Notes on
Rise of the Robots:
Technology and the Threat of a Jobless Future
Book by Martin Ford
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Also see
https://www.supersummary.com/rise-of-the-robots/summary/

INTRO

1. Previous tech disruptions *never became systemic or permanent* But how did they affect the workers at the time? Were the Luddites unemployed for the rest of their lives?

2. Milton Friedman was taken to a large scale public works project where the workers were using shovels instead of bulldozers. He asked why. They said it was a jobs program. He asked why not give them spoons instead of shovels. We still do this with Army Bases, military contracts for goods they don't need.

3. The spiral sounds either very good in good times&very bad now. odd Spiral: High Tech leads to more skilled workers, higher wages, and they then buy more good, so economy just gets better&better. Bad Spiral: High Tech displaces workers who then can't buy goods so economy gets worse&worse.

4. We need to create jobs just to keep pace- but what about fertility going down?

5. The High Tech is also leading to more income inequality.

6. Moral Question: We used to complain about sweat shops&child labor, but now there are NO jobs.

7. IBM Watson used for Medical Diagnosis- will we have to phrase our medical condition in the form of a question?

8. Jobs that can be replaced by high tech are those that are predictable. Teaching is predictable– In class I CAN predict what questions the students are going to ask. Research much less so.

9. Past: displaced workers pick up more skills&get get potentially better jobs. Present&future: There just won't be those other jobs.

10. Wages for college graduates are declining

11. Jobs that require vision&dexterity are not quite automated yet but are on their way.

12. Past: high tech disrupted ONE industry at a time. Now&Future: High tech is disrupting MANY industries at the same time.

13. Top 5% of people buy 40% of the products. This may increase.

14. So far Health and Education have not gone this way (but they could). If they continue to not go this way the expense of both may make the economic problems worse.

15. Other factors: climate change, aging population, resource depletion.

16. Disruptive technology is disrupting society.

1 Chapter One- The Automation Wave

1. Robots could not see in 3-D so SOME humans had to be employed. But Robots soon will be able to see in 3-D.

2. Video Games drove some of the Robotic 3-D tech.

3. Robots are now easy to train, so not special-purpose.

4. Robots are where Operations systems were a while back- getting more standardized, so will make progress really fast.

5. Reshoring-when jobs come back to America that were outsourced. Sounds good, but its far far fewer jobs than those that were lost. And those few will soon be gone.

6. China- the Gov offers loans at low interest so the trend to modernize and have less workers is very fast. China has lots of manufacturing jobs so they will be lost.

7. Service sector- also becoming automated. Bad for US jobs. ATM machines, Self-checkout, making hamburgers. Japan- robots making Sushi&conveyor belts take food to customers, eliminating chefs&waiters. Panera's has kiosks.

8. Avg age of McDonalds worker is 35. They have families&need real jobs, which are going away.

9. Min wage hikes may drive companies to automate faster.

10. If a business goes high tech, cuts costs the others have to follow.

11. Retail jobs being disrupted by Amazon, E-bay, Netflix Jobs go from store to warehouse to automated to gone.

12. Intelligent Vending Machines. Saves on labor, location, and shoplifting. The jobs fixing&installing&restocking these machines are very few. Some of the machines can self-diagnose.

13. Mobile disruption- we can do so much on our phones now.

14. The Cloud reduces costs also since can store data elsewhere.

15. One negative: hacking can destroy our infrastructure if too much of it is online, which it already is.

16. Robots even taking away jobs in Agriculture. Needs better vision and dexterity, but its coming.

17. Robots are even taking away jobs that Americans dont' want to do that goto immigrants (e.g., picking fruit). May skew immigration debate.

2 Chapter two- Is this time different?

1. There were similar predictions in the 1960's. Different now. Predictions then overestimated how good tech would be, but now it IS that good. Proof is in the job stats— no new jobs created 2000-2014.

2. Seven Deadly Trends

   (a) Stagnant Wages

(b) Labor gets smaller % of the benefit in increased production. Bowley's law said that the percent going to labor&business stayed the same over time, but this is no longer true. Economists still think its true.

(c) Declining Labor Force Participation

(d) Job creation down, jobless recoveries, soaring long-term unemployment

(e) soaring inequality

(f) Declining Income&underemployment for recent college graduates

(g) Polarization&part-time jobs. Middle class jobs going away and being replaced with far less jobs-&those are either low-wage or so high-end that very few people are qualified.

3. Three non-tech factors.

   (a) Globalization

   (b) Growth of the financial sector. Rent-seeking is bad, an effective regressive tax. Note however that this growth depended on tech. Also, not clear how much of the job loss is the fault of this.

   (c) Politics- deregulation&decline of unions

3 Chapter three- Information Technology

1. Info Tech is one reason why this time its different. Moore's law, very rapid increases in what you can do. Affects ALL aspects of society.

2. Winner take all economy. ALL books are sold by either Amazon OR by a few few people or stores making very tiny profits (I am one of them—&I do it through Amazon)

3. There are some new jobs writing apps but really because of the winner-take-all economy these won't amount to much.

4. Since a lot of the high tech was funded by American Taxpayers can we somehow give them some of the money back (the last chapter is more about that— the guaranteed income)

4 Chapter four- White collar jobs at risk

1. Sports columns generated by computers- though not as good as humans. Used for little league games now. Majors later?
2. Writing reports that only need to be informative- computers are getting very good at that.
3. Machine Learning- computers can do (say) translation without really having to understand stuff. Can also find meaningful correlations. Are ML/big data tech helping research or doing research?
4. ML- routine emails, tweets, blogs can be generated. Can also be used to get data on employees&decide hiring, firing. (Not in book- used to determine which prisoners should get parole.)
5. Self driving cars, trucks, cabs- will put people out of work.
6. Mid-management evaporates as top managers use tools of ML/big data.
7. Amazon Turk&in-house Amazon Turk lead to less full-time work.
8. IBM's program Watson- KEY- correlation is as good as true understanding. (NOTE- how much to doctors really understand anyway?)
9. Programs can also replace sales clerks,&they are less rude and they are always available. Also true on other levels- like helping a hospital buy equipment.
10. Watson now in the cloud, cheaper, more accessible. Poised for a research explosion much like Robotics.
11. Data Analysis jobs now use far less people.
12. Computer programs can do MORE than what people tell them to do. They can sift through numbers&come up with hypothesis. Unencumbered with conventional wisdom.
13. Can computers be curious?
14. Computers have already written music&drawn paintings.
15. Programs do wall street trading- so more jobs lost.

16. Offshoring is a precursor to fully automated. We are already seeing that with the the IT jobs shipped to India.

17. Offshore jobs have workers in other countries, so no aux jobs like bus drivers&coffee shops for Americans.

18. Puzzlement: Conservatives are against immigrants since they will take jobs (that most Americans don't want) but have no problem with offshoring which gives jobs (that Americans do want) to foreigners.

19. In the global economy American may lose since the jobs that are left all require being very smart—&other countries have lots more people hence lots more smart people. (Book did not mention the American School System which is also a problem.)

20. NLP will make not-knowing-English NOT a barrier.

21. Suggestion: Give displaced workers more education. Not enough, machines are evolving too fast.

22. Suggestion: Train people to work with machines. Humans+Computers beat Computers at Chess. Not for long,&not clear adding humans is worth the cost. Recent Go-programs humans would NOT help.

5 Chapter 5: Transforming Higher Education

1. Programs can now grade essay questions. And do a good job. Quick feedback, consistency. One bad thing- students will be taught to the test. Also– graders out of work.

2. MOOCS-not that many people finish these courses yet,&how to give credit, how to certify, still issues. One idea— the MOOCS are free&do not get you any kind of certificate, but a separate testing company gives tests&they give certificates.

3. MOOCS- could really displace standard courses like Calc I,II.

4. MOOCS- High Dropout rates, NOT helping the poor (one intent)

5. Cost of college skyrocketed, High Tech could bring it down.

6. Why does college cost so much— (1) Much more admin then in the past, (luxury dorms, (3) other frills for students. (4) Sports.

7. Once students can take online free courses at *Harvard* what happens to costs?

6 Chapter 6- Health Care Challenge

1. High Tech has NOT made health care more cost effective or efficient.

2. High Tech can help a lot in this area but there may be a problem with who-is-responsible. High Tech likely makes less errors than people.

3. Pharmacy robots already here. Elder-care robots on their way. Why is health care still so inefficient? Elder care robots have little funding in America but more in Japan where there are more older people (as a %) and there is more Industry-gov partnerships.

4. With High Tech might not need as high skilled a worker as a doctor to do some things. Already have Nurses doing more stuff.

5. Health care might still be a good area to go into, but future jobs will be low-paying.

6. Health care is a broken market- there are no cost controls since the insurance companies have little power,&can pass on costs to the consumer. Quasi-monopoly, hard for consumers to compare prices. Also out of balance- half of all health care spending is on 5% of the people.

7. Broken Market- expensive treatments that are no better are used to generate money.

8. On answer- consolidate the industry, like electricity, treat as a utility. Medicate is a good model. OR get gov out of it by just having them merge&be regulated. Or just some price controls.

7 Chapter 7- Technologies&industries of the future

1. 3D printing could work on food&construction, destroying far more jobs than they are creating. Hand made stuff a novelty?

2. Self driving cars. One issue- totally self driving or can the user take over? What about insurance&fault? Car will collect lots of data so frivolous lawsuits unlikely. If in wide use accidents will plummet. ALSO- may lead to more car-share, many fewer cars in existence. Note that most cars are idle most of the time. (Gee, could be like buses NOW.) Change in how we view car-ownership will destroy many jobs- car dealers, repair shops, car washes, (both of which may already be automated anyway) and of course Taxi's (Taxi's are now suing Uber, Will Uber sue the self- driving-car people?) *I hear people say that Trucks will be automated in the near future. I think the progress will be measured.* GEE— Read your own book to see why you are wrong!

8 Chapter 8- Consumers, Limits to Growth,&Crisis?

1. Henry ford doubled his workers wages so that they could buy his cars.

2. Replacing humans with high tech- humans can buy things, high tech cannot. Economic crisis. Downward spiral.

3. If 80% of people just buy the basics (food, shelter, healthcare, maybe education)&the rest buy other stuff, is that enough for the economy? So far Debt has enabled the poor&even middle class to buy stuff- but this is not a good long term solution&may have caused the 2007 crash.

4. Is income inequality a drag on the economy- economists disagree.

5. Low demand may make companies cut back on how much they produce, so they get less money– is this sustainable?

6. The Fast Food Effect– at first jobs get deskilled&then they are automated. Also, for fast food, automation is cheaper&more hygienic and prob more efficient.

7. If people are unemployed but expect to get a job, their behaviour won't change much (Think- Robin King) If they don't expect to get a job then their behaviour may change a lot.

8. Tipping point- as some point the economy may go into a fast downward spiral.

9. Objection-more automation means lower costs so people CAN buy things! but- not if people are unemployed,& also not for things like land.

10. Prices going down a problem- people wait to buy things, harder to borrow, and rather than cut wages, bosses will fire people.

11. Will business follow the money & only produce goods for the rich? Will the rich end up so apart from the rest, in gated communities. Scary- they don't need the rest (unlike medieval serf times)

12. Will mass retirements & the lower fertility rate help? No- the people who retire also consume less, so there is less demand (except Health ind) Also, as the book has already said, high tech is such a job killer that the retirees jobs are being replaced by machines. MIGHT be more jobs in elder care— which pay poorly.

13. Will China & other developing countries pick up the slack in consumer spending. Not likely- China's one-child-policy is really keeping down the spending. Also, in china the lack of a safety net (really- in a communist country?) has lead to people saving a lot. Also, men save to compete for women as there is a shortage.

14. China will have a bigger problem than US does since they are going from Farming to Manufacturing to High-Tech Manufacturing far faster than we did.

15. Asia&Africa– what will they do once nobody needs cheap labor (will they miss the days of the sweat shops)

9 Chapter 9- Super Intelligence&the Singularity

This is just stupid. One thing of interest- nanotech may lead to a post-scarcity society.

10 Chapter 10-Towards a new economic paradigm

1. Education is nice but NOT really the answer,&may lead to credential inflation. The number of jobs is shrinking, no matter how educated people are. And we've had a hard time getting Education right anyway.

2. Stop automation not solution- Automation is cheaper&better than humans.

3. Basic Income Guarantee. Everyone on welfare of a sort. This is his solution though he acknowledges problems with it

4. Who pays for it? Taxes? Cut down on Welfare, Food Stamps, etc? VAT tax?

5. Will it be means tested? If so then watch out for moral hazard.

6. Don't want people to be idle- so would a college degree get you more money? Want people to make constructive use of their leisure time. People already do with Wikipedia&other free software&You-Tube. YOU were Time Mags Man of the year in 2006. Or people who volunteer for the community get more (that sounds complicated).

7. Hayek-rather than pay food stamps or targeted money, give people money, have them decide what to do with it. (Goes against current conservative philosophy which is that the poor CANNOT use their money on certain items.) The alternative is an expansion of dysfunctional welfare system.

8. We already have the government giving away money- The Prison System, The Pentagon getting weapons it doesn't want. Basic Income is less expensive.

9. BGI would make stay-at-home-parenting easier.

10. BGI gives people purchasing power so the entire system does not collapse.

11. BGI will help people be risk-takers

12. Psychological problem- is it good for some people to just not work ever. Will they drink? Play video games? Work on Math problems?

13. ALT idea- rather than give people a BGI, give them a lump sum of money. Bad idea- no risk taking, always nervous it will run out.

14. NEAR TERM: Invest in infrastructure (pay for with gas tax?) Improve education- more geared towards the few jobs that are left Increase Earned Income Tax Credit, extend to unemployed (so a start on BGI). Taxes should be redone to fall more on capital than labor.