Many Roads Lead to Automation

Expensive labor

Tedious work

Too much data

Need for accurate decisions

Powerful technologies
A Smooth Transition from Analytics to Cognitive

- Correlation/Regression
- Text Analytics
- Natural Language Processing
- Logistic Regression
- Machine Learning
- Neural Networks
- Deep Learning
Is Knowledge Work Next to Go?

18th-19th C. 20th C. 21st C.

- Mechanical Systems
- Transactional Computers
- Cognitive/Analytical Computers

- Manual Labor Jobs
- Admin/Service Jobs
- Knowledge Work Jobs
My Answer Is…Yes…and No

► Many knowledge work job tasks are at risk of being automated

► Some knowledge workers will lose their jobs, but it will be on the margins
  ► We’ll need 8 lawyers instead of 10

► There are going to be a lot (no one knows how many) of jobs working alongside smart machines

► We’ll have plenty of productivity gains, so we can afford to retrain and redeploy people if we want to

► But there is no room for complacency!
Ten Knowledge Work Jobs w/ Automatable Tasks

1. Teacher/Professor—online content, adaptive learning
2. Lawyer—e-discovery, predictive coding, etc.
3. Accountant—automated audits and tax
4. Radiologist—automated cancer detection
5. Reporter—automated story-writing
6. Marketer—programmatic buying, focus groups, personalized e-mails, etc.
7. Financial advisor—"robo-advisors"
8. Architect—automated drafting, design
9. Financial asset manager—index funds, trading
10. Pharmaceutical scientist—cognitive creation of new drugs
Automation or Augmentation?

- Augmentation—smart humans helping smart machines, and vice-versa
- People do this by aiding automated systems that are better than humans at their particular tasks, or by focusing those tasks at which humans are still better
- The classic example: freestyle chess
  - Better than humans or automated chess systems acting alone
  - Humans can choose among multiple computer-recommended moves
  - Humans know strengths and weaknesses of different programs
- We’ve seen this before: textile machinery, spreadsheets
Five Ways of Augmented Stepping

► **Step in**—humans master the details of the system, know its strengths and weaknesses, and when it needs to be modified

► **Step up**—humans take a big-picture view of computer-driven tasks and decide whether to automate new domains

► **Step aside**—humans focus on areas they do better than computers, at least for now

► **Step narrowly**—humans focus on knowledge domains that are too narrow to be worth automating

► **Step forward**—humans build the automated systems
The Five Augmentation Steps for Financial Advisors

► *Step in*—advisors become experts in online advice, and assist clients to use it to their best advantage

► *Step up*—advisors identify the domains most in need of automation, or those already automated needing improvement

► *Step aside*—advisors primarily communicate with clients, but don’t make decisions for them—or work outside investments

► *Step narrowly*—advisors identify a narrow client segment or investment type

► *Step forward*—advisors use their expertise to build and support robo-advisor systems
Implications for Organizations

- Take an augmentation perspective from the beginning
- Pick the right cognitive technology for your problem
- Get good at work design for smart humans and smart machines
- Give your people the options and the time to transition to them
- Put someone in charge of thinking about this