John Zysman

- Intelligent tools transforming society – self-evident
- No single trajectory, we have choices
- Must understand the alternative trajectories
- What are the leverage points that allow us to influence the trajectory?
- What happens to work and workers?

Paul Alivisatos

- UCB ethos: relentless questioning, to help figure out how to make society more just
- This ethos is important to this topic
- Lots is said about intelligent tools’ impact – some accurate, some not
- Making good choices is critical

Shankar Sastry

- 1974, Daniel Bell wrote a book on post-industrial revolution
- Took 30 years after that to come to pass
- Social chaos that has come along with it could have been different if we had planned better – kinds of jobs that would be created, training for people to get there
- Today – every company says AI, Deep Learning – but that’s not what the meeting is about
- Instead we’re on cusp of a redux – a digital transformation of society
  - AI / ML
  - Cloud computing
  - IoT, wireless sensors
  - Kind of computation you can do by linking the above three
Consequences: greater levels of automation, new sectors, new kinds of jobs, different kinds of jobs, affecting every sector
• Need to think about the distribution of these jobs, the salaries of these jobs
• Hope we can keep an optimistic outlook, but there’s reason for concern
• Hope to start planning a roadmap for the way forward

Costas Spanos
• Technological development doesn’t have to be agnostic
• The development of technology can be in the interest of society
• Not just about “controlling the monster”

OECD Presentations

Andy Wyckoff, OECD. “Going Digital”
• Why?
  ▪ OECD origins are with Marshall Plan
  ▪ Unique: small enough to have an in-depth discussion
  ▪ Every policy issue under a small roof – 3,500 people in Paris HQ
    ▪ Allows for multidisciplinary outlook, going across different agencies
  ▪ Intelligent tools affecting every sector of policy; not just about the IT sector
  ▪ Overcome gap between policymakers and technologists; interaction across policies
• So it’s a “horizontal” project
  ▪ Look for very interesting report on automated trucking
• What?
  ▪ Three pillars
  ▪ Impacts in one policy area have unintended consequences for other policy areas
  ▪ “what keeps you up at night about the digital transformation?”
• Pillar 1
  ▪ Distill technologies to their disruptive properties
    ▪ Scenario analysis
      ▪ OECD’s foresight unit
    ▪ New ways of doing policy that we never even thought of
      ▪ Canada is using AI in immigration policy
      ▪ New Zealand is using blockchain for secure delivery of foreign aid
  ▪ Stocktaking of innovative policies
• Pillar 2
  ▪ Automated trucking – “tip of the spear of AI”
• Pillar 3: Deep dives (“what keeps you up at night”)
Jobs, skills, nature of work--- need happy voters
Use digital tools for policy design
“GAFA” – Google, Amazon, FB, Apple, impact on productivity, competition, market openness
Inclusivity / digital divide
They are halfway through the project; need feedback

Stefano Scarpetta, OECD. “The Future of Work”

- First ever strategy created in 1994
- History
  - 1994: many OECD countries facing high persistent unemployment
    - Focused mostly on labor market, social policy, not so much education
    - Need improve flexibility of services and markets
  - 2006: reassessment; unemployment was down
    - More macro: brought education and other policy areas into the picture
    - Started considering not just number of jobs but quality of jobs; link between productivity and wages
    - Focusing on representation of under-represented groups
  - Now we’re in a new world post crash
- 3 mega-trends
  - People concerned about increase in robots – 500k added to economy per year globally by 2020
  - Ageing – ratio of 65+ over working age is growing; 1 in 2 people by 2050
  - Integration – workers more integrated with global supply chain, dependent on performance of foreign markets
- Labor markets are changing
  - Record-high level employment so far – no major automation impact
    - Don’t believe the Osborne & Frey study
    - But jobs will go through substantial transformation
  - New forms of employment will form
    - LOTS of unknowns about how much employment and how many new jobs
  - Labor markets are polarizing
  - Projecting big increases in income inequality
- New jobs strategy framework
  - Dynamic perspective
  - Need the right policies to allow labor markets to overcome a major shock
  - Lots can’t be done to improve overall resilience and flexibility of labor markets
- New jobs strategy dashboard
  - White/blue chart
If you perform well on employment, you’re likely to perform will in other categories – inclusivity, quality
- But there are stagnant problems
  - Closing the gender gap

- Job quantity
  - US is close to OECD average in job quantity, poor on inclusiveness
  - Number of people with low income job is close to the lowest in OECD

- Key messages
  - Labor market has to be part of broad government strategy
  - Flexibility is not the entire solution; must work on job quality and inclusivity

- Three policy principles
  - Promote an environment of robust and widespread growth (high quality jobs)
  - Prevent exclusion
  - Prepare for future risks

- Think about what might happen in the future and adapt in advance, rather than waiting for changes to happen before intervening

Mariagrazia Squicciarini, OECD. “Overview of the Jobs and Skills”

- Individual transformation of jobs is key part of this project
  - 2 objectives
    - 1: how does IT change labor market, jobs and skills
    - 2: how can policy address challenges of digital transformation?
  - A tale of many tales
    - Measurement is hard
    - What does the “digital transformation” really mean?
      - It depends on the industry; skills also differ by industry.
    - Some metrics include, software investment, robot use, online sales revenue – reflect big changes in the market
  - Metrics are all over the map in terms of current distribution
  - They move at different paces; all are growing, but at different rates and accelerations
  - All sectors are now focused on developing IT technologies
  - Workers in digital industries have higher levels of cognitive and task-based skills
  - Returns to skills are higher in digital industries
  - Has become more important to have bundles of skills; two workers having complementary skills is out, multifaceted workers are in
  - Automation puts some workers at risk
  - Routine workers are more at risk
  - If you think automation and routine work are correlated, you worry about the lower part of the distribution
    - Tasks might be totally different in the same job. Job destruction and creation. 1.1% extra non-routine, and .4% routine workers?
- If you’re worried about polarization need to worry about the middle part
- Technology can destroy jobs and create jobs
  - +100 technology leads to 1 more non-routine workers and 0.4 routine workers
- Need to help people transition from one occupation to another
  - Need to also reduce cost of policy, and make more effective
- How to design and target training policies in terms of the distance between skills workers have and skills they need
- Map these distances and identify needed skills-related improvements
- Identify and define VET
- Training opportunities depends on your gender, and your cognitive skills
  - Routine workers are getting the least training
  - Perhaps we need to rethink policies, how they are targeted

Stephanie Jamet, OECD. "Overview of Skills and Digitalization"

- There are positive impacts of digitalization – how can skills make the most of it?
  - We know a lot about society at this stage, but there are new opportunities for learning
  - Risks: too much time on social media, etc
  - Idea that if you have certain kinds of skills, you have more opportunity to benefit
- Policy: how can countries shape their policies
  - Not just gaining of skills, but use of skills
- Project structure
  - Because digitalization goes beyond economy and society…skills have relevance beyond work
  - Digital transformation makes learning easier, but who benefits from these opportunities?
- Indicators
  - Skills and skills policies
- Understand labor markets and how they will change
  - What are skills people need on the job?
  - Comparison on how equipped countries are
- Preliminary finding
  - Workers are working more with IT
    - Both technical tasks, but also management and other more social / emotional tasks
  - Share of non-routine tasks increases as share of routine tasks decreases
- Skills in a digital society
  - Understanding various aspects of digital society, what skills do people need?
  - Addressing digital divide – relevance of cognitive skills
  - How do skills shape the relationship? Work life balance, social isolation
• How are countries preparing?
  ▪ Used survey of adult skills – literacy, numeracy, problem solving in digitally-rich environments
  ▪ People lacking these skills: 15% lack these skills in rich countries
  ▪ At best, 30% of population in each country fully has these skills
• Learning
  ▪ Growth in content of knowledge, sources of knowledge
    o Questions about reliability
    o Negative relationship between number of computers in schools and school performance; need to figure out how to use technology to help achievement
    o On the job – technology doesn’t necessarily help productivity
• Teachers need these skills – they need to know how to solve problems in technology-rich environments
  ▪ In some countries teachers have these skills, in some countries they don’t
  ▪ US is below average
• Low-performing teachers in this category can set students back; training teachers is very important for the future
• Lifelong learning – finding balance between initial education and adult training
  ▪ How does that balance need to change?
  ▪ Change certification – sources of knowledge are broadening, work is becoming more skills-demanding. Who should be in charge of certification
  ▪ Share of workers in on the job training is too low

Bay Area Views

Stephane Kasriel, Upwork

▪ Website helps people find freelancers all around the world
▪ Many clients are Fortune 500, many workers are knowledge workers
▪ Some of these technologies have an impact on the labor market
▪ 4th Industrial Revolution (WEF)- tech is accelerating
▪ AI / robotics could improve productivity, or destroy the labor market
  ▪ Don’t believe we’re running out of jobs
  ▪ Two futures: robot pets, or robot cattle
▪ Silicon Valley needs to lead innovation that is inclusive rather than destructive
  ▪ Startups that say “disrupt” get a lot more VC funding than people that talk about “creating, building”
▪ No fate but what we make – we get to decide what technology does and how it’s used; but need to be more thoughtful
▪ We operate jobs like in the first industrial revolution
  ▪ 1:1 employment; onsite employment, onsite 9-5
  ▪ Made sense for the assembly line; doesn’t make sense for what people do today
We can change, but how?

- People in OECD countries are being left behind. Why?
  - Inadequate training
  - Geography; knowledge work is done in big cities, but people don’t move around as much as they used to
  - 50% of US GDP is happening in 23 cities; globally it’s 200 cities
  - If you move to NY or SF, cost of living is untenably high; young students spend 70% of income on rent

- We need to change how companies operate, how jobs are tied to work; but these problems are solvable
  - 1) Need to for real invest in lifelong learning
    - US spends 6x less than Euro countries
  - 2) Need to move jobs elsewhere; workers moving to where jobs are is broken. Need to move jobs where workers are.

Survey data

- Freelance workforce is bigger than OECD metrics indicate; McKinsey asks, “do you do some freelance work;” don’t measure by tax forms
  - 162m people do at least some amount of freelancing every years, 33% of EU+US
  - 29% are full-time
  - Growing really quickly; 3x the rate of overall US population
  - In 10 years, 50% of US population will do some amount freelancing
  - 50% of these are doing this as close to their primary source of income
  - Impacting more and more higher educated people
  - 27% increase in revenue from 2016 to 2017

- These people have huge issues that aren’t being dealt with by any government
- The “gig economy” is not as scary as people think
  - 67% say they do this by choice
    - They don’t live in the 23 cities or work 9-5
  - Freelancers prefer “freelancers”
- Tragic story: architect gets fired for having a baby; now she’s a freelancer; she prioritizes kids, doesn’t work when they’re at home; now she makes more money than she used to make
  - Gen X is huge part of freelancing population
  - You like mobility – finding a new full time job every time your spouse’s job relocates is too hard

Freelancing is about freedom

Technology helps freelancing
  - Local network referrals dominate
  - But if you live outside of those 23 cities, your social network isn’t in cities where jobs are

“How do you feel about this whole 4th industrial revolution?”
  - 55% of freelancers update their skills; 33% of W2 employees do

By 2025 freelancers would add $2.7 trillion to global GDP
We’re not running out of jobs, we’re running out of people to perform them (aging workforce)

- Talk of AI x-risk is self-fulfilling prophecy; we can do things about potential problems
- Tech is helping match people to the right jobs
- What Amazon is doing right now, siting their HQ in one of the 23 cities, is a tragedy. Huge missed opportunity for the American economy. They should have chosen a different city to become a 24th city.

Hal Varian, Google

- Reduction in both demand and supply of labor
  - Last 50 years, loose labor market; if you need workers you can find them
  - Next 50 years, going to be hard to find workers
- Bots
  - People talking about job stealing robots dates back to 1812
- Women entering labor force has flattened; baby boomers are retiring
- Spreadsheet revolution: reduced demand for clerks but increased demand for accountants
- Distinctions between jobs and tasks
  - 1950: 270 detailed occupations, only elevator operators have been eliminated due to automation
  - Look at most jobs: they are a lot more complicated than intellectuals will recognize, eg groundskeeper
    - Huge number of tasks – goes over multiple pages
    - There are 60 tasks – so the idea that they’ll be totally automated away is kind of ridiculous
  - 10 largest occupations in the US
    - All those jobs are in services
    - Account for 21% of total employment
    - Future of work: “nerds and nurses”
- Workweek – people love 3 day weekends
  - Higher productivity, excess workers
  - Netherlands has only 29.1 hours per week. They do that so that they can handle part-time work
  - People ant more jobs and less work
  - Technology can deliver that
- There are 500m how to videos on Youtube
  - Both manual and cognitive guides
  - Amazing that we have an incredible delivery mechanism for skills development
  - Material is there, content is there, access is there, how to effectively deliver it?
Productivity
  - Close to full employment
  - Declining participation
  - Anemic productivity
  - Only improvements in productivity can turn that around

Labor shortages are worst in Trump country
Without immigration in the US, labor force would be declining in absolute terms
Participation declines; will see a tight labor market for a while, but boomers plan on continuing to consume once they retire
We’re in great shape compared to most countries: they all have demographic problems in terms of their replacement ratio
Robots per 1k workers – highest in countries where people have declining labor forces in absolute terms
In 2050, 2x as much alzheimers

- We shouldn’t be worry about lack of jobs, we should be worried about lack of productivity growth; and productivity growth only comes from technological improvements

Laura Tyson

- Worried about polarization
- What are the incomes of people in new jobs and job types?
- Who pays for people’s transitions? Government bears that costs politically and socially
- What is the political economy, not just narrowly the politics or narrowly the economics?
- What about the role of the institutions that represent the worker?
- Who are the winners/losers? How do you settle?