Only Humans Need Apply:
Adding Value to the Work of Very Smart Machines

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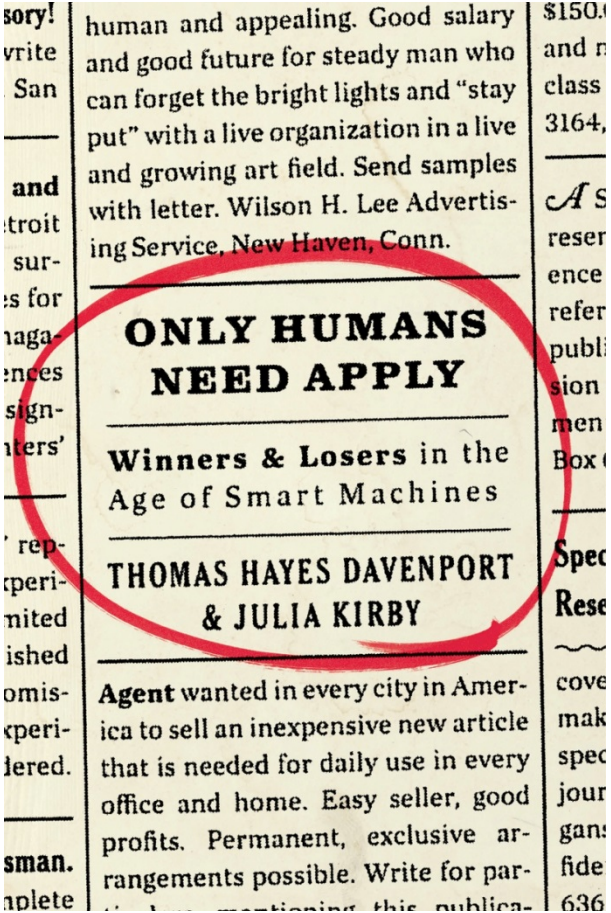
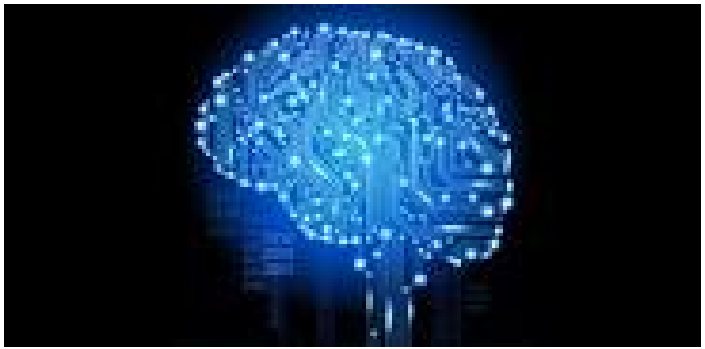


Many Roads Lead to Automation

Too much data

Expensive labor

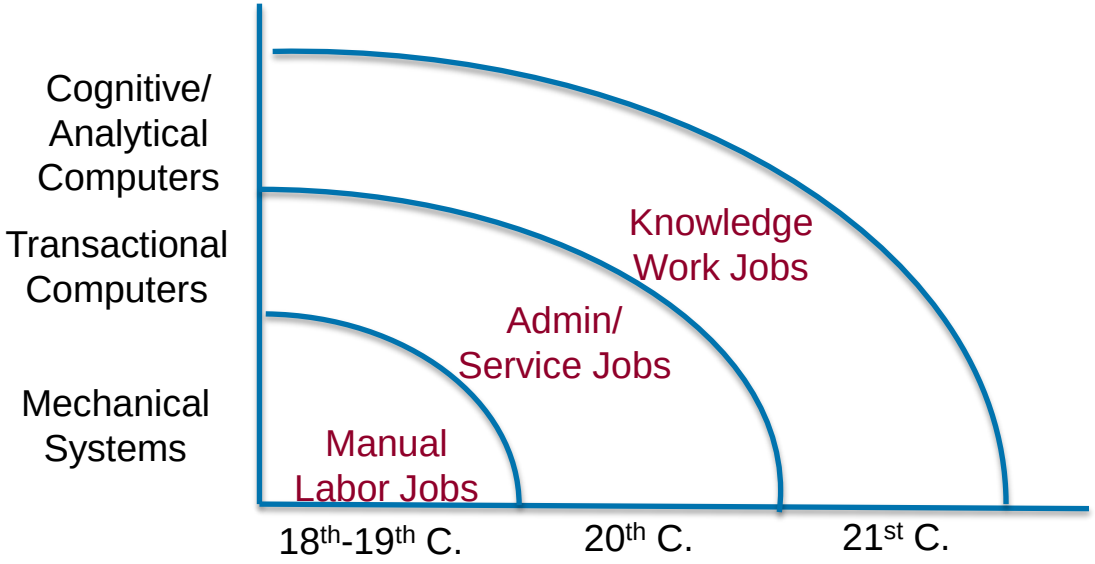
Humans poor decision-makers



Tedious work

Powerful technologies

Is Knowledge Work Next to Go?



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
- Job loss will happen slowly
- 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 Automatable Knowledge Work Jobs

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

The Impact on People: 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 augmentation 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

Five Ways of 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 in Insurance Underwriting

- *Step in*—underwriters become experts in rule-based and other underwriting tools, and modify them when necessary
- *Step up*—underwriters become portfolio managers assess the macro-structure of risk, and monitor need for change in rules or models
- *Step aside*—underwriters focus on agent and customer communications
- *Step narrow*—underwriters specialize in areas that are too narrow to automate, e.g., business insurance for dry cleaners
- *Step forward*—underwriters (or insurance-oriented programmers) build the automated systems for P&C underwriting companies or vendors

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