Aspirations

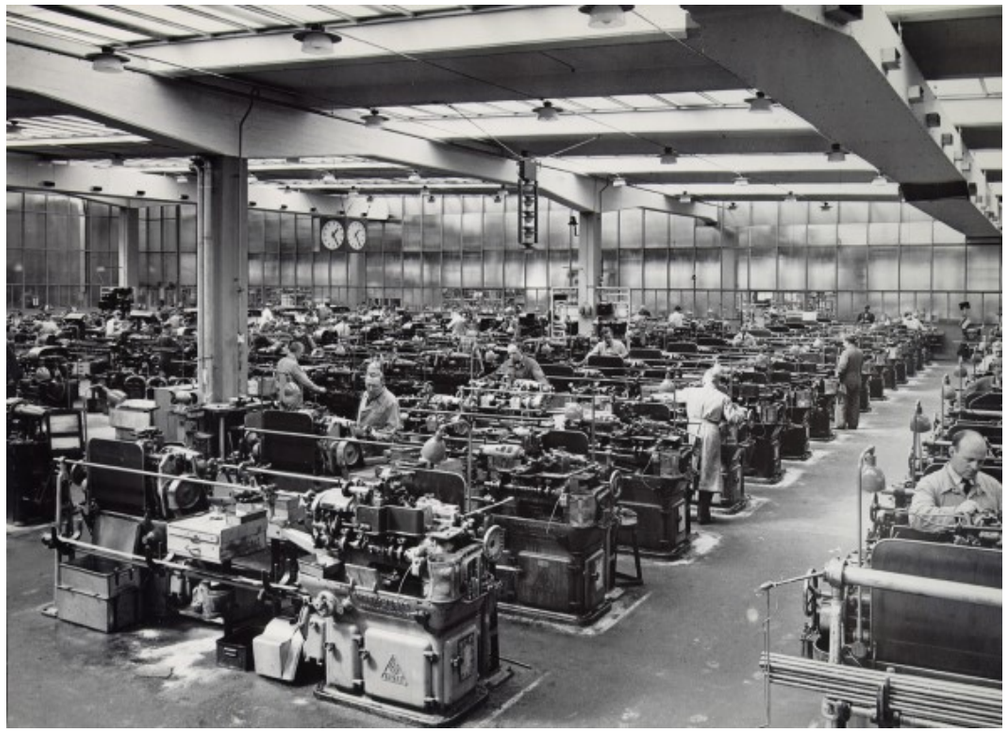
No Limits:

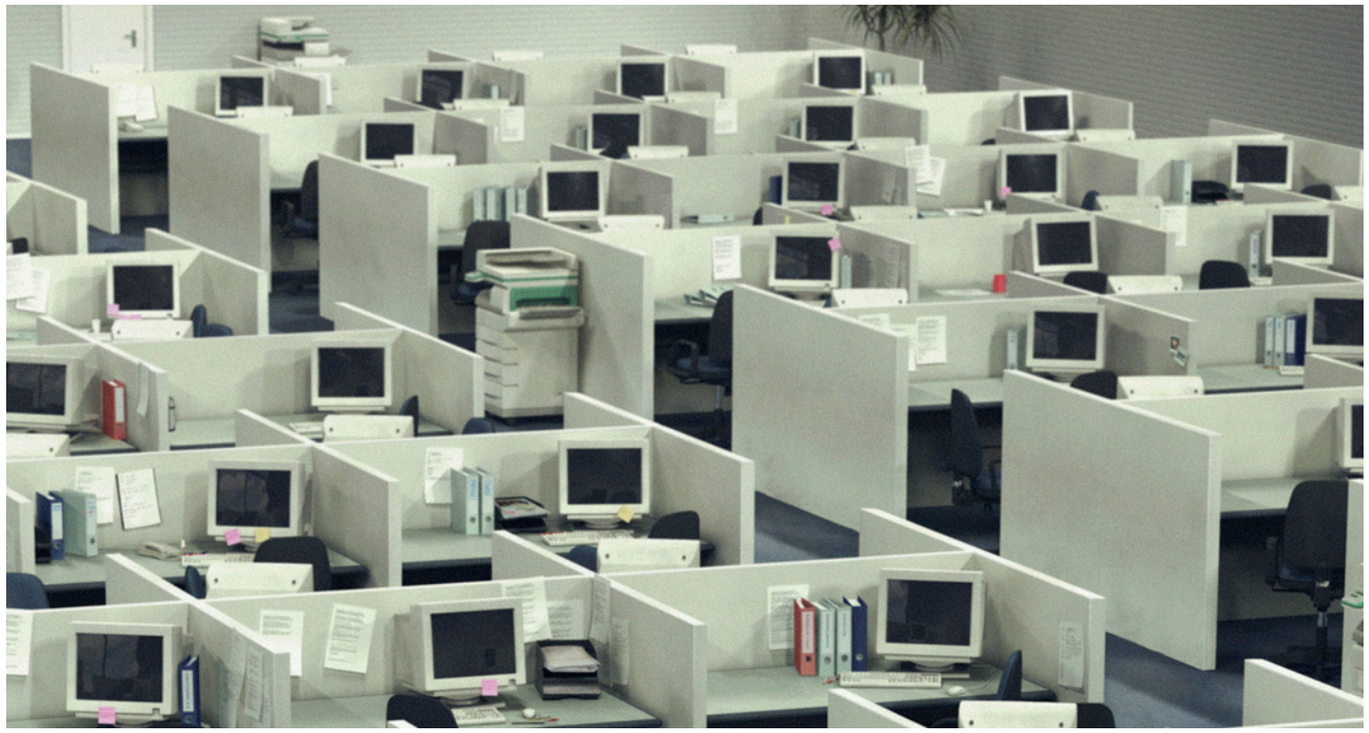
Education for success in the 21st century

RATIONALE

AN AUTHENTIC EDUCATION FOR THE 21ST CENTURY

Aspirations





To organise and teach children to become workers who could perform industrial tasks in a 'perfect way', the Taylorists set out to remake the architecture of the entire educational system to conform to the central tenet of scientific management: ***standardise everything around the average****. Schools around the country adopted the 'Gary plan', named after the industrialised Indiana city where it originated:* ***students were divided into groups by age (not by performance, interest, or aptitude) and these groups of students rotated through different classes, each lasting a standardised period of time****. School bells were introduced to emulate factory bells, in order to mentally prepare children for their future careers.*

By 1920 most American schools were organised according to the Taylorist vision of education.

**Taylorism: Production efficiency methodology that breaks every action, job, or task into small and simple segments which can be easily analysed and taught.*

Once upon a time…….

if you hadn't learned something by the age of 21, you'd never learn it – but the knowledge you had by then would most likely remain useful your entire life. Today the crafts, school systems and professions are largely still rooted in this perception, but learning and education should today be thought of as a life-long assignment where competencies continually are learned and developed – and not least unlearned. What you have learned by the age of 21 is simply a foundation on which you can develop yourself and study with a basis in the demands and needs of society. Changeability is the norm, and the static and narrow competency is not of much value if it can't continually be used and converted.

It has been said that Erasmus, the Dutch writer, scholar, and humanist of the Renaissance, was the last person who knew everything worth knowing.

Since his time, knowledge has increased at such a rate that it is no longer possible for one person to know everything worth knowing. Instead, **we must depend on others to share knowledge with us, plus a host of other resources - ideas, leads, opportunities, creativity, political support, financial capital, goodwill, and so on. We need contributions from others if we are to get our jobs done, achieve our goals, and fulfill our missions in life**. We live in a connected world, now more than ever before. The best performers in the future will be those who invest in and capitalise on the network of connections and resources, building powerful professional communities.

A time for softer skills

Dan Pink – A Whole New Mind

AGRICULTURAL AGE (farmers)

INDUSTRIAL AGE (factory workers)

INFORMATION / KNOWLEDGE AGE (knowledge workers)

CONCEPTUAL AGE (concept workers – creators and empathisers)

- Skills of '**high touch**' – empathy, understanding subtleties of human interaction, finding joy in one's purpose
- Skills of '**high concept**' – capacity to detect patterns and opportunities, combine different – maybe unconnected ideas together

18th century | **19th century** | **20th century** | **21st century**

Agricultural worker	Factory worker	Knowledge worker	Conceptual worker
Age of the plough	**Age of the machine**	**Age of the computer**	**Age of the idea**
Settle	*Automate*	*Aggregate*	*Create*
Grow things	*Make things*	*Program computers*	*Invent, innovate*
Feed	*Move*	*Inform*	*Serve*

In 2012 according to the Wall Street Journal an estimated 60% of Fortune 500 companies used some form of single-score ranking to evaluate employees (usually on a scale 1 to 5)

Yet by 2015, Google, Deloitte and Microsoft had each modified or abandoned their rank based hiring and evaluation systems.

Microsoft realised that the performance rating system forced employees to compete for rankings, killing collaboration among employees and, worse, leading employees to avoid working with top performers, since doing so threatened to lower their ranking.

'The End of Average' Todd Rose

The Drivers of Change (why is the world of work changing?)

The future world of work landscape is being reshaped by **six drivers of change**, working independently or together. These drivers are:

1. **Extreme Longevity**: Increasing global lifespans change the nature of careers and learning.

2. **The rise of smart machines and systems**: Workplace automation nudges human workers out of rote, repetitive tasks.

3. **Computational world:** Massive increases in sensors and processing power make the world a programmable system.

4. **New media ecology:** New communication tools require new media literacies beyond text.

5. **Super-structured organisations:** Social technologies drive new forms of production and value creation.

6. **Globally connected world:** Increased global interconnectivity puts diversity and adaptability at the centre of organisational operations.

Timeframe to impact industries, business models

Impact felt already

- Rising geopolitical volatility
- Mobile internet and cloud technology
- Advances in computing power and Big Data
- Crowdsourcing, the sharing economy and peer-to-peer platforms
- Rise of the middle class in emerging markets
- Young demographics in emerging markets
- Rapid urbanization
- Changing work environments and flexible working arrangements
- Climate change, natural resource constraints and the transition to a greener economy

2015–2017

- New energy supplies and technologies
- The Internet of Things
- Advanced manufacturing and 3D printing
- Longevity and ageing societies
- New consumer concerns about ethical and privacy issues
- Women's rising aspirations and economic power

2018–2020

- Advanced robotics and autonomous transport
- Artificial intelligence and machine learning
- Advanced materials, biotechnology and genomics

FUTURE WORK SKILLS OF 2020:

LONGEVITY

SMART MACHINES

COMPUTATIONAL WORLD

NEW MEDIA ECOLOGY

SUPER STRUCTED ORGANIZATION

GLOBALLY CONNECTED

SENSE MAKING

ABILITY TO DETERMINE THE DEEPER MEANING OR SIGNIFICANCE OF WHAT IS BEING EXPRESSED

THE DRIVERS:

SOCIAL INTELLIGENCE

ABILITY TO CONNECT TO OTHERS IN A DEEP AND DIRECT WAY, TO SENSE AND STIMULATE REACTIONS AND DESIRED INTERACTIONS

THE DRIVERS:

NOVEL AND ADAPTIVE THINKING

PROFICIENCY AT THINKING AND COMING UP WITH SOLUTIONS AND RESPONSES BEHOND THAT WHICH IS ROTE OR RULE-BASED

THE DRIVERS:

Catalogue of fears

Economist.com

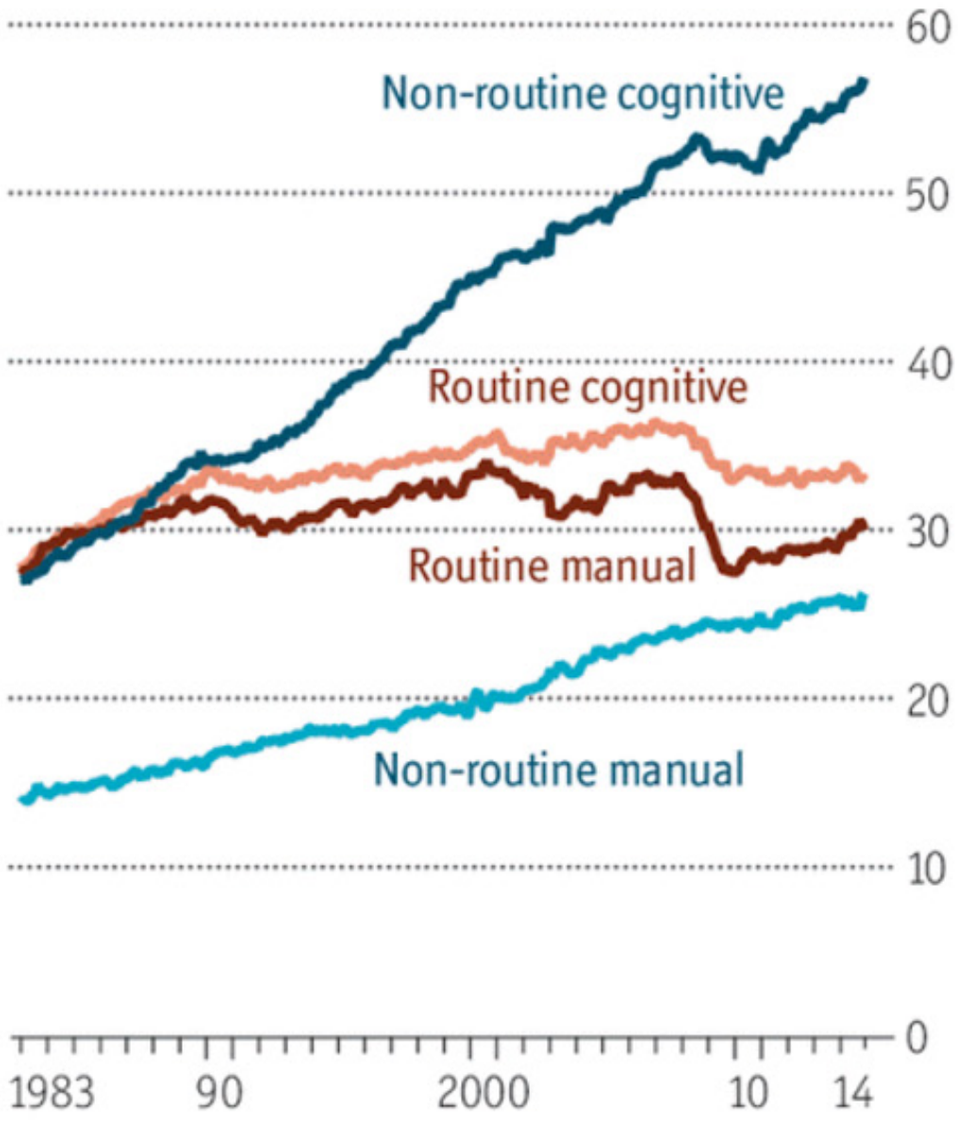
Probability of computerisation of different occupations, 2013
(1 = certain)

Job	Probability
Recreational therapists	0.003
Dentists	0.004
Athletic trainers	0.007
Clergy	0.008
Chemical engineers	0.02
Editors	0.06
Firefighters	0.17
Actors	0.37
Health technologists	0.40
Economists	0.43
Commercial pilots	0.55
Machinists	0.65
Word processors and typists	0.81
Real-estate sales agents	0.86
Technical writers	0.89
Retail salespeople	0.92
Accountants and auditors	0.94
Telemarketers	0.99

Source: "The Future of Employment: How Susceptible are Jobs to Computerisation?", by C. Frey and M. Osborne (2013)

Think

United States employment, by type of work, m



Sources: US Population Survey; Federal Reserve Bank of St. Louis

Financial Advising: Investment advisors will be replaced by “robo-advisors” using big data to understand markets and advise.

Medicine: There were only 1,000 robot-assisted surgeries performed in 2000. By 2014, that number was 570,000 — and it will continue to grow.

Service Industries: Robots currently can clean floors (Roomba) and serve drinks (the Robot above, Carl, is bartender in Germany). Many high-repetition tasks are on the docket.

Robot service in McDonalds

Fast Company talked to three futurists to find out what the hot jobs of 2025 could be, and here are some of their answers:

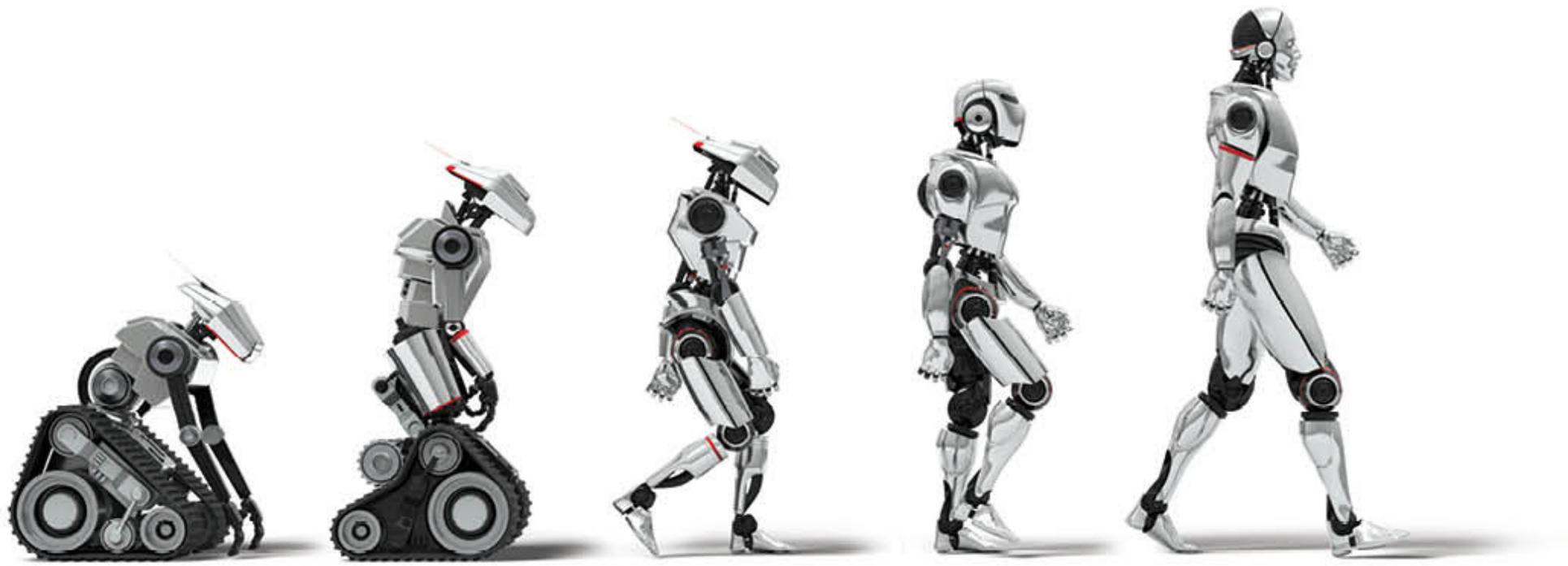
PERSONAL WORKER BRAND COACHES AND MANAGERS - the fact that more and more employees are working "on demand" will result in an increased need for individuals to brand themselves to set them apart from the competition

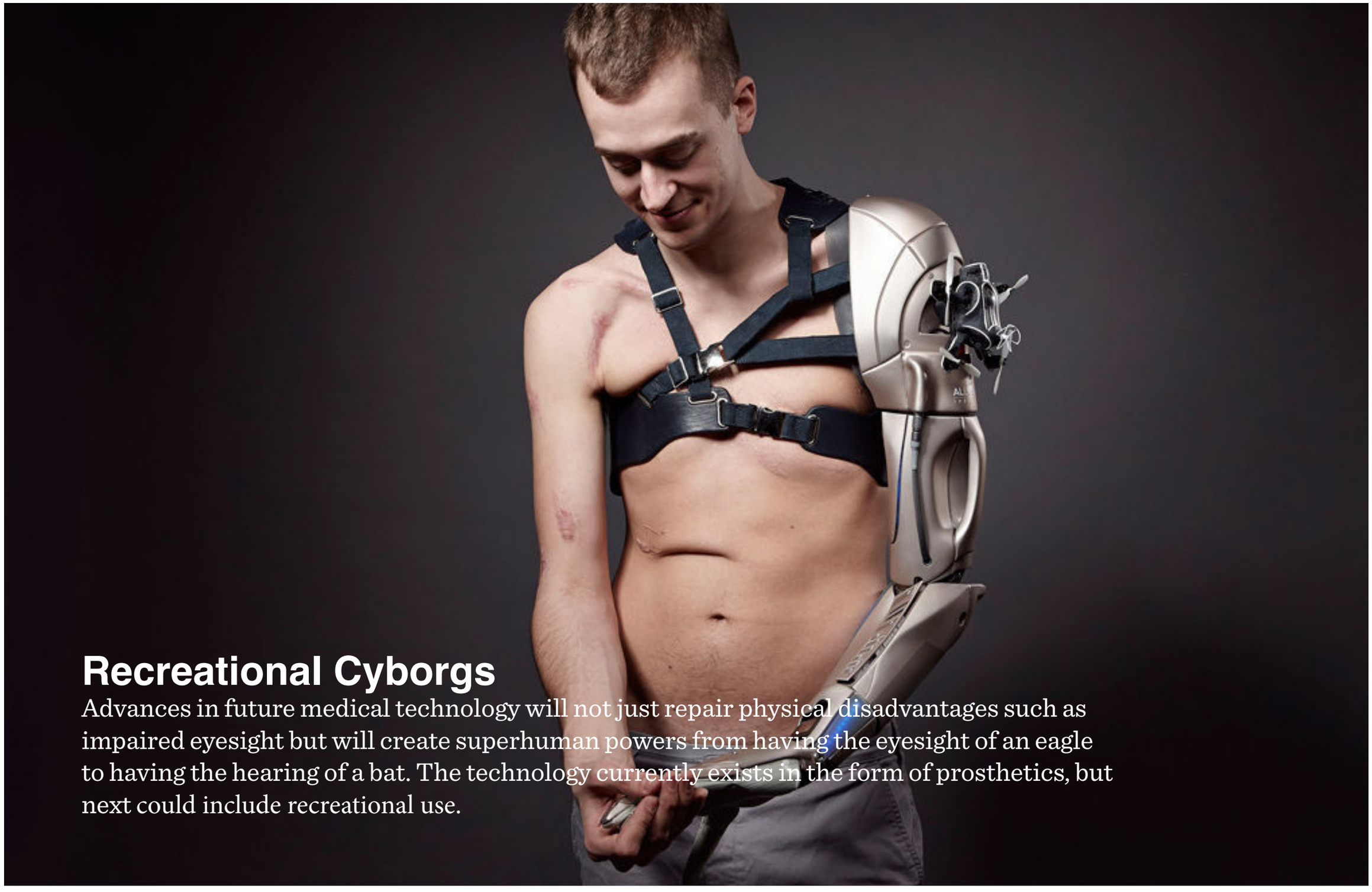
FREELANCE PROFESSORS - as teaching moves into the on-demand realm.

URBAN FARMERS - We may see the return of local farming due to the number of people living in urban areas and the increasing awareness of the detrimental environmental impacts of industrial farming.

END-OF-LIFE PLANNER - By 2025, the World Health Organization predicts that 63% of the global population will live to over the age of 65—some well past their centenary

VIRTUAL REALITY EXPERIENCE DESIGNER - people who can design the best VR experiences will be in huge demand





Recreational Cyborgs

Advances in future medical technology will not just repair physical disadvantages such as impaired eyesight but will create superhuman powers from having the eyesight of an eagle to having the hearing of a bat. The technology currently exists in the form of prosthetics, but next could include recreational use.

Now we wear a FitBit and other devices that measure easily quantifiable data, but the future belongs to digestible and wearable sensors that can work like a thin e-skin. Biometric tattoos such as VivaLNK's eSkin Tattoo can transmit medical information discreetly. RFID or Radio Frequency Identification chips can be implanted under the skin and serve as an identification device.

These sensors will measure all important health parameters and vital signs from temperature, and blood biomarkers to neurological symptoms...sending alerts to medical systems when a stroke is happening real time. It will call the ambulance itself and sends all the related data immediately.

economies of the future and the skills they demand

Forces of automation disrupt a broad set of industries and create a new landscape of jobs. These jobs prioritize new competencies to be competitive as well as an ongoing commitment to learning, growth, and flexibility.

Transcend

The essential 10 skills for success in the 21st century

1. **Sense making (critical thinking):** The ability to think clearly and rationally, understanding how and why ideas connect.

2. **Communication (social intelligence):** The ability to connect to others effectively, to sense and stimulate reactions and interactions.

3. **Creative and adaptive thinking (Innovation):** The ability to think and develop solutions and ideas.

4. **Cross-cultural competency (Global Citizenship):** The ability to operate in different cultural settings.

5. **Entrepreneurialism:** The ability to meet an unsatisfied demand or to radically improve the performance of something.

6. **Media literacy:** The ability to use and develop content that uses all media forms.

7. **Trans-disciplinarity:** The ability to access, analyse and synthesise information across several disciplines (subjects).

8. **Productivity and accountability:** Productivity is the ability to create a product whilst accountability is taking a role in the creation of a product and taking responsibility for the performance of the product.

9. **Cognitive load management:** The ability to discriminate and filter information for importance.This involves all aspects of perception, thinking, reasoning, and remembering.

10. **Collaboration:** The ability to work productively, drive engagement, and demonstrate presence as a member of a team, physically and virtually.

Born in the mid-90s to early ‘00s, Generation Z finally has an identity. Say hello to the generation that may be the first in human history to be free to fully express themselves thanks to a lot of help from their predecessors: the Millennials (Generation Y), Gen Xers, and vanguard Baby Boomers. Gen Z’s “why wait for things to change, when I can be the change” common sense approach to life is giving them, and us, wings to finally begin to fly—without waiting around for flying lessons.

As adaptive to perpetual change as they are to conquering the latest high tech gadgets, [Gen Z’s] don’t stop to read the instruction manual, they work their way right out of the box. ...Suppleness and the ability to learn at much faster rates are leading today’s teenagers to question if the exorbitant cost to learn already-dated models is the most efficient use of their time. Because [Gen Z’s] are globally connected and engaged and technology is perpetually evolving, their expectation is that personal growth should correspond. Fearlessness is the byproduct and the means by which inventive [Gen Z’s] are independently making use of the plethora of information at their fingertips to generate their own opportunities and create social change.

- “Say Hello to the World’s TransGeneration (Generation Z)”
By Christine Horner (HuffPo)

In "Will the Next Steve Jobs Be From China?," Lenora Chu writes:

The traditional Chinese approach to education is outdated. Domineering teachers discourage open questioning. **An emphasis on standardised testing keeps children studying rather than exploring**. Collectivism promotes conformity. **External rewards are prioritised over a love of learning**. Academic pressure creates undue psychological burdens.

But the Chinese leadership is intent on improving the system. "There is nothing that should remain unchanged when it comes to reform of our educational institutions," Wang Feng, a director in the Ministry of Education's National Research Centre, told me in 2015. Government policy, along with willing administrators and teachers, is beginning to produce positive results.

The typical Chinese classroom is generally centred around the teacher, with children sitting in rows, the higher performers at the front of the classroom. The curriculums in the early years focus on math and the Chinese language, with full literacy — defined as the memorisation of 3,500 distinct characters — expected in middle school.

In later years, students spend eight hours a day in school, and hours on homework or after-school test prep.

The system is highly competitive. Of the nine million students who take the national college entrance exam, about two to three million will fail to advance into college. **A focus on passing tests can kill a student's natural interests and prevent opportunities to explore and be creative.**

But the 10-year education reform plan released in 2010 declared that schools must foster a **"fine environment for independent thinking."** The government is beginning to allow some schools to dictate up to 20 percent of their curriculum, according to Yang Xiaowei, a professor at East China Normal University. **Some principals have chosen to introduce science-and math-based creativity classes or experiential learning assignments, while one Shanghai administrator simply lets out school early a day a week to encourage kids to "explore."**

Vishal Sikka argues that the outdated education system needs reform.

Emerging technologies in artificial intelligence, deep neural networking, and machine learning enable us to reimagine the possibilities of human creativity, innovation and productivity.

Research institutions, businesses and governments explore the great new frontiers of human possibility. So many of our systems have evolved beyond what we thought was possible, even 10 years ago. **And yet we still hold on to an educational system built more than 300 years ago.**

Today's classrooms often operate in the same way they did when farmers composed the majority of our societies; when memorisation was rewarded more than curiosity and experimentation; when getting something right outweighed learning through failure. We must transition away from our past; **shift the focus from learning what we already know to an education focused on exploring what hasn't happened yet**.

As individuals, we all must find our own space to learn, our own unique experiences which completely absorb us by requiring a high level of skill and challenge at a very individual level. When we find this balance for each of us, our potential is truly limitless. The human mind is, in some sense, the primal technology —Mother Nature's most disruptive innovation. **It enables us to analyse, understand, and evaluate; communicate, empathise, and collaborate; imagine, dream, and create.**

But none of these incredible capabilities would be possible without our fundamental ability to understand and to learn. It is this ability that transforms all of the waves of raw data and information that wash over our world into true knowledge. As technology continues its rise, absorbing our mundane and routine tasks, we must understand our calling to something greater – to be better, something more. This is the promise of our great human potential — that we are more than the sum of our knowledge of the past. It is precisely our ability to learn that will open a new future for all of us.

To start, public policy must transform at all levels - the local, the state, and the federal - to allow the education systems to keep pace with developments in technology. Governments themselves need to be renewed through modern, responsive IT infrastructure. Our policies must also provide an environment for our students to become fluent in technology.

Our educational systems must modernize to embrace this new reality. From a recent Infosys survey of 9,000 16-28 year olds worldwide, 40% replied that they believe a machine will be able to do their job in 10 years. Nearly half in Western countries said their **education did not prepare them for what to expect from working life**. And nearly **80% said they had to learn new skills that they didn't learn at school** — this is the new reality, one where technological change is so rapid that it requires constant learning. **Our education systems must teach the ability to learn, not the ability to memorize.**

But in order for these new educational systems to be successful, we must re-examine our own approaches. All of us can help to transform the context around us. The context which limits our potential.