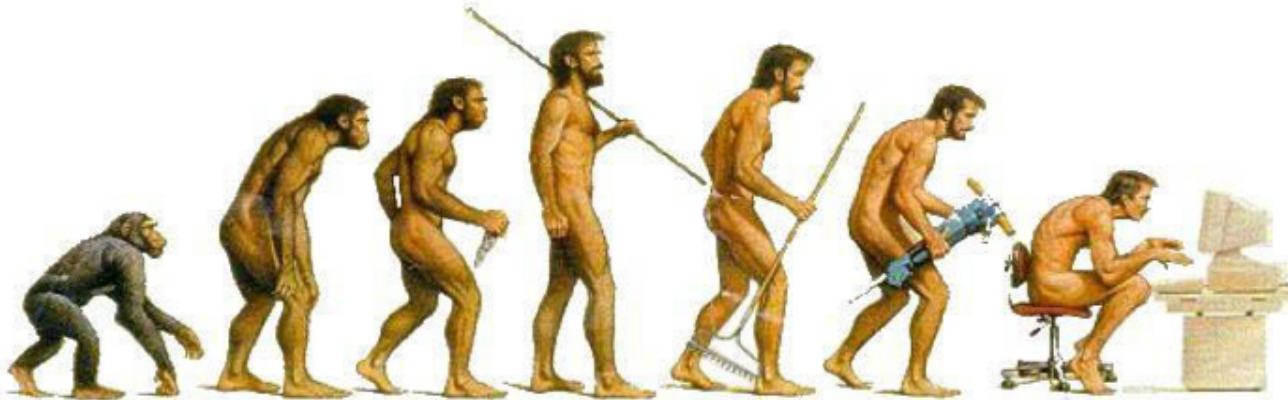




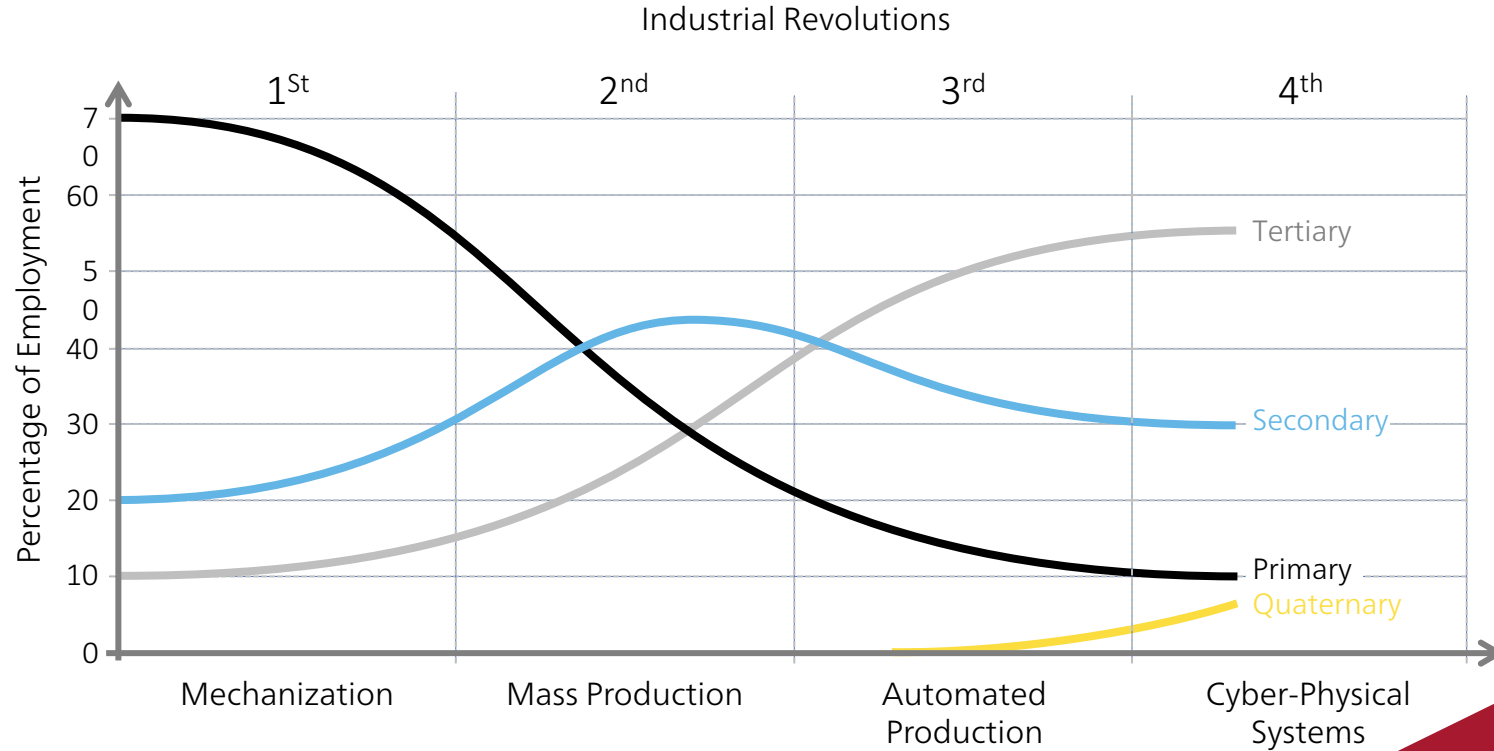
VANDERBILT  
PEABODY COLLEGE

College of Education & Human  
Development

# The Past, Present, and Future of Work



# WORK SEGMENTATION OVER TIME



# FINAL QUESTION ON ENGINEERING EXAM

What technology do you think will change the world as much in the next 25 years as computers and the internet have over the last 25?

# THE FOURTH INDUSTRIAL REVOLUTION

## DIGITAL

Virtual & Augmented Reality Robotics Blockchain  
Sensors Internet of Things Photonics  
Smart Grid Quantum Computing Data Analytics  
Cybersecurity Drones Artificial Intelligence  
Mobile & Wireless High Performance Computing

## ENERGY & ENVIRONMENT

Wind Turbines Bio-Fuel Advanced Energy Storage  
Carbon Capture & Storage Marine & Tidal Power  
Electric Vehicles Fuel Cells Precision Agriculture  
Autonomous & Connected Vehicles Fusion Reactors  
Reusable Rockets Asteroid Mining Micro Satellites

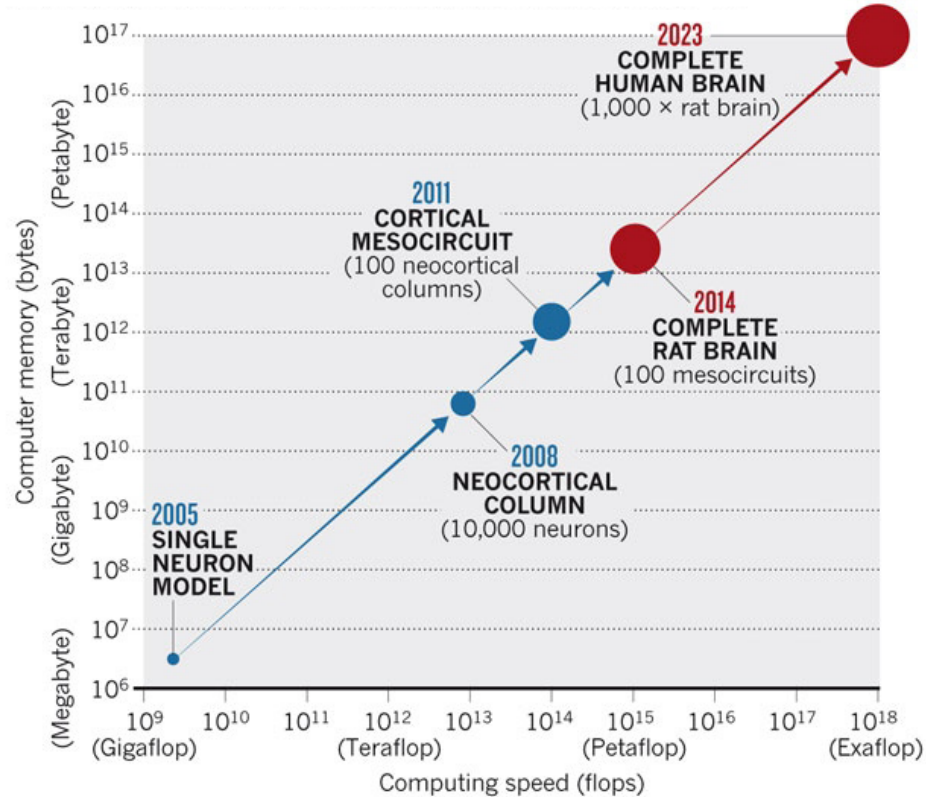
## BIOTECHNOLOGY

Bioinformatics Personalized Medicine Biocatalysis  
Regenerative Medicine Automated Drug Discovery  
Synthetic Biology Bio-Imaging Lab on a Chip  
Neuro-Technologies Health Monitoring Technology  
Robotic Surgery Genomics Biochips & Sensors

## ADVANCED MATERIALS

Additive Manufacturing Graphene Nanomaterials  
Nano-Robots Claytronics Flexible Electronics  
Carbon Nanotubes Super Alloys Functional Materials  
High-Temperature Superconductivity Metamaterials  
Conductive Polymers Graphene Quantum Dots

# SPEED + MEMORY = BRAINPOWER (AI)



Waldrop, M. W. (2012). Brain in a box. *Nature*, 482, 456-458.

# WORK CATEGORIES

MANUAL

COGNITIVE

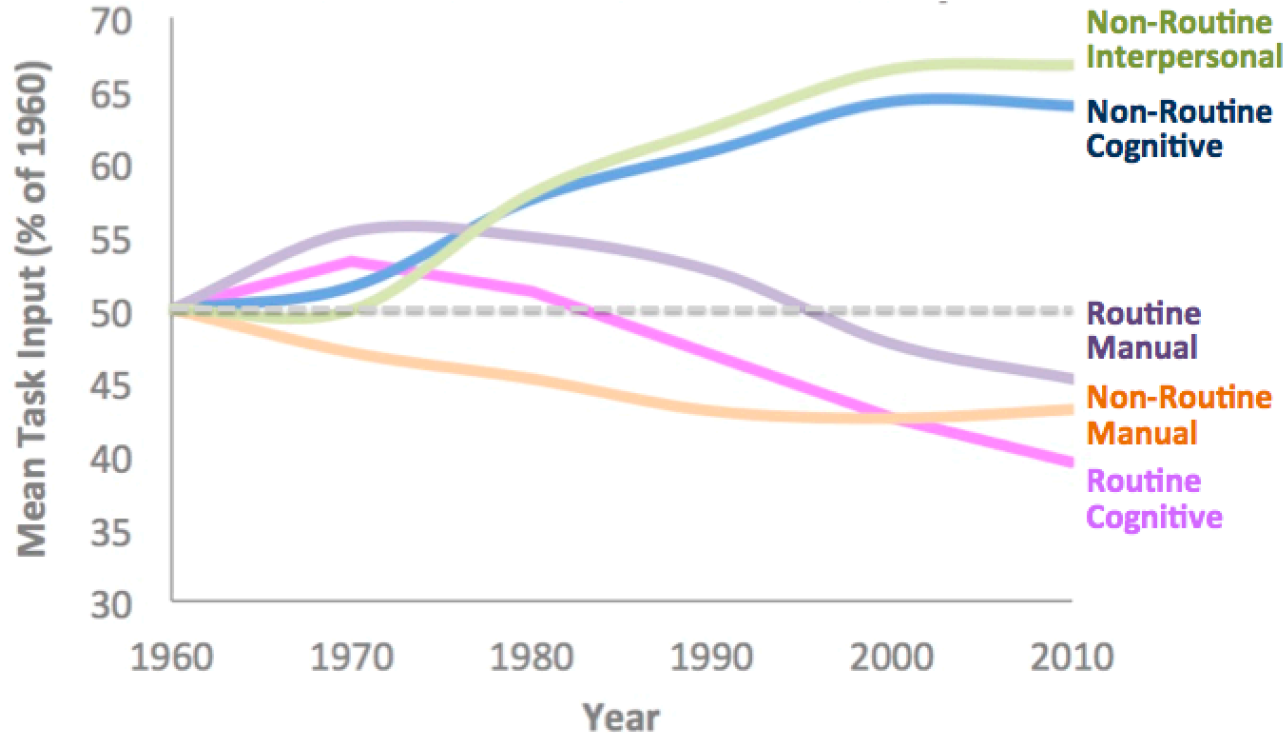
ROUTINE



NON-ROUTINE



# WORKER TASKS IN U.S. ECONOMY



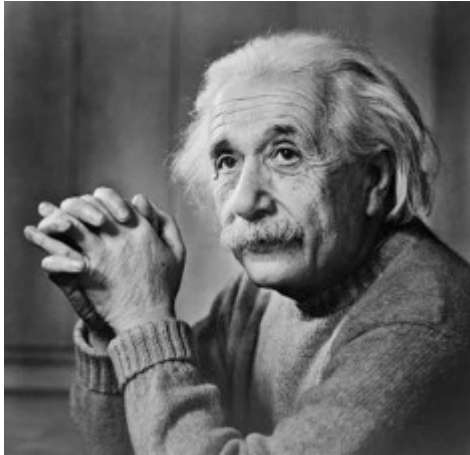
# TOP FIVE DESIRABLE FUTURE WORK SKILLS

1. Judgment and decision-making
2. Fluency of ideas
3. Active learning
4. Learning strategies
5. Originality

Bakhshi, H., Downing, J., Osborne, M., & Schneider, P. (2017). *The future of skills: Employment in 2030*. London: Pearson, Nesta, and Oxford Martin School.



THE WORLD WE HAVE CREATED IS  
A PRODUCT OF OUR THINKING. IT  
CANNOT BE CHANGED WITHOUT  
CHANGING OUR THINKING.



## **Albert Einstein**

Physicist & Philosopher  
1879 – 1955

**Andy Van Schaack, Ph.D.**  
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