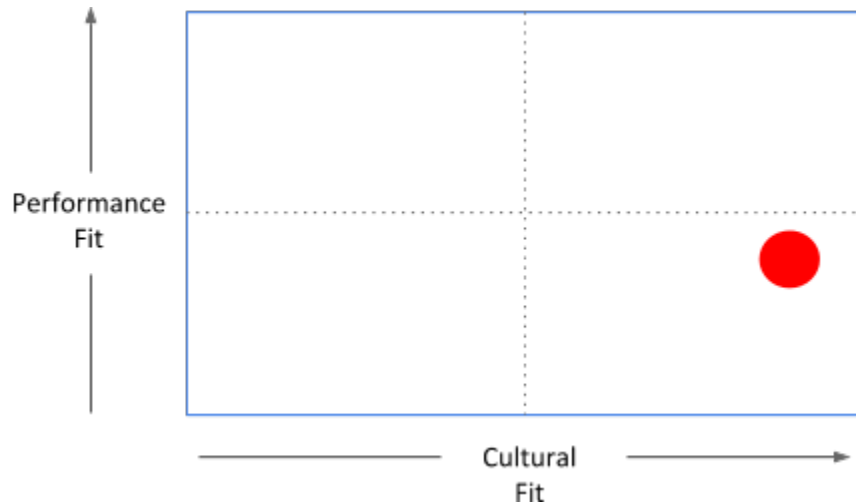
see a variety of recurring traits. LinkedIn’s tenets are “Transformation, Integrity, Collaboration, Humor, and Results.” The “behaviors” list of Netflix includes “Judgment, Communication, Impact, Curiosity, Innovation, Courage, Passion, Honesty, and Selflessness.” Hubspot’s Culture Code lists characteristics like “Transparent, Autonomy, and Mastery.” These companies have determined their overall purpose, established a set of goals (which they iterate relentlessly), and explicitly defined their values - and so should any worker. If a job changer doesn’t do this homework, they can’t possibly know if an organization is a match for them. Of course, not every hi-tech company has the same rules, or even the same culture. How can someone learn about the ways that different hi-tech organizations work? One of the best resources is GlassDoor.com, which posts the musings of former and current employees from many companies. Like all social media, it’s important to take any individual post with a large grain of kosher salt. But patterns will start to emerge from a series of posts on any particular organization, and that should give a good feel about how a variety of people view the company’s culture.

Cultural Fit Vs. Performance Fit

Though there are many dimensions to view the priorities of hiring strategists in organizations, two of the most important aspects are “performance fit” and “cultural fit.” The traditional hiring approach was biased toward performance, with a strong focus on direct experience in exactly the activities to be performed in the new job. There was typically far less focus on trying to determine if someone matched the company’s culture: If a worker had performed similar work in the past, they were considered a good fit.



But in a fast-paced environment where everything changes rapidly - customer needs, technology, products, competition - it’s often impossible to find direct experience of any length. How many candidates, for example, could possibly have ten years’ experience guiding social media marketing campaigns to millennials? If the traditional anchor of experience is taken away, hiring practices instead need to focus more on cultural fit - and that means a combination of transferable and self-management skills. As hi-tech companies find it more and more difficult to locate people to hire for critical roles, they inevitably have to shift toward hiring people for a general profile, rather than for deep knowledge or long-time experience in a specific role.



Of course, no company would completely ignore a worker’s Special Knowledges, and in fact for many fields there are still large bodies of knowledge that are critical for many jobs. But hiring for cultural fit, as well as performance, means that companies have to clearly define what their culture is, and isn’t - and what happens if you don’t hire appropriately. (For example, Netflix defines people who are high performance fit, but low cultural fit, as “brilliant jerks.”) I first learned about the distinction between performance and culture in 1995 from Pat Lencioni, author of *Five Temptations of a CEO* and *Five Dysfunctions of a Team*, when he was the head of organizational development for Sybase, a Silicon Valley database software company. In the past, when jobs lasted longer, and training requirements changed more slowly, employers were more able to find the skills and experience they needed, so the traditional hiring mentality was biased toward performance. This typically put career-changers at a disadvantage, since they had to build persuasive arguments focused on their transferable skills, rather than their deep knowledge of the new job. Even back in the mid-90’s, Pat argued that companies spent far too little time talking with new hires for cultural fit, and so ended up with the culture they got - rather than the culture they planned for. This shift is especially valuable for career changers: If a worker has done their homework, and they know the kind of corporate culture they can thrive in, they’re much more likely to get hired there.

Rule #4: Know Your Tribe

This shift toward an increased focus on cultural fit means that Silicon Valley companies have to clearly define the specific kinds of people they want in the organization. By continually focusing on the kinds of employees they want to have, Silicon Valley companies ensure that they’re hiring workers who will be compatible with each other.

In the same way, the need for a worker to know the kinds of people they most enjoy being with takes on a greater meaning in a hi-tech company. Having co-workers who are all passionate about their work means that workers are around each other for long periods of time. If the people environment isn’t a match, workers are far more likely to be dissatisfied with their jobs.

In the Valley, people matter for another important reason. Before the Internet, your network was only as good as your memory or your index-card Rolodex. Leveraging *bridge people*, as Dick Bolles calls them, to find out about fields, organizations, and people depended on how many people you could remember, and what you remembered about them and their contacts. People

who marked off the charts for “*Extrovert*” in the Myers-Briggs Type Indicator, or for “*Social*” in the Strong-Campbell Interest Inventory, were usually the most successful networkers: Everyone else had to struggle along as best they could. But today, far more information is available on sites like LinkedIn and Facebook than any single person could ever have maintained, and the connections between those you know and those you’d like to know are usually visible at the click of a mouse.

That’s also true for employers who are looking for workers. While Silicon Valley companies still use recruiters, they’re increasingly using their current employees to find future employees. A raft of hi-tech companies provide software that other companies can use to encourage and compensate employees for recommending new hires. If a seeker wants to optimize their chances of being recommended for a job, the people they know are more important in their work than ever before.

Rule #5: Take Responsibility Like an Entrepreneur

The Silicon Valley mythos encourages people to start companies. But though everyone can learn valuable lessons from being an entrepreneur, starting a full-blown company isn’t for everyone. What everyone can benefit from is thinking and acting like an entrepreneur, even in a large organization (which some call “intrapreneuring”). So what do entrepreneurs do?

They take calculated risks. It’s easy to think that entrepreneurs simply are risk junkies, looking for every opportunity to generate an adrenaline rush by pushing things to the edge. But the best entrepreneurs actually take calculated risks, weighing options and following the course they believe is the most likely to bring success. They also take a lot of smaller risks, learning and adjusting at each step. For example, rather than writing full business plans, startup incubators such as Y Combinator and 500 Startups encourage entrepreneurs to start off with a hypothesis about what customers need, then develop the most minimal product possible to test out that hypothesis. Workers need to think of the same kinds of decisions in their own careers: If they’re thinking about doing something new, how can they take the smallest risk possible, quickly, to determine if it’s the right path?

They act proactively, rather than reactively. People who think in an entrepreneurial way will do things in advance of a problem - and gather input on an ongoing basis. They try to move proactively, before problems grow. For example, Netflix’s *Culture Manual* states: “*You should periodically ask your manager: ‘If I told you I were leaving, how hard would you work to change my mind?’*” If the answer is, “*Not much,*” then a worker may not be working in the right job, or the right company. Shouldn’t everyone be asking this question on a regular basis - of their managers or their clients?

They inspire, rather than deliver orders. Because humans aren’t robots, they’re often messy: Messy in work habits, messy in communication, and messy in group dynamics. To counter all of that human-generated messiness, traditional corporations try to apply hierarchical order: We call this Management. But the very concept of management assumes that some people in the organization know what should be done - and others don’t, so they have to be told. So while Silicon Valley companies often have managers, they do much of their work by inspiring people to solve

problems, and by removing roadblocks so people can do their jobs, rather than directing every step an employee should take. “If you want to build a ship, don't drum up the men to gather wood, divide the work and give orders,” said author Antoine de Saint-Exupéry. “Instead, teach them to yearn for the vast and endless sea.”

Some hi-tech companies take this avoidance of traditional management infrastructure to a radical degree. At Valve Software, there are no managers, and no job titles. Instead, employees collectively and continually work together to determine what provides value to customers and to the organization. Some employees serve in coordinating roles, but they aren't called managers, so they don't wield what would traditionally be called *positional power*. And roles change as projects change, so employees continually have the opportunity to do new kinds of work over time. At Valve Software, there are no managers, and no job titles.

Other companies let employees make decisions that were once handled by personnel policies. For example, a growing list of hi-tech companies, including Twitter and Evernote, not only allow employees to determine their own vacation schedule - they also determine how much vacation they want to take. This removes the often-painful process of allocating a certain number of weeks each year for time off - and then effectively taking that time away by encouraging people to work so hard, it becomes a cultural no-no to walk away from the job for any period of time.

Theoretically, giving employees this kind of freedom should mean some people would simply never work. But that would mean the company had hired people who would do that sort of thing - which would mean a fundamental failure to establish the right culture in the first place. If you hire for cultural fit, people will be far less likely to do something counter to the organization's culture.

They iterate and optimize, rather than plan and execute. In an earlier time, even hi-tech companies had long product development cycles: From initial idea to shipping product might take years. But today's startups avoid extensive plans followed by drawn-out project execution periods. Instead, they rapidly prototype a product or service, quickly get customer feedback, then *optimize* based on that feedback. An early slogan of Microsoft was "*Shipping is a feature*" --that is, getting a product out the door was itself an important deliverable. Today, Silicon Valley workers avoid trying to initially perfect a product or service: They iterate relentlessly, and perpetually.

This widespread lack of explicit structure has its downside for some. If nobody is ordering people what to do on a daily basis, workers have to figure out for themselves what the “right” path is. The loose guidelines of a hi-tech company can create a highly ambiguous work environment, which can be stressful for some people. But that simply creates another characteristic for companies to recruit for. "We look for people who are comfortable with ambiguity, because we're a chaotic and messy environment," says Laszlo Bock, Google's SVP of People Operations, and author of *Work Rules!*, an upcoming book on the company's HR practices.

You Might Be Working Full Time, But You Might Not Have a Full Time Job.

Because the *lifetime employment* contract between most employers and workers is effectively gone, upper management of many companies no longer feel the obligation to nurture employees

for their entire working lives. In fact, even Silicon Valley companies do their best to only hire people when they're in dire need, and use contract workers wherever possible.

About 17.7 million workers are non-permanent - and 7.5 million of those workers wished they were working full time. Even higher education isn't immune from this trend: Fully 70 per cent of instructors in America's two- and four-year colleges are *adjunct faculty*--which means part-time teachers who don't qualify for tenure. Back in 2000, author Dan Pink famously called this a Free Agent Nation. Today, some call it a gig economy.

The good news is that there are far more entry points into a range of fields of work than ever before. It used to take years of training to become a journalist; today, anyone can start their own blog, and have the potential to find an audience. Driving for Lyft or doing contract work on Odesk allows even young people to get early work experience with virtually no initial training, and to start building a reputation. Working several part-time jobs allows young people to sample a variety of work to see where their passions are strongest.

The challenge for independent workers is that a gig economy provides little stability or guarantee of future employment. It also means that employers are often in the driver's seat, able to command the lowest possible pay for any given work. The most challenging example is TaskRabbit, which allows independent contractors to bid for the lowest possible cost for an activity, such as picking up someone's prescription at a drugstore - which could lead to a TaskRabbit Economy.

As companies provide compensation for just the skills they need - and no more than that - workers will inevitably make less money, unless they cultivate rare skills at the higher end of the compensation range. Working on a contract basis for minimal-training tasks like driving a car can also give a young person the illusion that they're *mastering* a job, rather than receiving the in-depth training they need to become really good at it.

For those who like flexibility, and who can adapt to lower pay, it's a land of opportunity. For those who need better pay and stability, it increases the need for a worker to be as entrepreneurial as possible, and to work hard at creating job opportunities that use their best-loved - and most-developed - skills.

Rule 6: The Work Environment Is a Life Environment

Lavish employee cafeterias. Onsite nurseries. Dry-cleaning services. Nap zones. Take-home dinners. Housekeeping services. To attract employees in a competitive hiring environment, the famously-generous employee benefits of companies like Facebook and Google have spawned an industry-wide competition to provide the best working conditions. Knowing the conditions under which a worker does their best work has always been an important aspect of career self-knowledge. But because Silicon Valley companies use data to determine the kinds of perquisites they believe will make people the most productive and happy, hi-tech businesses are providing increasingly-better working conditions. But there are two key tradeoffs: Seemingly-unlimited perks can create spoiled workers who become heavily reliant on their lattes and yoga classes. And workers will inevitably spend an increasing amount of their lives in the work environment - which is one of the intended effects of providing great working conditions in the first place.

In this perk-laden world, workers still need to be aware of the working conditions that make them the most happy and productive. But in hi-tech companies that iterate relentlessly based on the data they gather, employees will need to ask for improved working conditions less often. So long as they work at profitable companies, improved working conditions will simply happen - because it's proven to contribute to profitability.

Rule 7: Geography Doesn't Matter. Except When It Does.

Technology enables an increasing percentage of work activities to be performed from anywhere. For example, Google employees rarely engage in conference calls: Instead, they use the company's Web-based Hangout software to hold video-conference meetings. That's just one of the many technologies that theoretically enable workers to engage remotely, without the tyranny of regular office hours.

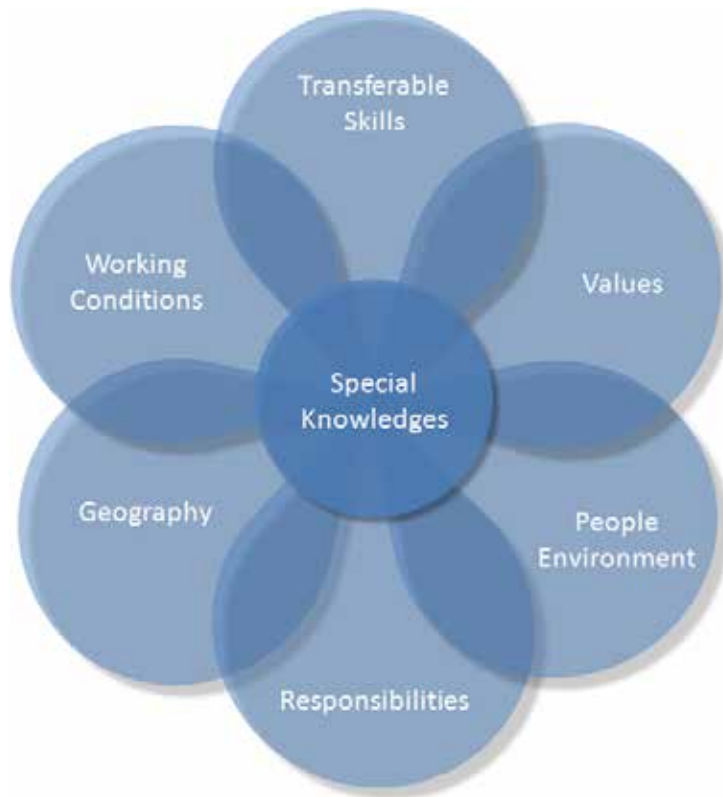
But though hi-tech workers often receive a tremendous amount of flexibility to decide when and where they can best get their work done, many Silicon Valley companies strongly encourage employees to work in the same geographical location. For example, Yahoo CEO Marissa Mayer famously created a New Rule to require employees to stop working from home. Why this seeming dichotomy, when technology provides location independence?

The answer is in human nature: We tend to build stronger bonds with the people we see in person. In hi-tech companies, workers dynamically bind together on new projects, hit their deliverables, then go on to the next project. Those collaborative relationships may work fine if workers are distant from each other, but hi-tech companies like Google point to statistics showing greater productivity when workers are co-resident.

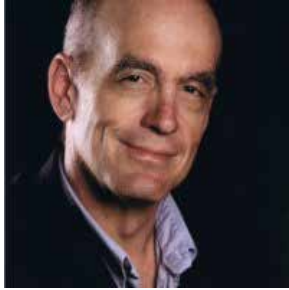
That impetus for in-person interaction means that many hi-tech companies continue to build massive campuses to keep their employees close to each other. And it explains why Silicon Valley itself continues to be a hub for startups and older tech companies alike: It's where the trained workers are. But there's good news for workers who want to live outside the Silicon Valley *bubble*: As hi-tech companies grow, they're forced to look further and further afield for new employees - which means growing offices in locales all around the world.

The New Rules of Work: Flowering Possibilities

By now you may have wondered if these seven rules actually reflect the seven petals of the Flower from *What Color Is Your Parachute?* And, of course, you'd be right. It turns out that even in the fast-paced world of Silicon Valley, the elements of the Flower remain the core components of career decision-making: What's tried and true is also new.



What's changed is the emphasis that hi-tech companies place on these attributes, and the way in which we leverage these components for our own ability to thrive in a work environment. It's important to recognize that there is a dark side to the New Rules. Not everyone is prepared to operate in such a fast-paced world. Many workers are likely to prefer stability and reliability over constant change and frequent uncertainty. But as technology comes to infuse more and more jobs - and as employers push relentlessly for increased productivity - these will increasingly become the common characteristics of a large percentage of companies, and the jobs in them. Adapting may increasingly become more of a requirement than an option. Counselors will need to assist employed workers to learn the changing rules for new work environments, and to prepare them for the need to continually update their understanding of their own unique attributes, on an ongoing basis. They'll need to encourage workers to adopt a "Three Boxes" mentality, infusing life-long learning into their career planning processes. And they'll need to help workers understand the New Rules on an ongoing basis - because it's certain that the Rules themselves will continue to change.



About the author

Gary A. Bolles is the co-founder of eParachute, Inc., a San Francisco Bay Area-based startup focused on helping job-hunters and career changers, inspired by the best-selling career book of all time, *What Color Is Your Parachute?* eParachute's first online application, Jump, helps young people generate ideas for areas of study and work. eParachute also licenses custom versions of its software to organizations such as AARP. Gary Bolles lectures regularly on the future of work and education, and publishes his writings on Medium.com. He has also produced a variety of conferences and strategic events. He was the co-producer of DGREE.org, a 2010 conference focused on the future of higher education, and is co-founder of SoCap, SocialCapitalMarketsnet, the premier gathering for impact entrepreneurs and investors. He has served as consulting producer for numerous strategic events for clients such as Google, Yahoo!, TED, Guggenheim Museum, L'Oreal, and the London Business School. Formerly, he was also the editorial director of technology publications such as *Yahoo! Internet Life*, *Inter@ctive Week*, and *Network Computing*, as well as the on-screen host of TechTV's *Working the Web*.

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Chapter 5

CHALLENGES FACING EDUCATION, TRAINING and CAREER DEVELOPMENT in the FUTURE

by Timothy C. Mack

Introduction

Following long term involvement in the global foresight community and from serving as the president of the World Future Society for a decade, I believe that the study of the future and the development of strategies for improving education, training and career development (both now and tomorrow) are interwoven in a number of ways. Both are very broad concepts, with interactive impacts across a range of sectors. When thinking about what is relevant to either, it is difficult not to respond with *what is not relevant?* Accordingly, I believe that the future of improving education, training and career development is the future of humanity, and how we all steer our course between potential opportunities and threats is a critical consideration for us all. As this is an opinion piece rather than a classical research paper, it is designed to stir up reader interest (hopefully to the point of open argument) and accordingly generate a robust dialogue about the issues I raise below. Let us begin.

Since thinking about what might impact career development and other related arenas in the future might yield little more than an extended discussion with few useful conclusions, I propose three specific issues to pursue throughout the course of this article.

First, we should examine which **trends** (social, economic, political) appear to most impact the future of education, training and career development, and ask *which are truly critical?*

Second, let us consider what effects the whirlwind of **new technologies** might have on how we learn, how we understand change and how we prepare for the possible worst and best to come.

Third, what **tools, skills, and techniques** may be available to enhance effectiveness and meaning in education, learning and training over the coming decades? One basic question here is to wonder whether the challenges facing the future of learning might not prove almost too challenging. In the 21st Century, while expanded technological capabilities have certainly led to higher volumes of connectivity, this at times seems to result in less relevant interactivity and knowledge sharing; especially when developing new education and training techniques.

Drivers of Change

Technology continues to transform business, organizational and institutional learning, in ways that are not always for the better, in spite of Thomas Friedman's optimistic *The World is Flat*. The problem is that so much information, even in career development, can become a wall of *white noise*. This can produce a state of cultural dysfunction, one result of which is the rise of buzzwords and secret professional languages, while another is the tendency to tune out the content of constant communication.

One very critical consequence of this is a growing loss of dialog in some training settings. For example, after decades of being a *gold standard*, team building is now often seen by some as just *too much hard work*. This can be accompanied by an increasingly widespread social illusion of total self-reliance. A common expression of this is captured by the phrase, *Not always right but never, ever in doubt*. If external validation is perceived as unnecessary, then faulty assumptions are seldom invalidated.

At a cultural level, this is likely to lead to an increasing loss of mutual trust across society. When viewed in an educational context, it becomes a systemic problem, which may affect the underlying systems of communication critical to effective learning.

The challenge in addressing this troubling trend is how a trainer or career development professional can actually be heard against this din of white noise. One solution is to search for ways to enhance the dialogic nature of learning communications by enhancing the value, relevance and uniqueness of the information being offered. This can thereby increase the likelihood of that training module being heard, considered and acted upon.

Another Troubling Trend

This second trend is a bit more long-term, and involves the continuing inability or lack of inclination of many governments, organizations, corporations, and NGOs to understand and respond to potential negative *environmental* change (a term used here in a much broader context than just relating to climate change) across a range of sectors. To put it in a more specific context, many groups actually adapt to change, not when they should, but only when they must (and then often too late).

A result of this dynamic is that many looming resource shortfalls that now face humanity will continue to grow; driven in significant part by the expanding consumption patterns of global prosperity at many levels. Ignoring these trends can only enhance their prevalence and impact. Accordingly, systemic solutions and public education strategies must be developed and implemented.

Let me provide a few specific examples: by 2025, over 36 countries will have major freshwater and agricultural land resource deficiencies (up from 20 countries today). These water problems include: pressure from growing populations, especially in the arena of food production; discarded pharmaceuticals and personal care products that inhibit or interfere with wastewater treatment processes; high costs of desalination technologies; etc. One solution path is to accelerate development of new technologies, such as greenways and other vegetation filtration systems for recycling grey water outputs.

By 2025, 3 billion people will be facing water scarcity (the figure stands at around 70 million people at present). In some areas of India and China, ground-water levels are falling by 1 to 3 meters per year. Rainfall declines of 15 per cent since the 1980s in East Africa will continue at least until 2050, according to United States Geological Service; very likely leading to a doubling of under-nourished people there by 2030.

Third Troubling Trend

This leads us to the conviction that imagination and innovation are essential to both the identification of emerging problems and the crafting of *workable* solutions (and their lack could be highly detrimental). Use of the term *workable* here assumes that: resources exist for solution design and successful implementation, as well as the political will and ability to implement these solutions in a global context. These problems will not yield to a patchwork quilt of varied solutions, as has become evident from the ongoing hodgepodge of climate change solutions worldwide.

And as the future of urban areas is increasingly becoming the future of the globe, the need for imaginative innovation becomes more critical. The world urban population is likely to double by 2030 and there will be at least nine cities with populations over 20 million. As a result, by 2050 more than 70 per cent of the world's population will live in urban areas with a total global population of nine billion plus.

The central problem there is Unplanned Urbanization – development without consideration of economic, political, health and/or environmental consequences. One potential urban food solution that presents itself is downtown self-sustainable vertical farms; built into high-rise frames. Proposals such as Dubai's Food City have some appeal, with solar energy to power lights, pumps and conveyer belts, plus chicken and fish fed on plant byproducts. And by 2025, since 2.75 billion people will live within 60 miles of an ocean (a 30 per cent increase over the present) the broadly held expectation of between a one and a 14 meter rise in sea level by 2100 is certainly sobering, if not terrifying--bringing to mind the old foresight saw that *if you are not scared, you are not paying close enough attention*.

However, some counter-forces can be tactically utilized to offset those challenges, and these include a range of new technologies, public education on consumption practices and commitments to mutual cooperation. The relevance here in relation to education, training and career development is that any endeavor undertaken during periods of general resource shortfall will need to compete with a wide range of other demands.

Fourth Troubling Trend

As well, it may turn out that humans are not the only decision-makers which will be involved in meeting these challenges and mitigating damages, which may further complicate their solutions. Without uncritically validating the singularity concept concerning the role of machines in human decision-making, this recognizes that novel factors are definitely in play. The *Digital Universe in 2020* report indicates that over 40 per cent of all communications anywhere will be machine-generated by 2020, (i.e., M2M or machine to machine). Of course, interpretation and response will be much faster than the typical human conversation, which could be as problematic as machine-driven stock and financial instrument trading in 2007 (which, if memory serves, did not turn out well).

Metcalf's Law states that communication networks increase in user value as they grow, especially where the capabilities of the whole are far beyond that of individual units. As well, these value increases can generate *unpredicted emergent properties*. One example classic is computer networks that come to exhibit abilities for which they were not originally designed. As a general

result, when system complexity increases, predictability declines. Where the number of machines who can effectively step in for human educators and trainers in a widening range of situations dramatically increases, the stances of those stakeholders involved will certainly be in flux.

Fifth Troubling Trend

Many proposed solutions to the problems outlined above will appear viable in theory, but the most daunting task is how to build sufficient ongoing support, experience and resources into implementation to yield a successful result. Accordingly, identification of resources and expertise continue to be challenges to be faced and overcome, even after problem identification and solution suggestion have been developed; that is to say, making the solution work using resources at hand is never an easy task. This is not to say that reaching beyond one's grasp or *dreaming big* should not be encouraged, but only that a thorough understanding of whether resources needed for a viable solution and resources actually available will match up as intended. Then there is the political will, sufficiently broad stakeholder buy in, and essential community education needed to forestall inevitable knee-jerk change phobia.

Resources and Know-How

This provides an entre to the question of how to address resource needs in what is often a 'diminishing resource' environment. Of course, we are all aware of the economic challenges that have faced the world over the past decade. But the water-related discussions in the paragraph above suggest just the iceberg's tip as far as how much expanding global consumption is out-racing global resource reserves and their levels of renewal. And it is not just consumables that are in question. Beyond energy, food, adequate transportation, waste management, and etc., there are more intangible issues such as sufficient educational resources and job creation to balance exploding populations in developing countries. One critical application of these resources is the enhancement of global education and training capability. There are plenty of ideas and not a few dynamic strategies already in play, such as the *One Child, One Laptop* program championed by MIT's Nicolas Negroponte; in part a response to the Thomas Friedman premise in *Flat Earth*. Part of the premise is that communications technology will broaden global participation to the level where it enables significant geographic shifts in knowledge firepower between developed and developing countries. In other words, within an ideal environment, the enabled soon become the enablers of others. But what we should also be on the lookout for are new ways to maximize the effectiveness of the learning experience. Strategies here might include:

- Better understanding of neuroscience and how we learn—expanding the range of delivery systems at conference—repetition and skill-building (maker fair model) activities.
- More clearly mapping how to effectively move from knowledge to learning, and thus avoid overloading an audience with information beyond the point where they can process and assimilate it. Trainees are often stressed by a massive overload of new information and tend to *zone out*, because their brains can't digest it all. One idea is to avoid 7 a.m. training sessions, but have more evening sessions and networking events at other times of day, when greater effectiveness is likely to be possible.
- Moving away from the traditional, there is some support for enrichment of training experiences by enhancing the engagement of all the senses (sight, hearing, taste, smell, and touch) and maximizing the use of more flexible, open-space organizing approaches.

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- Encouraging person-to-person collaboration and supporting creative gamification activities (interactive content that encourages engagement) and “hackathons,” such as problem-solving exercises and the building of new solutions for existing problems does a great deal to build engagement and training-team mindsets.

Standards for Future Education and Training

Is effective education just persuasion or does it actually enable its recipients? One answer is that the latter is true when the education enhances self-teaching and student-directed learning, which often includes authentic dialog. Dialog is now technologically possible almost everywhere, and effective dialog can perform multiple tasks:

- Building potential channels of connectivity
- Building new attitudes (very often positive)
- Providing feedback, both positive and negative (only God never makes a mistake and it’s better to hear about it early – before it is unfixable)
- Special interest groups focusing on personal interests (foresight!)

Information consumes attention, thus making attention a critical leadership tool (and perhaps a potential currency). The rapid explosion of available information has resulted in a scarcity of attention. And the challenge is then allocating attention efficiently among the massive overabundance of information. One indicator guiding these allocation choices has proven to be relevancy, suggesting that a thorough understanding of the goals and mindset of the information receiver is not always achieved.

Relevance Measurement Tools

One arena where message and dialogic relevance in training is being improved is in the arena of Attention Mechanics. In general, the research underway is a mix of psychology, epistemology, and system dynamics. When tied to career development, the process proceeds as follows: educational content enters the *field of attention* of an individual student or a community; then (ideally) the attention of that target audience is grabbed and held; and finally some level of understanding and possibly retention occurs. This Attention process is tied to the factors of Interest, Desire and Action (AIDA), but the training retention is most effective if the communication content is perceived to offer one or more of the following benefits: Immediacy (or relevance), Interpretation (or translation), Authenticity (or trust relationship), Accessibility (or ease of understanding), or Findability (of desired objects or valued activities). As a result, the content of the training program is then perceived as material essential to enhanced professional skills and professional success. To summarize, there is growing interest in more effective training tools and techniques. These types of tools will improve: Visualization [e.g., through Interactive Graphics or Animation] and/or Translation [defined as a successful restatement concepts in terms more comprehensible, relevant and important to the listener].

Using Foresight Tools in Education and Training

There is a common distinction in the area of Education Foresight between discussions of the *future of education* and *education (and training) around the use of foresight tools*. Accordingly, I would like to conclude by taking a quick look at tactics and tools that might prove useful to the latter. I suggest that ethical consultants assist clients in building internal trend identification and analysis skills within their own organizations. Much has been written over the years on the use

of such classic foresight tools as scenarios, back casting, and Delphi studies, and I recommend the reader to that quite voluminous literature. At present, I will discuss a promising technique known as *weak signals*, that can be done with the help of a few colleagues. Let me begin this discussion with an overview. The promise of being able to create one's own virtual foresight capability is an intriguing one, perhaps by utilizing social media tools such as LinkedIn. Self-organizing Special Interest Groups that arise (for example) within the LinkedIn macro structure (such as those dedicated to the practice of foresight) can be especially useful. Listening is usually a passive activity; but it takes some serious digging to uncover the operational implications of a critical naysayer (external or internal) and how that affects one's own position. Up close and personal is usually one of the most effective ways to learn about others and vice versa. Body Language Works! Mapping different experiences often requires collaboration versus teamwork, as the latter consists far too often of simply exercising good manners at the workplace. It often is more productive to avoid reliance on outside experts, as just as much or more relevant information is available in your own organization - from your own systems and people. As well, the relevant Knowledge Base does not walk out the door when a consulting contract ends. If the research and analysis process isn't unpleasantly difficult, you are probably not doing it right (or accomplishing much).

The Holy Grail of Foresight: Weak Signal Systems

I use the term Holy Grail, because Weak Signals, while widely recognized as useful thing to have in an organizational tool kit, seldom reaches the stage of a mature and reliable foresight practice. MIT's Sloan Management Review has asserted that less than 20 per cent of global companies have an ability to spot, interpret and act on weak signals. One often illusive goal is locating new developments early enough. That is, uncovering developing trends neither too late nor too early, as too late does no one much good (like yesterday's news) and comes close to embracing conventional wisdom; while too soon can leave you too far ahead of other stakeholders and accordingly and out of connection with present 'real world' dynamics. Thus, building a functional regimen of preemptive and proprietary visioning involves a never-ending balancing act. For example, Weak Signal issues may be threats *or* opportunities, and the real challenge is knowing which are which, relatively early on. And weak signals are actually *suggestive* trends; so interpreting them takes significant time, focus and experience. Not all leadership teams have such luxuries; and those that do must use them wisely.

The reader might notice an energetic use of the phrase *education team*, because I strongly believe that the search for Weak Signals simply cannot yield useful results as the exercise of a single visionary analyst. It must be a team effort and ideally a community effort, involving coordinated work among concerned and relevant stakeholders to yield viable results over the longer term. Accordingly, the broader the search process and the greater the number of scanning participants, the higher are the chances of yielding relevant and useful results.

And the search for Weak Signals, properly done, can be very useful:

- To spot problems early and share them with allies;
- To extend the senses of the organization beyond organizational boundaries;
- To broaden stakeholder networks through distributed intelligence [one example is *Intelligence* which arose out of the US intelligence community after the shock of being blindsided on September 11, 2001].

Accordingly, the weak signal process involves looking for robust results (defined as offering the most application in the broadest number of settings). Thus, it is important to cross-utilize potential measures of interest, such as: social values; market dynamics; and attitude shifts, to triangulate the analysis. This means using cross-sector translation (to avoid buzzword blindness), and selective attention, which avoids the *zone out* that results from trying to see everything all at once, and the related failure to properly prioritize. The literature is full of what are called *black swans*, *wild cards* or other terms of endearment (because of the grief that results when they slip unnoticed). These low profile trends constitute events, which are highly unlikely but have a very high systemic impact that surprise knowledgeable stakeholders of all types.

Conclusion

In summary, to be valuable to education and career learning professionals, foresight work should be focused and targeted, original and imaginative; provide economic, personal and cultural pay-offs, offer enrichment and learning, and include localization when relevant, to account for unique cultural and logistic details.

About the author



Timothy C. Mack was president of the World Future Society from 2004 to 2014. From 2009-2014, he was Executive Editor of World Future Review; previously, he edited Futures Research Quarterly, and Future Survey. He has been an attorney and member of the New York and District of Columbia bars since the 1970s and has served as General Counsel for a number of profit and non-profit groups involved in trend analysis, social dynamics and public policy. After holding research positions at the John F. Kennedy School of Government at Harvard University and the US National Academy of Sciences, he joined the Budget Policy Task Force at the US General Accounting Office, which served as the analytical arm of the US Congress (now called the Government Accountability Office). He co-founded a Children's Law Institute while in law school and worked at the Institute for Human Policy. He was a Research Associate for the National Academy of Sciences' Committee on Child Development Research and Public Policy. He co-managed a Summer Institute for K-12 children. He has testified as an expert witness before the White House Conference on Small Business. He has delivered keynotes, seminars and consultations concerning trend analysis and foresight skills to over a hundred industry trade groups, government agencies and non-profits around the world. In August 2014, he started AAI Foresight, a consulting firm located in the Pacific Northwest.

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Chapter 6

OLD PEOPLE are PEOPLE TOO, SO LET'S ACT ACCORDINGLY

by Aubrey de Grey

*“We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty, and the pursuit of Happiness” - United States **Declaration of Independence***

Several years ago, I wrote an essay castigating my normally inestimable colleague Art Caplan for opining that the time someone who has already lived plays some part in determining the magnitude of their entitlement to further life. I should stress that I have no great difficulty with the idea that today, while aging remains essentially immutable, and thus while one cannot (with the same amount of effort, money, whatever) give an older sick person the chance of as much more healthy life as one can give a younger sick person, if resource limitations force us to choose then we should preferentially treat the younger person. But Caplan’s comment explicitly considered the future situation in which indefinite healthy life extension is potentially available to all, whatever their current age, and indeed at a cost independent of their age. My position on this question is the reverse of Caplan’s, and my logic is painfully simple: any such discrimination constitutes ageism in its starkest form. What discrimination can possibly be starker than that concerning how much longer someone will be given the chance to live? We have rejected ageism in other aspects of society – in policy if not always in practice – so comprehensively that any further justification of rejecting it here seems entirely superfluous.

Let’s also look at a couple of other, somewhat similar failures to eschew ageism. The first concerns the idea that working today to cure aging is of limited importance because it will certainly not yield results for at least a decade or two. This is a frequently-heard complaint against life extension research: there seems to be a widespread gut feeling that our resources are better directed at more “urgent” concerns, such as saving the lives of children in developing nations where infections that kill very few in the industrialized world remain rife. This logic can be challenged on several grounds, but the one I want to focus on here is, as above, one of discrimination.

I should first point out that people’s opinion that curing aging is less urgent than other life-saving endeavors is not, in general, based on pessimism about timeframes. To elaborate: my scientific position is that we are now in possession of sufficiently detailed knowledge about how to cure aging that we can profitably embark on that project with an engineer’s, rather than a basic scientist’s, frame of mind. Eventual success will follow not only a lot of hard work but also a fair dose of serendipity, as intervening discoveries (both by the researchers involved and by those in hitherto unrelated areas of biology) will be found to inspire easier solutions to various compo-

nents of the plan than those currently envisaged. But it is no longer reasonable, in my view, to claim that serendipity will almost entirely determine how soon we cure aging – say, that a year’s delay in embarking on this project in earnest will probably make a difference of only a day in the date at which it succeeds. (This claim would have been at least arguable a decade ago, however.) Someone who disagrees with me on this could quite logically argue that work on curing aging is not urgent, simply because it will not expedite a cure, even though those working on it may think it will. But those who accept my scientific position are often inclined to take that view of the priorities anyway.

My argument that this is a blatant case of discrimination is as follows. As I have discussed in detail elsewhere, the cure of aging will be gradual in terms of the progression of technical advances but essentially instantaneous in terms of lifespan potential, because the beneficiaries of first-generation rejuvenation therapies will be around long enough to benefit from the second-generation ones too, and so on. (I have termed this phenomenon the achievement of “longevity escape velocity”.) Thus, if the effect of starting to try really hard to cure aging today, rather than a year from now, is likely to be a substantial difference in how soon such a cure emerges – say, for sake of argument, a month – then by doing so we will confer on roughly three million people the opportunity to live indefinitely rather than to live no more than (say) 150 years, since that is the number who die of age-related causes each month worldwide. (Exactly which people depends on how long the development of a cure takes, of course.) If, instead, we focus those resources on a year’s life-saving of children in the developing world, we will at best confer on a few million people the opportunity to live about a century longer than otherwise. It seems utterly unarguable to me that this means the anti-aging effort should take priority, even though its benefits will take longer to be realized.

Consider parallels in other walks of life. Someone who deliberately builds a house poorly, so that it risks collapsing and killing the occupants, is criminally culpable even though his actions may predate by years the fatal outcome; we regard such actions as no less worthy of punishment than those of someone whose actions (say, driving when drunk) cause fatality at once. The only material difference between this pair of cases and those under discussion is that one pair involves death resulting from action and the other involves death resulting from inaction; that distinction cannot affect the question of morality, however important it may be psychologically. Hence, in summary, the popular view that saving lives of children in Africa (for example) is more important than curing aging constitutes discrimination in favor of those whose remaining lives will be very short unless we help them but fairly short even if we do, and against those who will probably live a few decades anyway but could live many centuries if we act now.

The third self-evident truth that I want to highlight here is also a case whose oversight is causing discrimination in access to healthy life extension – and, interestingly, here it is discrimination against the young rather than the old. The funds spent by the West on saving children’s lives in Africa are dwarfed by how much we spend on treatments for age-related diseases, but resources that go into curing aging are a tiny fraction of the latter and are in fact even smaller than the former. The reason for this is pretty obvious: not only is the need of our elderly compatriots urgent, it is also in our faces more starkly than that of those in far-off lands. But, even more than for the African children, the amount of extra healthy life that we can give someone already too elderly

to have a chance of living long enough to see real rejuvenation therapies is far less than what we might give someone currently young by curing aging in time for them. Thus, to prioritize expenditure on treating diseases of old age (and on research to develop better such treatments) and to deprioritize expenditure on curing aging constitutes discrimination against those just young enough to benefit from a cure for aging if we threw more resources now at developing it.

There we have it – three truths that are every bit as self-evident as the truth that all men are created equal. In sum, not only are we all equal at birth, we also remain equal until death. It is defensible (though so is the reverse) to benefit one person over another in terms of life extension if the quality of that future life is not the same for the two people, but it is not defensible to set priorities based on current age, on expected length of future life before the benefit one confers today is experienced, or on a combination of the two (which, respectively, are what the first, third and second biases discussed above constitute). What matters is the potential number of extra healthy years afforded to people. And since by curing aging we will give everyone on the planet an indefinite number of further healthy years, there isn't much contest, really, is there? It's time to wake up to our responsibilities to humanity.

In concluding, I must address a further issue – one that is of central importance to counselors and others who seek to enhance not only the physiological health of the elderly but also their satisfaction with life. It is that the elderly are, in respect of the above issues and others, their own worst enemy: they are overwhelmingly inclined to argue in favor of the ageist position, i.e. for the preferential allocation of medical resources and research funds to benefit the young. Why is this, and should we respect that attitude or resist it? I say we should resist it – I say we should help the elderly even if they do not ask us to. And that is not only because those of us who are not elderly will be in due course: it is for a much more direct reason, namely that we already take the same approach to those who refuse medical care, or even who are actively inclined to self-harm. We know that such people are basing their decisions on what we view as a distorted understanding of their opportunities – of what their life truly has to offer. I submit that that is exactly what most people do today when they view aging as inevitable. In an ideal world we would simply reason with those who think the attempt to cure aging is a fool's errand, educating them sufficiently on the scientific realities that they acquire an appropriate degree of hope. But reason and education are simply not always effective in the real world, and sometimes we must help people despite themselves. This is one such instance – I would say, the most important such instance there is.

About the author



Aubrey de Grey, PhD, is a biomedical gerontologist based in Cambridge, UK, and Mountain View, California, U. S., and is the Chief Science Officer of SENS Research Foundation, a California-based 501(c)(3) charity dedicated to combating the aging process. He is also Editor-in-Chief of *Rejuvenation Research*, the world's highest-impact peer-reviewed journal focused on intervention in aging. He earned the BA in computer science at Cambridge University in 1985. He earned the PhD in biology at Cambridge University in 2000. He is author of *The Mitochondrial Free Radical Theory of Aging* (1999) and co-author of *Ending Aging* (2007). He is known for his view that medical technology may enable human beings alive today to live to lifespans far in excess of any existing authenticated cases. De Grey's research focuses on whether regenerative medicine can thwart the aging process. He works on the development of what he calls *Strategies for Engineered Negligible Senescence* (SENS), a collection of proposed techniques to rejuvenate the human body and stop aging. To this end, he has identified seven types of molecular and cellular damage caused by essential metabolic processes. SENS is a proposed panel of therapies designed to repair this damage. His research interests encompass the characterization of all the accumulating and eventually pathogenic molecular and cellular side-effects of metabolism ("damage") that constitute mammalian aging and the design of interventions to repair and/or obviate that damage. He is a Fellow of the Gerontological Society of America and the American Aging Association. He sits on the editorial and scientific advisory boards of numerous journals and organizations. Contact him as follows:
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Chapter 7

CRISIS of HUMAN CAPITAL in AEROSPACE: It's All About the STEM

By Deborah Westphal

Today's organizations are grappling with complex problems in a world of accelerating change. Aerospace organizations in particular – and the people who work there – must cope with the extra complexity of keeping up with shifts in international security and rapid advances in technology. At the same time, however, like any other company, Aerospace organizations must continuously find ways to differentiate themselves from their competition and meet the evolving needs of their customers. Unfortunately, over the last decade, evidence suggests that even as the industry has strived to stay competitive with its customers, Aerospace as a whole has fallen behind in tending to one of its own most valuable resources: its people. As a result, the industry is facing a crisis of human capital: Aerospace has a problem with STEM. STEM, a catchy acronym for Science, Technology, Engineering, and Mathematics, has become part of our common lexicon – both in this country and abroad – amidst an ongoing debate about whether or not there is a lack of technical talent in the U.S. and if there is, how it is impacting future economic growth. Whether you buy in to the notion of a STEM shortage or not, however, one thing is certain: today's top technical talent is not lining up for jobs with Aerospace and Defense (A&D) companies. Instead, technically trained workers are taking their talents to the likes of Google, Apple, Twitter, and clean energy producers. When it comes to STEM, A&D firms and related government agencies – once known as dynamic bastions of engineering geniuses, rocket scientists, and developers of “James Bond-style” tech gadgets – are out. Glamorous, cutting edge firms are in.

Why? Because in the last decade, A&D giants have allowed their organizational dynamics to languish against the backdrop of a rapidly changing world. Seeming to stand still in time, these businesses and agencies have become vast, hierarchic bureaucracies with aging workforces and mounting legacy costs. Not exactly the kind of place likely to attract the best and brightest – especially when competing with firms like the ones mentioned above.

What do the best attracters of today's STEM talent have that A&D entities don't? While you could argue they are more prestigious and impressive – even “sexier” – these are elusive qualities. What specifically makes them more appealing? It all boils down to one word: agility. From a human capital perspective, agility means more than staffing to satisfy the changing demands of an organization's customers. Agility is also about creating an environment in which people love coming to work, give their best every day, and feel empowered to champion and carry ideas to fruition. It is about creating an environment in which leadership does not dictate every initiative, but instead is primarily concerned with determining and promoting an organization-wide vision and empowering each employee to fulfill it as he or she sees fit.

The ever-changing demands of the Aerospace and Defense market – as well as the constant churn of technological innovation and obsolescence – require a workforce that is adaptive to new challenges and opportunities. But the organizational dynamics must create and support this agility. There are no step-by-step instructions for becoming an agile organization, particularly when existing dynamics and processes are deep-rooted and engrained. Instead, only through radical transformation can an organization’s culture truly shift. And only then will today’s – and tomorrow’s – best and brightest STEM talent be eager to play a central role in the future of the Aerospace and Defense industry. A&D firms and agencies must turn a new leaf. They must:

- Ease bureaucracy and needless levels of approval by reducing hierarchy and flattening the organization.
- Overcome bias by challenging old notions of what Aerospace and Defense is; create an exciting vision for a future that incorporates the explosion of technology and the blurring of boundaries surrounding both customer and capability.
- Develop a robust leadership pipeline and fill it with the right people. Identify leaders by focusing more on attributes than skills. Celebrate diverse qualities like the ability to: challenge assumptions; sense, probe, and identify problems; imagine; collaborate in real-time; be culturally intuitive; take a multidisciplinary approach; engage in anticipatory risk-taking.
- Incentivize and encourage attrition of long-tenured members of the workforce who cannot – or will not -- keep up with the changing face of A&D.
- Look outside the traditional Aerospace and Defense industry to find the right talent that can increase business capability and technology know-how.
- Appeal to today’s globally conscious talent pool by embracing “sexier” practices like campaigns for green energy and social responsibility.
- Assertively recruit millennials by understanding and actively addressing what they want and need from their careers. Acknowledge and support, for example, their expectation of transparency; bring them in on what’s going on with the business. Grant them the flexibility they crave – in dress code, in work hours, in opportunities to make connections outside the workplace that may enhance their professional and private life. Treat them as they want to be treated: like equals.
- Develop and promote the study of STEM amongst women and minorities by engaging them when they’re young – as early as K-12 or college. Introduce mentors and coaches who model that being smart is “in.”
- Build competence in the face of rapid change by encouraging a culture of innovation that embraces ongoing change.
- Foster collaborative behavior in the workplace by creating a neutral space in which people with diverse expertise and experiences can work together.

In short, A&D leaders must acknowledge and accept that tomorrow’s A&D is not – and cannot be – their father’s A&D. A generation ago, A&D organizations were leaders at the forefront of technology. Today, however, they are followers, just barely keeping pace with the demands of their market and customers. With timeworn organizational structures, processes, dynamics, and physical spaces, they have become dinosaurs – dusty old relics of an age trying desperately to be forgotten. It is time A&D leaders rethink the definition of A&D and transform their industry. They can start by transforming the workforce to attract the best and brightest. And the rest will follow. The lessons learned from studying today’s human capital crisis in the Aerospace and Defense industry can be applied to any organization, in any line of business, and any market. The

underlying truth is that the world is changing at an acceleratingly rapid pace. A holistic, multi-disciplined approach to understanding, planning, and adapting to the future – across all aspects of a business – is key to any organization’s ongoing success in the face of such change.

About the author



Deborah Westphal is Managing Director of Toffler Associates, Inc. She has served on the boards of directors of several nonprofit organizations. She served as a civilian in the U.S. Air Force for 13 years, and was the deputy director of Development Planning for the Space and Missile Systems Center. She has experience in a wide range of other sectors including materials, transportation, security, hospitality, and telecommunications. She was recently selected as a member of a congressionally directed study focused on National Security Space Defense and Protection. She moderated in April 2015 a panel during the 31st Space Foundation Space Symposium. The panel "Prospects and Issues for Small Businesses," focused on opportunities for small businesses in a rapidly changing space market. She was appointed in August 2014 to the Air Force Studies Board (AFSB). AFSB collaborates with Air Force leadership to develop in-depth studies that are carried out by the National Research Council (NRC). Recent topics addressed include fuel efficiency, acquisition processes, and assuring the future scientific and technical qualification of Air Force Personnel. She earned the BS in electrical engineering at the University of New Mexico and a master’s degree in business administration at Webster University. Contact her as follows:

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About Toffler Associates

Toffler Associates is a strategy advisory firm with a future-focused approach to helping leaders build the extraordinary organizations of tomorrow. Toffler Associates serves as a catalyst for change for clients with tough problems to solve, creating impact through knowledge of the forces of change that will shape the future. Built on nearly two decades of trusted private sector and public sector partnerships, we deliver strategic advantage to clients operating in the hospital-ity, transportation, aerospace, chemical, energy, information technology, commercial space, and defense, federal civilian and intelligence community markets. For more information, visit us at Toffler Associates or connect with us on LinkedIn. For general questions, please email

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Chapter 8

COLLEGE FOR ALL: Reality or Flawed Myth?

By Helen Harkness

“Why didn’t someone help me learn all this about myself and possible careers while I was still in school, before I spent a small fortune to get degrees, and years stressed out in the wrong career?”

For almost four decades I have heard this repeatedly from the thousands of adult clients in my career transition practice, Career Design Associates, Inc. (www.career-design.com) and today I focus on meeting this need. Students and their parents require special attention on discovering a satisfying career direction in our incredibly volatile and frequently bewildering work world. This insight for career focus must be based on understanding the student’s innate skills, interests, and values, matched with insight in current (and possible future) workplace options. The goal of my nonprofit, Career Design Foundation (www.careerdesignfoundation.org), is to help students research and determine a meaningful purpose for their future work life, so they will avoid becoming a member of the “lost generation,” as Business Week, noted in an article published on Oct. 19, 2009.

Is college for everyone a desired goal or merely a flawed myth—a carryover from a former age? This critical question affects students, their parents, and the tax payer as well.

Countless students enrolled in college today are coming out with:

- heavy student debt
- no career focus
- a major in an outdated career field
- a major they do not fit
- a major with no jobs currently available

My goal is to be instrumental in reducing this waste of time, money, and resources by helping students and their parents better understand their career options in our chaotic, rapidly changing work world! It is imperative to approach this subject with a broad view and insight into where are we now, both in our education and our employment. To determine the value of a college degree, to any student, we must look at a broad picture of the career activities relating to education and work.

Here’s some background: I incorporated Career Design Associates in 1978 following two years of intensive, nationwide research on my dissertation—*Establishing a Career/Educational Counseling and Information Community Center: A Study of the Developmental Problems of an Educational Counseling and Information Brokering Center of Adults*. This concept was designed to meet the emerging (but totally ignored) need of highly educated adults without careers or jobs in the early 70’s.

At the time, the US Department of Labor was searching for a systemic way to help all adults find jobs. I wrote a proposal and obtained a Department of Labor grant for designing and establishing a free Career Service Center in our local public library in Garland, Texas. At the center, I selected and trained eight career counselors, and we worked with over 6,000 adults. The Department of Labor carefully documented the community use and performance of the center. I learned that my community-based model was later used by the Texas Workforce Commission to help adults in social and economic transition. I also rapidly learned that, in reality, college degrees were not protecting adults from severe career/job problems. A full 65 per cent of those using the career center had a college degree or degrees but no job!

When the grant ended in late 1979, I opened my own practice, Career Design Associates, Inc (www.career-design.com). Since that time, I have provided in-depth career counseling/coaching for more than 15,000 adults. My research and learning is an ongoing project, and I closely follow notable futurists, especially Heidi and Alvin Toffler. I have attended the World Future Society (www.WFS.org) for two decades, where I have coordinated free career counseling for all attendees. I have completed four books on our career issues, options and solutions. In the early 1980's, I designed a national program called "Campus to Corporate Careers" designed to help unemployed PhD's transition from academe to alternative careers. It was funded by a group of high level Dallas entrepreneurs who strongly supported its success.

As a teacher, researcher, author, futurist and pioneer in solving career/work related problems in an era of change, chaos, complexity and uncertainty, my mission is to do whatever it takes to help younger students, their parents, and teachers gain valid information and insight into their career options and where they can find work/life success. This must be based on each student individually, and be coupled with the reality of our rapidly changing and chaotic current work world!

Today, we are in Future Shock, which results in rampant career shock that directly affects our education decisions. Defined by Toffler in 1970, Future Shock is "*the shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time.*" Toffler carried this theme forward to 2004 at a meeting of the International Conference on Complex Systems, when he emphasized that most underlying and industrial management theory of the last 100 years is obsolete, and that all major social institutions are in trouble. "At every level, economics, social organizations, culture, politics, we're in the process of inventing a new civilization. Everything is transient: families, corporations, governments, universities, organizations, religions, communities and nations are all temporary . . . most human institutions haven't caught on – all in denial – operating as they did almost three centuries ago in the Industrial Revolution!"

As a result of all this, our careers are in collision with reality! We are grieving over our careers as they were *supposed to be*. As a result, millions are frazzled, strung out, numb, overwhelmed and shocked!! More than 60 percent of adults are unhappy in their work life and research states that as many as 20 per cent are so deeply negative about their employers that they wish them harm. This, of course, has a negative effect on innovative thinking, which is much needed in today's work world.

According to the U.S. Department of Labor, the workplace is the greatest single source of stress, no matter what you do or how much you earn. Stress may now account for fully 75-90 percent of all visits to physicians, according to the American Institute of Stress. The price of stress for American businesses is at least \$200 billion a year. This figure is the “*emperor’s new clothes*” of organizational effectiveness. We all know that stress is out of control, but we’re all afraid to speak up about it. A United Nations report called job stress “*the 20th century disease.*”

We’re Worried! In one recent study, 44 per cent of the workers questioned believed their workload was excessive; 46 per cent worried about layoffs; 55 per cent worried about the company’s future, and 50 per cent felt that their jobs were not secure. This equates to millions of people trying to work through worry and insecurity on a daily basis. Another study found that 42 per cent of Americans had looked for a new job because of the struggle to maintain balance between work and their personal lives. We must recognize that change will accelerate.

All of our unexpected and rapid changes could create a feeling of total uncertainty and even helplessness. However, Ilya Prigogine, a colleague of Toffler’s and a winner of the Nobel Prize in 1977, maintained in his book, *The End of Certainty* that “the future is uncertain ... but this uncertainty is at the very heart of human certainty.”

As chaos theory implies, order and disorder are mirror images, with disorder as a source of new order. Dissipative describes a loss, energy ebbing away, but it plays a constructive role in the creation and rebirth of the new. Dissipative-like disorder does not lead to the end, but is the first part of the process from which new forms develop. It makes a path for a new structure to be created.

Prigogine found that a dissipative structure was any self-organizing, renewing system—a person, a chemical solution, a seed, a school system, a city government, a culture, a dynamic pattern in the brain, or anything capable of change and interaction with its environment. Prigogine said that if the perturbations—the initially small changes outside the normal system—exceed the power of integration, the system is destroyed or gives way to a new system or organization. Isn’t this what is happening today on myriad fronts?

Questioning the value of a college education today, which in the past seemed a good investment and certainty, may be very wise. “Our instability, our questioning of past and current rules, can be the key to transformation. This transition involves relinquishing parts of the past and taking hold of the future. We must first determine what to firmly grasp from the past to continue to build on; second, what to turn loose; and third, what new piece to pick up or add onto. It’s a process of “hold on, drop off, create, and build.” It is critical for individuals and organizations experiencing cultural change to understand this if they are to remain successful. And it is critical for an education system that is currently out of step with our economy, according to Brandon Busteed of Gallup.² This is also very true for adults forced into a recareering process, either by the unavoidable loss of their former career or by an interior, psychological shift that dictates the career change.

If we Americans, both individuals and institutions, are to move forward today, we must identify and unlearn or release countless *mindless myths*. These major *autonomic* assumptions based on our current *have it all today* mentality are rapidly taking us to the *edge of the talent cliff*, accord-

ing to Ed Gordon, author of 18 books and more than 76 articles on current career and workplace needs. His latest book, *Future Jobs: Solving the Employment and Skills Crisis*, is a must read for everyone. When I researched and wrote *The Career Chase* in 1997, I included the following certainties—myths to be questioned and perhaps dropped altogether. I teach all my career clients the necessity of developing a sharp *crap detector* to successfully address and question these set, rigid rules.

Moving from Mindless Myths to Meaning and Money at Mid Life

Myth 1: Our current chaos and disorder is temporary and it will pass and the good old days will return. We were taught that the more things change, the more they stay the same! Current Reality: Our most passionately held assumptions may vary from the emerging reality. Two certainties seem to be emerging: continuing technological change and the insistence of individuals to control their own destinies.

Myth 2: One life equals one career. The work we selected, perhaps in our late teens, or somehow backed into without much thinking, is a lifetime commitment. We picked it, so till death do we part! Current Reality: Most people experience 3–5 career changes and 14–16 job changes by age 36.

Myth 3: The best is over, so go gently into the good night! Old dogs can't learn new tricks! Reality: Chronological Age is Crap! Focus on Functional Age—Mental, Emotional, Physical. I wrote 120 pages on this subject which was cut by the publisher to less than one page, so I had another book, *Don't Stop the Career Clock*, practically completed.

Myth 4: Increasing middle-class affluence and expanding opportunities are our inherent right and expectation. Reality: The loss of our middle class is a very real current concern.

Myth 5: Career success, happiness and high self-esteem directly correlate with status, money and upward mobility. Dropping out of the corporate world is career suicide: step off the ladder and you're dead! Sacrificing your personal/private life is the price of success. Reality: This is not proven but assumed! Positive Psychology, www.ippanetwork.org, is researching this in-depth.

Myth 6: Planning a career isn't necessary because there is an automatic system in place that will take care of it. Trust the system and keep the career on cruise control. Superior performance will be automatically recognized and rewarded in the workplace. "Someone" is coming to provide career security and direction for us. Reality: The *Yo Yo Career Model* is in operation. You're on your own! Any automatic career advancement system has totally collapsed!

Myth 7: Select your career on labor market projections: Go where the best jobs, best money, and most secure jobs are predicted to be. Reality: Be aware: predictions and numbers are frequently way off. We have "*liars, damn liars and statistics*," according to Mark Twain.

Myth 8: Successful people make no mistakes and they do it all perfectly every time. Failures are to be avoided at all costs, and less than perfect is not acceptable on any level. Reality: Perfectionism (except for my dentist) is to be avoided. Lessons learned from our mistakes and failures frequently help us focus and advance faster.

Myth 9: "Either/Or" Paradigm: only one reality! There is one best option—to be, to think, do, act and succeed! So discover it, freeze into it, live with it, and serve it tenaciously! Reality: Think “both/and” such as both Meaning and Money, work and leisure, etc.

Myth 10: A college degree is a magic key to a good job and career success. The more degrees and the more advanced, technical and specialized they are, the more magic, and the greater the guarantee of career success. Reality: 82 per cent of upcoming jobs in Texas do not require a B.A. degree, but post secondary training only. *“In the conventional view, a college degree prepares one to enter the workforce. This is no longer true, as higher education has failed to keep pace with technology and a fast-changing economy. Anyone seeking a livelihood must also understand the new role of education in the emerging economy.”*

I am currently focusing on the myth of college for all, because while I highly value advanced education, I can see from my work with thousands of adults in career chaos that our beliefs and education are frequently a total mismatch for our current economy. The cost of college, if it is not really desired or really required for our career success, is not the best use of the money or time.

A college degree today does not ensure employment, as once assumed. As pointed out in *The Tragedy of College for Everybody*, the traditional American dream is a college degree tied to the implicit promise of a golden future. *“While the media portray those who bypass college as doomed to low incomes of blue collar jobs,”* this is questionable. The article points out that while the concept of universal higher education seems appealing, the reality is that college education only makes sense under the right conditions. For those motivated to make the most of the opportunity to attend college and pick a major with a high return on investment, it’s a sound choice. However, many will be worse off economically by spending four years out of the workforce. This is the opinion of three-fourths of employers recently surveyed by Millennial Branding and Beyond.com, an online career network. This is based on the results of a study focused on helping people grow and succeed professionally. Of the 2,978 respondents, 43 per cent said *“cultural fit”* was the single most important determining factor when making a new hire. And while academic success was helpful, the majority of hiring managers (64 per cent) would consider a candidate who had not attended college. Also, 73 per cent feel that college is only somewhat preparing students for the work world.

The top three attributes that companies are currently looking for are:

- positive attitude (84 per cent)
- communication skills (83 per cent)
- an ability to work on teams (74 per cent)

Ironically, liberal arts majors who are historically more focused on communication were least likely to land a job since only 2 per cent of the companies were recruiting them. In addition, 49 per cent of all generations believed that there were no jobs for those with a liberal arts degree. Based on this research, acquiring a college degree may take a backseat to the applicant’s personality. Even worse, 60 per cent of full-time students take six years to graduate college. They keep switching majors or they drop out without a degree but with college debt!

Is College Worth it?

Although 71 per cent of all generations pay their way through college, 31 per cent of job seekers said that a degree isn't worth the cost due to the high price of education.

41 per cent said it's going to take four or more years to pay back student loans.

53 per cent said that colleges should be accountable for getting students jobs.

33 per cent of all generations would rather have started a business than attend college.

59 per cent said that college doesn't prepare students for the real world.

Time magazine stated that our Human Skill and Knowledge base must change and be reworked to capitalize on our changing workplace, marketplace and social culture. We must constantly change and adapt. The key question remains, what works best in a changing environment?

The goal of the book that I am currently researching and writing is to provide information to revise and unite education to match the current and world of work. As a confirmed futurist, teacher and entrepreneur, I find this research highly engaging!

For example, Hugh Smith, reported that Google said *“Doing well in college – earning a high test score and grades has no measurable correlation with becoming an effective worker or manager. The entire higher education system is detached from the real economy: excelling in higher education has little discernible correlation to real-world skills or performance.”*

Our education system today prepares students to advance to the next level of education. It does not create real value or solve problems in the real economy. Smith states that education prepares students to obtain a credential, rather than developing skills essential in the real economy. Credentials are largely worthless in the real economy. Instead our emerging economy needs workers with practical skills and professionalism.

Runaway education costs and the failure to prepare students reveals a total lack of accountability. The educational path is unaffordable and obsolete. Colleges maintain a government-grounded monopoly on accreditation and even more alarming, Academically Adrift found that over 1/3 of college graduates did not demonstrate any significant improvement in learning in college.

The *New York Times* reported that 50 per cent of recent college graduates under 25, (the highest number in 18 years) are unable to find high paying jobs and are working at jobs that teenagers once held. Older workers—reluctant to leave—have impacted this. Higher minimum wages may also be creating a reluctance to hire teenagers. More people going to college leaves the remaining labor pool less desirable. Also, half of the traditional-age college students work 20 hours per week. By 2016, 53 per cent of college graduates will be underemployed.

More importantly, much of the demand for workers in the next 10 years will be in occupations that do not require a degree. The Bureau of Labor Statistics estimates that 15,628,000 jobs will need to be filled by 2022, but only 2,731,000 actually need at least an associate's degree.

These occupations include:

Registered nurses

Secretaries and administrative assistants, except legal, medical and executive

General and operations managers

Bookkeeping, accounting and audit clerks

Medical secretaries

Licensed practical and licensed vocational nurses

First-line supervisors of office and administrative support workers

Elementary school teachers, except special education

Accountants and auditors

Medical assistants

Software developers

Management analysts

Sales representatives, wholesale and manufacturing, except technical and scientific products

Most of the job growth – about 13 million of the 15 million jobs – will be in the following fields for which a degree is not required such as:

Personal care aides

Retail salespersons

Home health aides

Combines food preparations and serving workers, including fast food

Nursing assistant

Customer service representatives

Janitors and cleaners

Construction laborers

Laborers and freight, stock and material movers

Carpenters

Heavy tractor-trailer truck drivers

Childcare workers

Office clerks

Maids and housekeeping cleaners

Cooks

Landscaping workers and groundskeepers

Receptionists and information clerks

Therefore, millions of college graduates with liberal arts degrees will enter a bleak world in which the only jobs available are as retail sales clerks, groundskeepers, and fast food workers. Not only do they earn low incomes, but they are saddled with student loan payments that further reduce their spending power. However, not all of the jobs available for people without college degrees are low paying. The BLS also lists 40 jobs that don't require bachelor's degrees. Each has an annual salary of at least \$58,000, **including the following top 10:**

Air traffic controllers, with an average annual salary of \$122,530

Transportation, storage and distribution managers, at \$81,830

First-line supervisors of police and detectives, at \$78,720

Radiation therapists, at \$77,560

Elevator installers and repairers, at \$76,560
Nuclear power reactor operators, at \$74,990
Detectives and criminal investigators, at \$74,300
Commercial pilots, at \$73,380
Power distributors and dispatchers, at \$71,690
Dental hygienists, at \$70,210

According to *Trends e-Magazine* (August 2012) American education is increasingly out-of-step with the new economy. The university education model has worked well for only the top 5-10 percent of the population. Forcing that model on everyone has led to a severe shortage of people with the skills needed for this country to compete in the 21st century.

College for all directly reflects the *one size fits all* of a piece of apparel according to the author of a *Trends e-Magazine* article aptly named, “American Education: Increasingly Out-of-Step with the New Economy.” Why? “*Because individuals possess very different abilities, aptitudes, and dreams.*” The traditional four-year liberal arts education is suitable only for a subset of the population. We are beginning to face the reality that it can be detrimental to many for whom it is not the best option. . . “*forcing too many square pegs into this round hole is, in the long run, a bad thing for the country as well.*”

Here are some additional realities: About 40 per cent of Americans have a bachelor’s or an associate’s degree. About 36 per cent of Texans have these degrees but ironically, there is an action plan to increase this to 60 per cent by 2030. Nationally, between 1992 and 2008, about 20 million students graduated from college but 12 million of them found jobs that didn’t require their college degree. This result means that 60 per cent were underemployed. In 1992, over 5 million people were in this career situation. In 2010 Forbes research reported that this number had tripled to 17.4 million.

The research by *Trends e-Magazine* focusing on all current working graduates reported that they found that more than one-third are employed in jobs that require no degree – flight attendant, taxi driver, non-technical sales and so on, and nationally, 330,000 waiters and waitresses have college degrees not needed for their jobs.

The problem is not the number of degrees, but the types of degrees and their poor fit with business needs. At the same time, we have a “shortage of workers in specialized trades and a scarcity of job candidates with a deep understanding of science and engineering.”

College for all thinking became strong in the 1980’s when the marketplace was demanding higher skills and a college education was seen as the ticket to top-paying jobs and entry into the middle class. So, all possible barriers were removed for attending college, and a “significant number of students who did not have the wherewithal to absorb and implement the lesson derived from higher learning were admitted.” Other post high school learning options would have better served both them and society. The *college for all* direction also had detrimental effect on colleges, leading them to water down or *dumb down* their intellectual content.

A highly significant study on current college students is summarized in *Academically Adrift* by sociologists Richard Arum and Josipa Roksa. They found that after two years in college, 45 per cent of students showed no significant improvement. For the two main real world skills measured, critical thinking and writing skills, the figure was 36 per cent after four years in college. Arum's and Roksa's research shows that the reason for these results is a lack of rigor. Students were too comfortable, and not challenged. They only spent 12–14 hours per week on studying—mostly in a group setting. Only a third of the students studied alone, averaging 5 or fewer hours per week. A majority avoided taking courses that required more than 20 pages of writing per semester, and 32 per cent avoided courses that required reading more than 40 pages per week. Countless students did not make wise decisions regarding majors that would help them build a satisfying career.

A Rutgers University survey asked recent college graduates what they would have done differently to be better prepared for the workplace of today and tomorrow. They offered some good advice, including:

- Be more careful about selecting a major or a minor.
- Do more internships or part-time work in the field related to your field of study.
- Take more classes to be prepared for your career.
- Take greater care in selecting a college, university, or technical school program.

To determine if college for all is highly desirable or a flawed myth, we should not track how many students enter college, but how many students graduate with marketable skills—and then find satisfying work!

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About the author



Helen Harkness, PhD, founded Career Design Associates, Inc. (CDA) in 1978. She is a futurist, consultant, researcher, an experienced speaker, teacher, writer, and a pioneer in the development and implementation of career management programs and resources for organizations and individual clients. Her work integrates her own multidimensional career as a successful entrepreneur, former academic dean/provost, college professor, director of continuing education, and public school teacher. In 2012 she founded Career Design Foundation to provide service for middle and high school students, parents and teachers to determine a career based on their skills, interests, values and the current and future workplace needs. She wrote and produced a series of eight videotapes, *Careers in Finance* and *Discovering Career Options* with Dr. John Holland. CDA has produced and maintains a library of 600 *Pathfinders for the Future* career videos available to the public at no charge. She has published *Best Jobs for the Future; The Career Chase; Don't Stop the Career Clock; Capitalizing on Career Chaos* and countless articles exploring the myths of contemporary work life that steer careers off course. Her work focuses on the new realities and changes to be faced in our work life in the 21st century. She taught Career Options for Teachers, Making Your Career Change, Myers-Briggs Temperament Indicator and Best Jobs for the Future for Southern Methodist University [SMU] and FunEd. She also taught Running From the Law, and continues to teach a two-night course, Re-Careering: The Search for Meaning, Money, Creativity and Control at SMU. She formerly taught Career Development in the Psychology Department for the graduate students at SMU and Career Development Coaching for the Executive Coaching Program at University of Texas-Dallas [UTD] School of Management. The Dallas/Fort Worth Chapter Association of Career Professionals (ACP) International created an annual award, the "Helen Harkness Professional of the Year Award" permanently named for her. She is a member of the World Future Society and has coordinated the career counseling at their annual conferences. Also, she is a member of the International Positive Psychology Association, Association of Professional Futurists, National Speakers Association, International Association of Career Professionals and The Collaborative Law Institute of Texas.

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Chapter 9

OUR JOBS: THE AMERICAN WORKFORCE and ECONOMY in CRISIS

by Ed Gordon

The good news is that the U.S. economy is set to grow between two to three percent in 2015. This is partly the result of America's rising shale oil production that has helped to drive down world petroleum prices. Also, a strengthening economy is attracting more overseas investments. On the surface the unemployment crisis has waned. The United States may reach so-called *full employment* of its skilled workforce during 2015. Global economic prospects are far weaker. Increasing financial turmoil is rising due largely to a major economic slowdown in China. Its ripple effects are triggering declining exports from Germany, Russia, Australia, Brazil, Canada, and other nations. This may depress the economies of many nations in 2015. [1]

U. S. Employment Challenges

The U.S. unemployment rate has fallen from 6.7 to 5.5 percent during the past year. By February 2015 the United States had seen its longest streak of monthly job gains above the 200,000 level in the past decade. This also broke the record for the longest streak of private jobs gained over 60 straight months. However, the number of people in the U.S. labor market or the labor participation rate is near a 36-year low and is a major reason for the decline in the unemployment rate. More people who previously had been looking for work left the job market in February 2015 than got jobs. Normally as the labor market improves, people re-enter it and wages begin to rise. Thus far this has not occurred. The spiking number of baby boomers who are retiring only explains part of the fall of the labor participation rate, as this rate has declined among all age groups under age 62.

The number of Americans whom the **U.S. Bureau of Labor Statistics** classifies at "*Not in the Labor Force*" has increased by over one million workers in the past 12 months from 92 million to 93.5 million. In 2008, before the start of the U.S. recession, 79.5 million people were not in the workforce. The number of non-workers has risen by 14 million in the past seven years. Some claim that this increase is due to the bulge of baby-boomers reaching retirement age. However, the data show this is only partially correct. Almost 50 per cent of the people who have dropped out of the workforce are not retirees. More ominously, 16 per cent of men aged 25 to 54 who are classified as *prime age workers* are not in the workforce. This proportion has tripled since the late 1960s. [2]

Why are so many potential workers still idle? Why is wage growth stagnant?

New Jobs "Deal" for the United States

The United States has a new jobs *Deal* that consists of four moving parts:

-
- Demographics
 - Education
 - Automation
 - Longevity

1st: 79 million Baby Boomers need to be replaced. Many held technical jobs in STEM areas that are now vacant.

2nd: Jobs require more education and career skills than ever before.

3rd: Automation has eliminated most low- and middle-skill jobs. The digital workplace requires thinking and problem-solving abilities.

4th: People are living longer. Actuarial projections estimate that on average an American 65-year-old man will live to 86.6 years and the average woman to 88.8 years. More boomers want to keep on working beyond age 65. As they retire, their knowledge will be difficult to replace.

This new jobs *deal* helps explain why the current U.S. unemployment numbers just don't add up. [3]

No Labor Slack!

In March 2013 when the unemployment rate was 7.7 percent, the then Federal Reserve Chairman Ben Bernanke said that when the economy strengthened discouraged workers would return to the workforce. [4]

This has not happened! Instead as the rate dips closer to the benchmark for “full employment,” the proportion of Americans not looking for work is near the all-time low. The big question is when and how will these workers return to the workforce. If the labor participation rate continues to stay at very low levels, economic stagnation is a distinct possibility. So what headline news can we expect in 2015? Rather than the gadget-filled utopia promised by tech enthusiasts, our world may begin to come to a slow grinding halt. The supply of adequately skilled workers in the United States and across the world may fail to keep up with the increasing demands of today's tech-driven economies.

Neglect in Developing the Work Force

The United States and many nations throughout the world are being confronted with a legacy of over two decades of neglect by both businesses and society at large in developing their workforces. Hundreds of reports, studies, and surveys from such organizations as **Deloitte**, the **Manufacturing Institute**, **McKinsey**, **Accenture**, **Harvard Business School**, **Manpower**, the **Institute for Management Development**, **Conference Board**, **Brookings Institution**, **Business Roundtable**, **Oxford Economics**, **CEO Council**, **Society for Human Resource Management**, **Thomasnet's Industry Marketing Barometer**, **Center on Education and the Workforce of Georgetown University**, **National Bureau of Economic Research**, **Towers Watson**, **ABC Canada**, **U.S. Department of Commerce**, **American Association of Colleges of Nursing**, and many more have called attention to this human capital time-bomb. Yet we have largely ignored both updating worker skills and providing more students with the challenging general education and career training needed to meet the rising requirements of the contemporary workplace. [5]

Millions of workers who have left the workforce had jobs that have now been automated. Many

of them lack the educational preparation and specific career/job skills currently sought by employers. They want good paying jobs but only qualify for low-skill jobs. On the employer side, companies only want to hire people who are *job ready*. They are looking for an exact fit and scorn job-training programs because they fear that such qualified hires will be poached by a competitor. Businesses see millions of unemployed people. They believe there is plenty of labor slack in the U.S. work force. They not only reject training, but also have kept wages low. This has kept a growing cadre of skilled people waiting until wages again reach a competitive level in their job area. On the other hand, recent surveys continually show that executives report finding appropriately skilled workers is their biggest worry, and they only see that it is getting worse. Yet, while some state that they intend to increase their training expenditures, this is happening too slowly for the labor force to significantly advance in attaining the skill levels demanded by modern workplaces.

One solution used by Columbus Casting, an Ohio steel foundry, was to hire 175 inexperienced workers who were given just enough basic training to do their jobs. The \$14-an-hour wage was unattractive to skilled workers, so this company hired people with a criminal record or a past history of extended unemployment. Following this practice of providing the most minimal training possible helps explain why U.S. annual productivity growth since 2009 has averaged just 1.3 percent, the weakest since the 1970s. Many new technologies are increasingly reliant on digitally driven equipment and software. Weak business investment in its human capital is a limiting factor for productivity growth in the U.S. knowledge economy. Something has to give to prevent the U.S. talent crisis from ending up in an economic train wreck!

In 2015 the business community must face the reality there is little slack in the U.S. labor market. Since the skills-job disconnect is global, every industrial nation is now chasing after the same limited supply of skilled people. U.S. business efforts to import an adequate number of these skilled foreigners to fill vacant STEM and other high-skill jobs has become an increasing exercise in futility. [6]

Lack of Rigor in U. S. Education

Yet there seems to be a growing hostility in American culture to raising educational standards in order to provide larger numbers of students and workers with more in-depth knowledge and workforce skills training. This is because we have failed to clearly provide a coherent picture of what sustains our modern standard of living. It explains much of the public's hostility to overhauling the largely outdated 20th-century education-to-employment system. This system is similar to running a high-performance race car on low-octane fuel! It is self-defeating for students/parents and workers/businesses.

What are the consequences of the lack of rigor in American education? In January 2015 the results of an exam developed by the **Council for Aid to Education** found that 40 per cent of college seniors lack the critical thinking, analytical reasoning, writing, and communications skills required for success on the job. In a similar vein, the Association of American Colleges and Universities national survey reported that 58 per cent of employers said that serious education improvements are needed in higher education to prepare students for entry-level positions. [7]

An international perspective is provided by the Survey of Adult Skills administered by the **Organization for Economic Co-operation and Development (OECD)**. This test was completed by about 166,000 adults in 23 nations and assessed the literacy, math, and problem-solving skills of adults aged 16 to 65. U.S. adults scored below the OECD average in literacy, very poorly in math, and slightly below average in technological problem-solving. [8]

The **Educational Testing Service (ETS)** extracted data from the OECD survey to conduct a comparative analysis of U.S. millennials. *America's Skills Challenge: Millennials and the Future* (January 2015) focuses on adults ages 16 to 34. They are our *digital natives*, the generation we have conditioned for higher achievement. Unfortunately, this did not prove to be the case. In literacy out of the 23 nations, only millennials in two nations, Italy and Spain, had lower average scores than Americans. In math, U.S. millennials were dead last, and in technical problem-solving skills, second from the bottom. The ETS study analyzed overall averages, but also did a variety of other comparisons. The results were equally surprising. U.S. millennials with master's degrees and doctorates did better than their peers in only three countries, Ireland, Poland, and Spain. The best students in Finland, Sweden, and Japan scored far higher than their U.S. counterparts.

ETS focused on native-born Americans and further native-born American with at least one college-graduate parent. The scores of both groups were still behind those of most other nations. When ETS looked at race, white and Asian-Americans did better, but still fell behind similar populations in other nations.

The ETS study called into question the rigor of U.S. educational credentials. Though few American test takers lacked a high school diploma, the scores of American millennials were not any better than those attained in nations that had relatively high rates of students who failed to finish high school.

Moreover, U.S. scores on the **Survey of Adult Skills** were lower in 2012 than in when it was last conducted in 2003. The ETS study concludes with this assessment:

A decade ago, the skill level of American adults was judged *mediocre*. Now it is below even that. Millennials, who will form the backbone of this nation's future, are not poised to lift us out of this predicament; in fact, the lack of adequate skills in this population has become a challenge for us to confront. [9]

Let's stop kidding ourselves that the kids are doing just fine! Already there are too many unemployed grads wondering, What was the benefit of my college education? Their parents are wondering that as well! Too many parents still don't get this message. National test scores (i.e., **National Assessment of Educational Progress**) indicate that many schools have too many students who are not reaching proficient skill levels in these general education areas. America's advanced technical development demands that all students attain higher reading, math, science, and communications proficiency. There are no more low-skill/high-wage jobs. This is not a political statement. This is the reality of America's 21st-century economy. Today's students need to learn more, not less than past generations, if they are to attain middle-class status. People will have to

master multiple skills if they are to thrive in today's workforce and keep their skills and knowledge up-to-date as jobs and career demands change. If the United States is to prosper in 2015 and beyond as it faces the challenges posed by globalization, automation, and demographic change, we must invest more to develop our human capital.

Investing in Human Capital

The message for businesses is that to achieve more growth over the next decade they must increase investments in both technology and in improving the education and skills of America's current and future workforce. That means that both Wall Street and Main Street businesses have to change their thinking. Company cost-cutting to increase short-term profits has led to serious underinvestment in worker training and student career education. Both poaching skilled people and surrendering all responsibility for student career education to local schools has become an accepted U.S. business practice.

American businesses have continued down this road of underinvesting in human capital for several decades. They now face a rising tide of vacant jobs they cannot fill. This will grow from about 7.4 million vacant jobs today to an estimated 14 to 25 million by 2022. [10]

What is a promising solution gaining traction across the nation for rebuilding America's education-to-employment system in order to prepare people for 21st-century job opportunities? More American companies need to participate in collaborative business-education programs at the regional level to provide people with the skills needed to fill current vacant jobs and prepare more students for in-demand careers.

What RETAINs Can Do

Regional Talent Innovation Networks (RETAINs) are all about creating local delivery systems that both reeducate those already in the workforce and better prepare a larger proportion of students for current jobs and future careers that will be created by the ongoing jobs revolution. The over 1,000 RETAINs across the United States have chosen a wide variety of names, such as:

- The New North (Wisconsin)
- The Vermilion Advantage (Danville, Illinois)
- High School Inc. (Santa Ana, California)
- The Coachella Valley Economic Partnership (Palm Springs California Area)
- New Century Careers (Pittsburgh, Pennsylvania)
- Partners for a Competitive Workforce (Cincinnati, Ohio)

RETAINs act as neutral intermediaries that provide a place in which different groups can gather and safely collaborate. They produce cross-sector programs that support skill needs common to many businesses. RETAINs help minimize the poaching risks and promote a more positive overall regional business culture of creating rather than stealing talent from each other. (See **Figure 1, Appendix**) RETAINs succeed because individual groups form a new shared vision of a larger community arising from a variety of isolated silos. Each group has its own agenda and needs. But each also has an influence on the whole community, and each depends on the success of the whole community (See **Figure 2, Appendix**). RETAINs are of particular interest to small business owners because they offer a viable way of pooling their resources through joint programming that will inform, attract, and prepare skilled workers to fill current vacant jobs.

RETAINs link regional employers together as a collaborative network to rebuild the talent pipeline that integrates training organizations, educational institutions, and other community-based organizations. This reduces the individual company's investment in employer-provided education and training (See **Figure 3, Appendix**). RETAINs also recognize that the development of a student's academic knowledge and career skills are no longer mutually exclusive silos. Both the informational content of 21st-century jobs and the speed of continuing labor-market changes have now ended this division.

Today's reality is that all students must be prepared for some form of postsecondary education – 2- or 4-year college degrees, technical certificates, or apprenticeships. Integrating the required 21st-century skills and career and technical education into the entire education system (elementary, secondary, postsecondary, workplace learning) will make this a reality. The required direction for all K-12 education is to prepare every student for this transition without remediation to a postsecondary education.

This is the primary reason why many RETAINs have as part of their network liberal arts, college-prep, career academies, or to adopt a simpler term for this discussion, comprehensive career academies (CCAs). They are a growing phenomenon in high schools across the United States. Over 2,500 CCAs are already operating. Many are smaller learning communities within larger high schools. Some are stand-alone career high schools in healthcare, IT, and various STEM areas. They blend a stronger liberal arts curriculum with specific practical career-education courses, internships, and pre-apprenticeship experiences. RETAINs also support apprenticeship education programs. Apprenticeships are post-secondary skill-training programs that combine paid, supervised, on-the-job learning experiences with related classroom academic instruction. Apprenticeships provide students with an advanced set of skills leading to certification in specific career areas including many types of technicians. No single business sector can effectively rebuild regional workforce delivery systems by acting alone. RETAINs as cross-sector public/private partnerships help focus on building sustainability and growth for all their business members. Through participating in them businesses discover they share the same concerns and learn how to work together in solving this skills-job crisis for employers, community members, and the regional economy (See **Figure 4, Appendix**). [11]

Call to Action

American society is currently neglecting both its students and workers. If we fail to reform our education-to-employment systems to produce the skilled labor needed today as we approach full employment, when will this ever happen? Decision time has arrived for systemic change to restructure learning for the 21st century!

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About the author

Edward E. Gordon. is the author of *Future Jobs: Solving the Employment and Skills Problem* (2013) as well as many other academic and business titles on adult learning and workforce development issues. For 20 years he taught at several Chicago universities including DePaul, Loyola, and Northwestern. He is the founder and president of Imperial Consulting Corporation in Chicago. He has consulted with leaders in business, education, government and non-profits for over 40 years. Ed is a big picture thought leader connecting the employment dots between business, education, and training. The culmination of his work as a visionary who applies a multi-disciplinary approach to today's complex workforce needs and economic development issues can be found in his newest book, *Future Jobs: Solving the Employment & Skills Crisis*. The founder and president of Imperial Consulting Corporation (in Chicago and Palm Desert, California), he is a human capital management expert who is internationally recognized as an authority on how talent discovery, career planning, and training relate to business and economic development. As a writer, researcher, speaker, and consultant he has helped shape policy and promote business and education development. He has helped hundreds of clients, including Fortune 500 companies, as well as: Microsoft, PricewaterhouseCoopers, the Federal Reserve, Motorola, Metra Rail, the American Institute for Research, the Conference Board (U.S. and Canada), the U.S. Departments of Education and Labor, state agencies of Alabama, Arkansas, California, Delaware, Illinois, Indiana, Kansas, Michigan, Minnesota, New York, North Carolina, North Dakota, Ohio, Pennsylvania, South Carolina, Virginia, and Wisconsin; as well as universities, school systems, non-profit organizations, and trade or professional associations. Gordon is the author or co-author of 18 books including *Winning the Global Talent Showdown*, *The 2010 Meltdown*, *Skill Wars*, *FutureWork*, *Closing the Literacy Gap in American Business*, *Opportunities in Training and Development*

Careers, Literacy in America, The Tutoring Revolution, Peer Tutoring: A Teacher's Resource Guide and *Tutor Quest*. He has been quoted in or written over 300 articles for major newspapers, including *USA Today, The Wall Street Journal, The New York Times, Washington Post, Boston Globe, Investor's Business Daily*, popular magazines, business publications, and education journals, including *The Futurist, M World, Talent Management, Training, HR Magazine*, and *Employment Relations Today* as well as in the documentary film *Waiting for Superman*. His media experience includes the CBS Network's The Early Show, PBS, CNN, NBC, Bloomberg TV, WGN, NPR, Time-Warner Cable, USA Radio, and Yahoo! As a professional speaker, he has been heard by over 500,000 people and millions on television and radio. He has taught courses in business, psychology, and history for 20 years at several Chicago-area universities including DePaul, Loyola, and Northwestern. He currently is on the Executive Board of the Chicago Renaissance Manufacturing Council, the Advisory Board of the Coachella Valley Economic Partnership (Palm Springs area), the Human Capital Executive Research Board, and the Advisory Board of the Catholic Charities of Chicago. He previously served on the Board of Directors of the Better Business Bureau of Chicago and Northern Illinois, the Board of Trustees of Moraine Valley Community College, the Board of Directors of the Illinois Literacy Resource Development Center, and the Youth Policy Committee of the Chicago Workforce Board. He earned the PhD in History/Psychology, graduating Magna cum Laude from Loyola University in Chicago, and the MA in History, graduating Magna cum Laude from DePaul University in Chicago. Contact him as follows:

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APPENDIX

Figure 1: Build a RETAIN Network

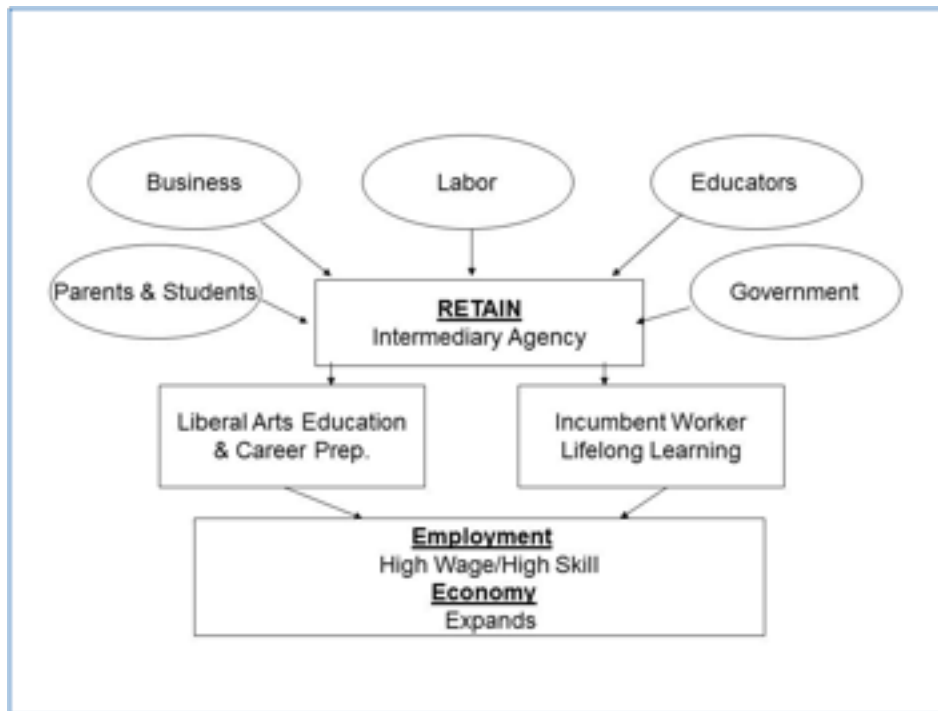


Figure 2: Shared Talent Vision

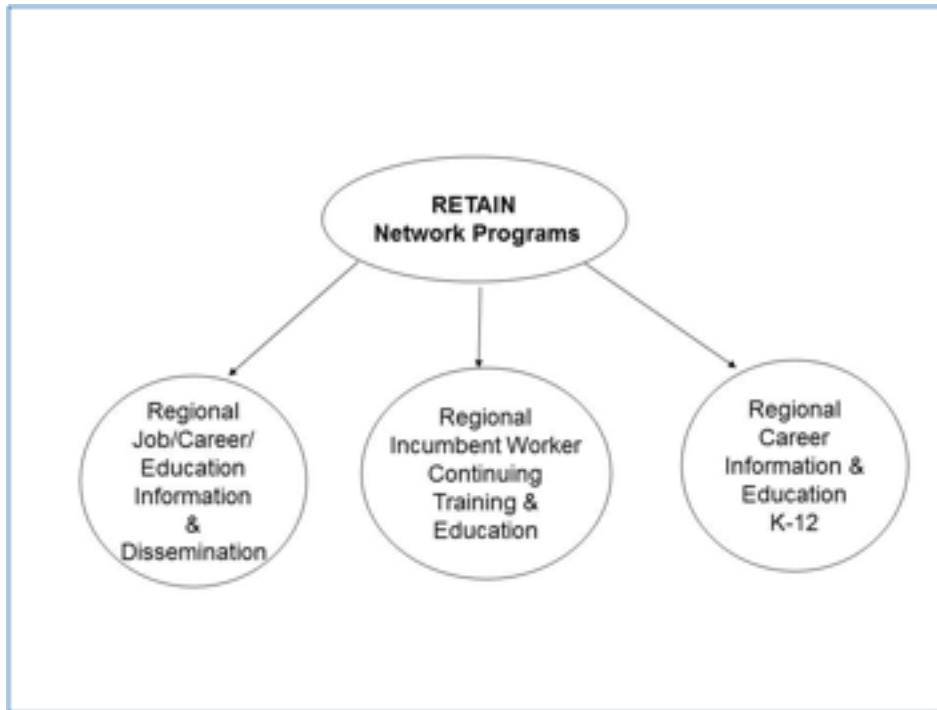


Figure 3: Rebuilding the Talent Pipeline

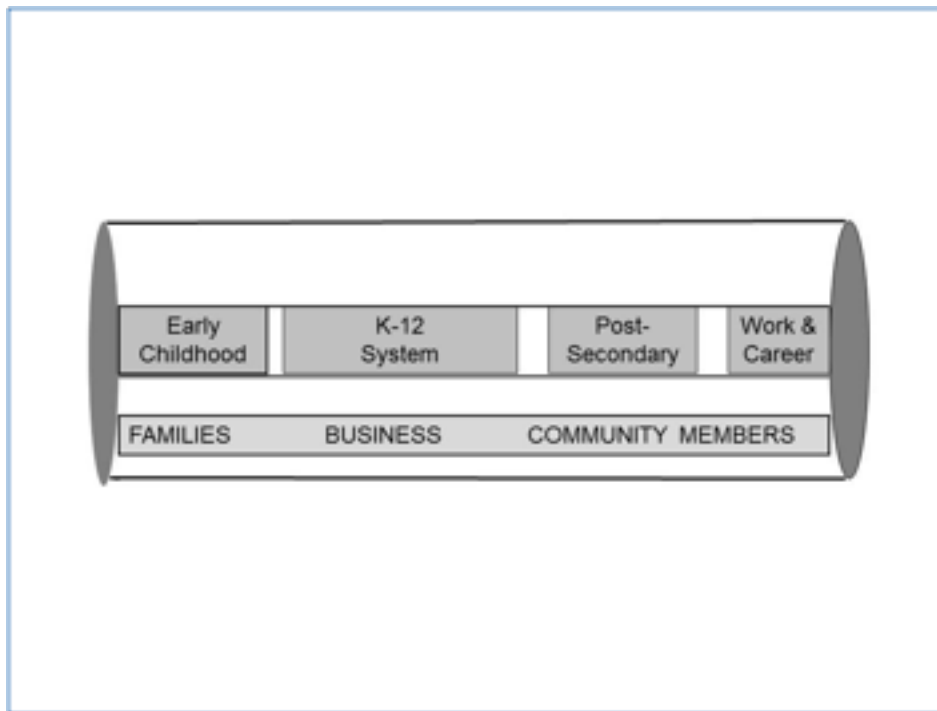
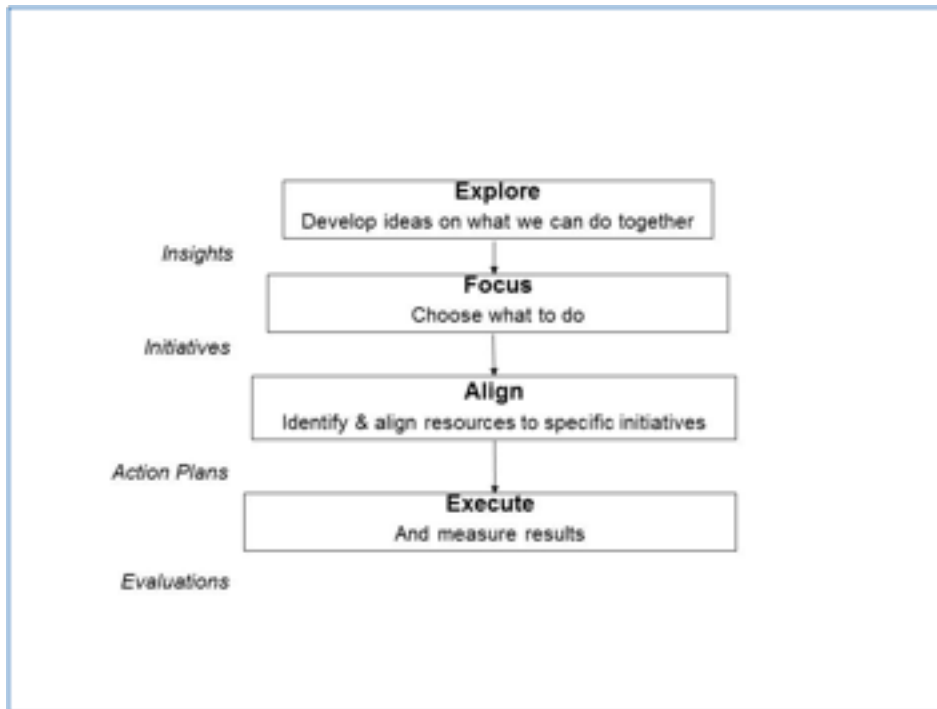


Figure 4: What RETAINs Do



Chapter 10

THE FUTURE HAS ARRIVED: The Future is Now the Present

by Helen Harkness

For two decades I have attended and presented at the World Future Society. The title of this article summarizes my thinking after returning from the week-long 2002 conference last month in Philadelphia.

Immediately I also spent three nights in bed with Toffler — not the man, but all his books and articles, collected for 30 years and stashed in my research room. Believe me, they covered my king-size bed! As my clients and readers know, since I incorporated CDA in 1978, I relentlessly study all forces impacting and transforming our workplace: the economy, the business world, technology, and society. True, this strong research base is coupled with my intuition and foresight based on my real-life experiences.

At one time or another I have plowed doggedly through Toffler's work in order to access his foresight. On re-reading his work, it's amazing how on-target he has been concerning the changes in our world — not 100 per cent of course, but without question much he forecast has happened. Now I plan to focus on gaining insight on trends for the next 30 years since I plan to work that long! I have trusted his assessments of the changes in the workplace, because when Toffler talks about the negatives of blue-collar factory work, he personally knows. He and his co-writer wife, Heidi, both worked in factories for years. This is difficult to believe when you read their highly scholarly and lengthy works!

I remember well my introduction to Toffler and future thinking in early 1970. I was rather ineptly trying to keep freshmen awake in their MWF 1:00 pm English class. Giving up on Shakespeare, and trying to be relevant (the cry of the '70s), I dashed out and bought a stack of paperback copies of Toffler's *Future Shock* (after only reading a review). I don't know how it affected my students, but it hit an extremely important life-changing "*aha*" for me. His definition of "future shock" as total disorientation, shattering stress, and overwhelming unexpected change parachuting us alone into a chaotic world where current reality and our former expectations and rules were totally clashing put a vocabulary to my life at that time! My quest became the search for understanding my life by studying the future.

Toffler's predictions of 3–5 career changes seemed ludicrous in the early '70s. A college degree was touted as the major magic key! But yet, though a teacher with many degrees, I knew I could not rear three kids on my faculty salary. I could never excel in a first-rate university because of the time I had taken off with my young children. This settled me on my purpose in life.

Incidentally, as I remember, Toffler also said we would have homosexual parents — a totally way-out, not-ever- believable forecast which has certainly happened. The paper, disposable clothes I remember that he predicted haven't happened yet. Toffler also wrote the introduction, titled "Science and Change," to Ilya Prigogine's first book, ***Order Out of Chaos: Man's New Dialogue with Nature*** (1984). As my CDA clients remember, the first session of our Skills Workshop series begins with a discussion of Prigogine, a Nobel Prize Winner in 1977 for his Theory of Dissipative Structures, the initial writing on the Theory of Chaos. There is a strong connection between the work of these two. Toffler's works include:

Future Shock, (1970), sold over 7 million copies — an unbelievable number since it doesn't deal with Hollywood, sex, quick-fix motivation or a get-rich-quick formula. However, it left us with a new term, "*future shock*," which entered our vocabulary and frankly now describes the chaotic world we find ourselves experiencing daily. Millions are in what I call "career shock," a painful splinter of future shock.

The Ecospasm Report, (1975), outlined what was happening in economics and labeled it as the beginning breakdown of our industrial civilization and early appearance of the wholly new society.

The Third Wave, (1980), though extremely analytical and scholarly, became an international bestseller, breaking many records. Toffler again deals with change — it's speed and direction — synthesizing information from highly disparate fields and providing startling ways of viewing our world. Toffler said that "life organizers ... a cadre of professionals," would be needed to provide practical assistance for structuring one's life under the high social and technological turmoil and overchoice. He said that we probably need fewer psychotherapists, burrowing mole-like in to id and ego, but people to help us pull our daily lives together provide a framework of order and purpose in our lives. Toffler stresses that people need meaning beyond their own — this is the Holy Grail that clients and CDA seek! Remember we must:

- Know what we want: internal & external — see a future image of it
- Ask for it effectively — confident that we will receive it
- Know that we deserve it · Become first rate in it

To continue with Toffler's works:

Previews and Premises, (1983) — a series of interviews about jobs, identity, sex roles, new politics of the Information Age, and the hidden forces driving our economy .This book is shorter (most of his other works have around 600 pages) and it hits on his major ideas up to this time .If you haven't read Toffler, this is a good starter.

Powershift, (1991), discusses the battles that pit new-style workers against investors, retailers, and manufacturers, as well as the conflict between new media and the old television networks.

The Adaptive Corporation, (1984), I don't own this book and have not read it.

War and Anti-War: Making Sense of Today's Global Chaos, (1993), which emphasizes that while we are racing to make better weapons, our peace-making *weaponry* is out of date and ignored! Toffler, thirty years ago, forecast much happening in our work world. He discussed retraining and retooling the mind instead of moving workers unequipped into retirement. Whether training was done by the private sector, the education system, military, media, with any or all of the above, he said more was needed than simple occupational skills. New values, attitudes, and life styles are essential. It's a cultural jump, not merely a change in job skills. Retraining, according to Toffler, is very complicated and expensive but cheaper than throwing employees "onto a slag heap and subsidizing permanent retirement." In ***Previews and Premises***, Toffler says,

"What is needed is a massive effort to redeploy labor through training, retraining, and still more training

And again, I don't mean for specific mechanical job skills, like keypunching. I mean something we don't do very well: helping people transition to wholly new ways of life. This fits directly into a study by **Bain & Company** (www.bain.com). They found that companies that dismissed 15 per cent of their workforce experienced below-average stock prices for the same period. Continuing waves of layoffs created even more damage. According to the research, the costs of severance, loss of skilled workers, damaged trust and credibility, reduced innovation, lowered productivity, and what I call "*survivor syndrome*" for those who remained is far more than companies can calculate. Becoming risk-adverse, employees feel justified in spending more time looking for a new job. Cost-cutting gone wrong can end up losing key employees with important knowledge who are going to cost a fortune to replace when upturn comes. Quick fixes can create long-term loss! To me, it is obvious that to cut effectively, senior management needs to provide career development programs to accomplish the following:

- learn the essential skills needed for the organization and identify those in their organization who can do these;
- retrain employees who have aptitude and interest in a needed field;
- offer retirement but provide a plan for it; · provide sabbatical and incentive bonus, perhaps working in non-profit at a reduced salary (goodwill for companies);
- offer sabbatical at 20 per cent of salary, or flex-leave to catch up on family needs.

Thoughtless, careless downsizing without any innovative thinking and a seeming disregard of their people or the needs of future company employees will come back to haunt them. The economy will return. Skilled workers will be highly valuable. In Europe, the U.S. and Japan the workforce is rapidly aging. The revenge of those mistreated will hit countless of today's companies.

Future Workplace Trends

The main safety net for capitalizing on chaos and avoiding culture and career shock is to know our Success Criteria – those "**Glass Balls**" that are critically important to us – not to others – not what we *should* or *ought* but those needs which arise from our DNA, our very instinctive intuitive being. That is the taproot, the bedrock – the calm eye in the hurricane of much of our current life! What would you answer to the following critically important questions? These are the "**Glass Balls**" from a client and his employer:

Q: What do you personally want from your work?

A: Partnership, balance, community, and synergy.

Q: What does the organization want and need?

A: Commitment, quality, success, and growth.

Success is bringing these goals together to move the organization and individual careers forward. Critical trends that will influence the workplace are:

- Work/life balance and synergy
- Work as a noble cause
- Personal growth and development
- Partnership in a collapsed hierarchy · Community at work · Trust/ethics

My clients reflect these issues on their Success Criteria.

Additional forces impacting today's workforce are:

Pace and acceleration of change: focus on developing "future shock absorbers." Family – parenting and family patterns are changing. Economy – jobs for life no longer exist, nor the automatic loyalty this produced. What is the new definition of loyalty? Society – more wealth, more worries. Affluence has not brought fulfillment: Strong movement to find deeper meaning and satisfaction. Technology – solved some problems but created others. Over-choice – too many decisions focusing on best option – our preferred future is the challenge.

From *Career Design Newsletter* September 2002

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