NM&SC
National Modeling & Simulation Coalition

MS&V Workforce Development Panel

a University & Technical Training Perspective

"M&S-focused curricula and credentialing programs supporting Industry Needs"

National Modeling & Simulation Coalition

Moderator: ***Richard J. Severinghaus, NM&SC***

Panelists:

Amy Cell

Chief Matchmaker, Amy Cell Talent, LLC; Univ. of Michigan, Ross School of Business

Virinder K. Moudgil, Ph.D.

President & CEO, Lawrence Technological University

Technical training and certification programs serving manufacturing industries

Brian Payne, Ph.D.

Vice Provost, Academic Affairs, Old Dominion University

Director, HRCyber, a NIST-funded project to adapt cyber curricula to better serve Industry needs

Academic-Industry Collaboration for Workforce Development

Jeff Segall

Founder & CEO, inFlow Interactive, LLC

Embedding Data Analytics within educational curricula & instructional designs

About 'the workforce'

Marine Col. Drew Cukor, the chief of the (DoD) algorithmic warfare team:

"What I notice from the government perspective as I go around is that these young software engineers are essentially making NFL salaries," Cukor said. "*The computer science departments of our major universities are wiped out because they're all on sabbatical working for commercial tech firms*. ... I did not know we have an algorithmic warfare branch of DoD!!

- National Defense Magazine 21 August 2017, "Pentagon Struggling to Take Advantage of Artificial Intelligence"

http://www.nationaldefensemagazine.org/articles/2017/8/21/pentagon-struggling-to-take-advantage-of-artificial-intelligence

On the migration of jobs & changes to skills

from the book, Connect:

On "The Jobs Compact"

The service sector employs over 80% of the developed world.

Over the past 40 years, more than ½ of American transactional jobs have been eliminated:

Bank tellers to ATMs
Travel agents to self-service travel
Typists, telephone operators essentially gone.

Products like Apple's Siri threaten a number of transactional jobs (e.g., cashiers)

On automation of education:

"another profession ripe for productivity gains."

Connect
HOW COMPANIES SUCCEED BY ENGAGING RADICALLY WITH SOCIETY
By John Browne
w/ Robin Nuttall and Tommy Stadlen
Public Affairs™, a Member of Perseus Books Group, 2016. p. 225-230

On emerging & changing markets

An ongoing "gravity shift" in economic activity:

- China's growth - is at 10x the speed of the 1st country to urbanize, the UK, … & China is 100 times the scale.

- The UK took 154 yrs. to double GDP per capita during the Industrial Revolution. The same achievement took 12 yrs. in China, and 16 yrs. in India.@

- Between 2007 and 2010, three (3) more Chinese cities reached 'megacity' status - 10M people or more.

  Between now (2015) and 2025, 7 more Chinese cities, but only one developed world metropolis, will achieve 10M people - Chicago.##

@ Richard Dobbs, James Manyika, & Jonathan Woetzel, *No Ordinary Disruption: The Four Global Forces Breaking All the Trends*, Public Affairs, 2015.

McKinsey Global Institute, 'Urban World: The shifting Global Business Landscape', October 2013

On STEM education

Although **children between the ages of 11 and 14 years old** demonstrate a high level of interest and skills in STEM – science, technology, engineering and math – **their interest dwindles as they get older**, according to new research from Randstad, a global human resources firm.

The survey also revealed a gender gap. Girls are 34 percent more likely than boys to say that STEM jobs are hard to understand. Moreover, only 22 percent of young women name technology as one of their favorite subjects in school, compared to 46 percent of boys.

Fifty-six percent of young people said knowing how STEM skills relate to the real world would make STEM classes more interesting.

"The term 'STEM' needs a rebrand and awareness campaign to get the next generation of talent excited about pursuing these careers," concluded Alan Stukalsky, chief digital officer for Randstad North America. "**Young people are self-selecting out of higher STEM education classes because they can't see how these skills apply to different professions and employers they're excited about**."
"The misperception has created a serious economic problem", he added, "because many jobs today require STEM competencies."

On STEM attitudes

• **52 percent of students say they don't know anyone with a job in STEM**, and more than 1 in 4 students (27%) say they haven't talked to anyone about jobs in STEM.

• **Almost half (49%) of respondents say *they don't know what kind of math jobs exist*** and 76 percent report not knowing a lot about what engineers do.

• 87 percent think people who study STEM work at companies like NASA; far fewer associate them with mainstream consumer brands such as Instagram (40 percent) and Coca-Cola (26 percent).

Also, **young people reported high enthusiasm for careers not explicitly defined as STEM but requiring related skills, suggesting the need for broader education as to how STEM skills can be applied in fields beyond math and science**.

The online survey was conducted in the United States between July 20 and July 30, 2015 among 1,000 11- to 17-year-old students.

Survey reveals growing lack of interest in STEM careers among young people, especially girls. Bernie Monegain, 22 August 2017
http://www.healthcareitnews.com/news/survey-reveals-growing-lack-interest-stem-careers-among-young-people-especially-girls
Accessed 11 September 2017

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On Big Data

"The Memphis Police Department, for example, use IBM's predictive technology to reduce serious crime by 30 per cent and violent crime by 15 percent."

Ref: IBM Smarter Planet Leadership Series, "Memphis PD: keeping Ahead of Criminals by Finding the "Hot Spots", 2011. p. 155.

Prior to 2000, Americans defaulted on their debt in a very specific order: first, their credit cards; second, their cars; and finally their homes. By 2006, that order had been completely reversed. In the twenty-first Century US, a credit card and a vehicle were more important for survival than a home with no remaining equity. *Almost none of the financial models picked up on this*. (italics added) P. 168.

The average time US equities are held has decreased from seven years to seven months over the last four decades." ... roughly, 1975 to 2015.

Ref: Krishna Guha and Gillian Tett, 'Last Year's Model: stricken US Homeowners Confound Predictions', *Financial Times*, 31 January 2008

On company longevity and technology

"The **average age of a company listed on the S&P 500 has fallen from almost 60 years old in the 1950s to less than 20 years currently**," a team of Credit Suisse analysts led by Eugene Klerk wrote in a note to investors Thursday.

The disruptive force of technology is killing off older companies earlier and at a much faster rate than decades ago, squeezing employees, investors and other stakeholders, according to a new report.

"We argue that disruption is nothing new but that the speed, complexity and global nature of it is," the report says. "In fact, it is clear that a number of sectors are currently impacted by multiple disruptive forces simultaneously."

Automation is the No. 1 "disruptive force," the report said.

… in shortening that life span, … the increased pace of the disruption by companies like *Amazon**, Alphabet and *Apple** today is causing the trend to accelerate even more.

* Two of the companies among the Intern Salaries list shown earlier. And Alphabet is the parent of Google, also on the list. The CNBC article reports stock "shares of Apple, Alphabet and Amazon … doubling, and in some cases tripling, the 9 percent return of the S&P 500 in 2017.

Technology killing off corporate America: Average life span of companies under 20 years. Michael Sheetz, CNBC , 24 August 2017.
https://www.cnbc.com/2017/08/24/technology-killing-off-corporations-average-lifespan-of-company-under-20-years.html

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