

Education for a Changing World Symposium



Learning in the Time of AI

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Oh, Brave New World



- **At least half** of existing jobs in advanced economies can now be automated; proportion rapidly increasing—drivers, retail clerks, miners, farm workers, manufacturing workers, warehouse workers
- **Wiped out first:** Jobs requiring the skills needed for routine work possessed by the typical high school graduate in the advanced industrial nations (HALF of all current graduates!)

Oh, Brave New World



- **High skill jobs** NOW on the chopping block: artificial intelligence programs that write artificial intelligence programs, fully automated investment bankers, composers of symphonic music—more to come
- **Endangered species:** regular full time jobs; Net new jobs in U.S. almost all in 'gig economy' (self-employed, multiple employers, different kinds of work)

But What Kind Of World?



- **Utopia:** machines do the work, humans live to be 150 years old—or longer—in luxury, or...
- **Dystopia:** a handful of fabulously rich live in enclaves, supported by a band of artists and professionals who do well for themselves, the rest, declared ‘surplus labor’, survive on the dole
- **Second option now well underway**

My Take



- Educators could sort children out into **two bins**:
 - those who will be educated for work requiring high skills
 - those who require little or no skill because they will be declared 'surplus labor'
- But even if that were ethical, which it is not, the 'universal basic income' idea won't work anyway, because **humans derive much of their dignity from the contribution we make through our work**. To accept the idea of 'universal income' is to accept permanent political upheaval or the steady advance of autocracy and the end of democracy

The Education We Need



- In a world in which routine work will be done by machines, the work of humans will involve **increasing technical complexity**
- But your employers will not teach you how to work. In a ‘gig economy’ in which fewer and fewer workers will be full-time regular employees, employers will have little incentive to invest in their workers; people will have to come from initial education **fully equipped to do highly complex technical work**
- But in a gig economy in which more and more workers will have to be able to do a swiftly changing array of jobs, both in succession and all at once, they will have to be very **broadly and deeply educated**, so they can learn very quickly

The Education We Need



- **‘Deep conceptual mastery of the disciplines, constantly applied to the unexpected’**
will be the watchword

The Education We Need



- This will require a **“T-Shaped” curriculum**, the bar at the top being a first rate liberal arts curriculum, and the vertical element an equally first rate preparation for hitting the ground running with a complex technical specialty; ***they will have to be intertwined.***

The Education We Need



- In a world in which the machines will be doing a lot of the thinking, humans will have to be **exceptionally good at the quintessentially human**: empathy, warmth, courage, caring, sensitivity, managing, supporting – can be taught but only in action and by example
- In a world in which information is ubiquitous and cheap, schooling will have to be not so much about ‘stuffing the duck’ with information as **creating experiences, in and out of the classroom and in and out of school** that will combine to give students the qualities demanded by this new environment

The Education We Need



- In a world in which amoral machines will be making momentous decisions, schooling will have to pay much **more attention to the moral dimensions of education** and to the values that will help them shape their interactions with the new machines and each other
- In a world in which machines could in relatively short order destroy the jobs of millions of people and, in the process of doing so, destroy democracy and liberty, it will be more important than ever for future citizens to **understand the historical forces** that produced democracy, how important it is, how fragile it is and what it takes to sustain it

The Education We Need



- In a world in which job destruction will reach those in the lower half of the income and skill distribution first, it is essential that nations **redesign their education systems** to provide to all students the kind of education they have heretofore provided only to their elites
- In a world in which the jobs available to people with 7th or 8th grade levels of literacy are disappearing, educators can no longer think of vocational school as the place that students who cannot do academics go; all students, whether they are going to work right after school or later, will have to have a **high level of academic skill**

The Education We Need



- In a world in which all education is about learning to learn, and about learning how to apply what you learn to a swiftly changing array of unexpected real world problems, all education will be a **mixture of formal learning and applying that learning in real time** to real, unanticipated problems.
- Academic learning will need to be more applied. Vocational learning will need to include more theory. Everyone will be going back to school all the time, but most people will stay on the job while they are learning

The Education We Need



- Education has never been more important. It could make the difference between a world in which humans become pets to amoral but extremely powerful machines and a world in which the same machines **enable humans to create a world we could otherwise have only dreamed of.**