

21 March 2013

MEMO: The future of automation, income, and work

At the beginning of the industrial revolution, the Luddites feared that automation would deprive people of labor, concentrating wealth in the hands of a few. Today, technology-driven unemployment is rekindling those fears.

Until recently, the Luddites were wrong for two reasons. Firstly, because technology enabled the creation of new industries. Although automation reduced the agricultural labor force by 95%, it also caused a tremendous drop in the price of food, making money available for other activities. Displaced agricultural laborers could easily shift to factory jobs, where they could create more value than they had as farmworkers. This dynamic -- of technology creating more opportunities than it foreclosed -- continued for centuries, leading many to believe it to be an immutable law.

Secondly, automation often tapped into tremendous demand elasticity. Henry Ford produced cars with 90% less labor and sold them at a 65% discount. This price drop unlocked a latent demand for automobiles, causing *thousands* of times more cars to be sold, creating more rather than less employment in automobile manufacturing. Similar dynamics played out in household goods, personal computers, and innumerable other industries.

Today, neither dynamic persists. Although technological innovation still creates new opportunities for labor -- mobile app developers, machine vision programmers, etc. -- they are increasingly specialised roles, requiring tremendous amounts of time and education to master, and can no longer be easily shifted into by displaced workers. Nor is there demand for *millions* such jobs, which is how many jobs are being lost to automation. Finally the developed world has passed "peak consumption" in the last decade, and there is no longer such latent demand for goods. Inventing a cheaper light bulb won't stimulate the demand for more light -- but will likely put more light-bulb-making workers out of a job. So today, the Luddites would seem to be right.

But technology doesn't just reduce the cost of goods and the value of labor -- it also enables the creation of entirely new goods and services, with incalculable benefits: antibiotics, telecommunications, mechanised transport, etc. In developed economies, these technologies are rightly considered essential to maintain a minimally acceptable quality of life. But accessing these technologies is not cheap. As a matter of basic social justice, most consider it unethical to employ somebody at a wage which does not support access to these technologies -- hence the call for a minimum wage, with pressure to increase it in tandem with the rising cost of living.

This has created one of the central paradoxes of our age: *even as labor is becoming less valuable, it is also becoming more expensive*. Because the price of labor cannot be allowed to sink to the point where supply would meet demand, this has led to increasing technology-driven unemployment and poverty, even as the same technology creates benefits for society at large.

Some people hope that as automated goods and services become pervasive, there will be a

renewed appreciation of human-produced goods and services, creating a negative feedback loop that will dampen demand for automation and restore the role of the worker. Unfortunately the opposite is true. As people become poorer, they increasingly prioritise the bare necessities of life. This causes a well-documented increase in demand for “inferior goods” -- products that are cheaper than their qualitatively superior alternatives. Hand-cooked meals are replaced with industrially-produced fast or frozen foods; handcrafted furniture is replaced with mass-produced flat-packed furniture; a night at the theater is replaced by an evening of television, and so forth. This pattern repeats itself universally: poor people prefer cheaper goods, cheaper goods are produced with more automation, and more automation produces more poor people.

So there *is* a feedback loop, but unfortunately it's a positive, self-reinforcing one.

Until recently, the link between mass production and job loss has been blamed on the globalised labor market, with factories shifting to where workers are cheaper. This has always been a partial illusion: the manufacturing booms in Japan and Korea were driven less by the cheapness of their labor than by their comparative willingness to automate. Even China is now becoming increasingly automated: Foxconn -- the world's largest manufacturer -- is adding a million robots to its production lines each year, and its vast labor force is beginning to shrink. Today, in the developed world, the production of both basic goods and precision machinery is *always* done more cheaply by machines than by people -- and this is increasingly true in the developing world as well. There are a few pockets in Asia and Africa where human labor remains cheaper than machines -- but even there, labor prices are rising and the cost of automation is falling. Before the decade is out, automation will be cheaper than human labor -- first for basic manufacturing and agricultural tasks, but eventually for all non-creative work -- everywhere in the world.

There are only two solutions for this. One is to make automation more expensive; the other is to make human labor cheaper.

How could automation be made more expensive? Perhaps with a technology tax or a mandated technological regression -- making it more economical to dig ditches with the proverbial soup-spoons rather than backhoes. This would let people to return to the drudgery of non-creative manual labor, and would restore the link between labor and the distribution of money. But it would result in more costly goods for everyone else, and make the world worse by every other measure.

So how could human labor be made cheaper? If healthcare, housing, transport, and education could all be made radically cheaper -- which would require massive automation and job-loss, since labour is the major driver of all of these costs -- then the poverty line could be lowered, allowing wages to fall until they were more competitive. But because the number of income-earners would also fall, the demand for inferior goods would increase faster than wages could decrease. So this approach would not work, and there is no indication that technological or market forces will allow it to happen.

The only remaining solution is to break the link between labor and sustenance, by providing everyone with a basic income that meets their critical needs *prior* to labor. That way, any income derived from labor would be the icing on the cake. Thus there would be no ethical requirement for a minimum wage, and the price of labor could be allowed to float until it meets demand. This would allow things like hand-cooked meals, handmade furniture, and live theater to again become competitive with mass-produced alternatives, because those are tasks which many people enjoy doing for their own sake.

To provide an illustrative example: let us imagine that every earned income is taxed at 50%, which is then redistributed equally to every individual. This would set the basic income at 50% of the mean income, by definition. In America, the mean individual income is \$27,500, so the basic income would be \$13,750. Now consider the case of a furniture-maker who aspires to earn the equivalent of minimum wage, and how they would fare in today's economy vs. one with a basic income.

Minimum wage is \$7.25 per hour, so a handcrafted chair which requires 20 hours to produce has a labor cost of \$145.00 -- a very expensive chair. With a basic income of \$13,750 per year (and a 50% earned-income tax rate), the craftsman could maintain the same standard of living at \$1.28 per hour (assuming a standard 2,080 productive hours per year). This would allow the labor component of the chair to fall to \$25.60 -- a much more competitive price, for which there would undoubtedly be much more demand. The craftsman would have a much easier time finding customers, and might even be able to raise their prices and standard of living.

A guaranteed basic income -- together with a substantial income tax and the elimination of minimum wage -- would not see the factories repopulated. There is little pleasure in rote factory work, and the marginal earnings (above and beyond the basic income) from factory work would not be worthwhile for most people. Rather, a guaranteed basic income would allow local human endeavours with an enjoyable or creative component to be priced at a level that can compete with the cheap work of machines. This would ensure that the wealth which automation creates never becomes too concentrated, without artificially constraining the real benefits of automation.

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