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## Automation and the Need for a Social Vision

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On July 15, I attended a forum on the effect of automation on longshore workers, in the U.S. and around the world, held in San Francisco at the meeting hall of International Longshore and Warehouse Workers Union Local 10 (ILWU 10). Much of the discussion centered on the news that a major Chinese port – Qingdao New Qianwan Container Terminal (QQCTN) has introduced Asia’s first fully automated port terminal, including two berths with a capacity of 1.5 million TEUs (each TEU is a 20-foot long container unit), with seven huge ship-to-shore gantry cranes serving two berths operated by remote control, 38 automated stacking cranes, and 38 battery-powered automated guiding vehicles (the automated guided vehicles are programmed with routes and tasks, and with artificial intelligence algorithms that recognize when the vehicles need to be recharged and drive to a battery swap station where a robot equips them with a new battery.) The terminal is controlled by laser scanners and positioning systems that can locate the four corners of each container accurately enough to clamp and move them into driverless trucks. The technology enables the

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terminal to operate around the clock, including in complete darkness, reducing labor costs by 70%: the number of workers required to unload a cargo ship has been reduced from 60 to 9. And this is just phase one of QQCTN's automation. When the next phases are complete, a total of six berths will be completely automated – QQCTN will operate around the clock, its berths fully automated, its labor force almost completely eliminated (aside from crew in the central control room, who clearly are highly vulnerable to further automation.)

While a significant number of longshore jobs have been lost to attrition since the ILWU (and the east coast dockworkers union, the ILA) agreed to accept containerization more than 40 years ago, and although some major terminals in Europe and Latin America had been largely automated, the news of the automation of QQCTN nevertheless sent shock waves through the room. QQCTN was automated in three years – heretofore, it had taken at least ten years to fully automate a terminal. The handwriting was already on the wall – the RWG terminal in the port of Rotterdam has been nearly fully automated since 2015 (only one human worker is involved in running the ship to shore gantries at the RWG terminal in Rotterdam), and other ports in northern Europe (especially Hamburg), in Turkey, in Venezuela, and elsewhere have introduced substantial automation – but the aggressive speed at which the automation project at QQCTN was completed (and a similar project at Shanghai is well on its way to completion at comparable speed) convinced the ILWU members that Oakland and other major U.S. ports may soon follow in the footsteps of QQCTN. Partial moves in this direction are already in place. For example, in 2008 the ILWU locals at the giant ports of Los Angeles and Long Beach formally agreed to the use of self-driving and automated technologies. On the east coast, ILA president Jim McNamara told Fox News, “We have no problem with semi-automated terminals. New technology is fine if it keeps our workers safe, but full automation means that our

degrading working conditions. But we need to do this by counterposing what we are for. The status quo is unacceptable. We need to reorganize society. The priorities of this society are upside down; we need to turn them right side up. We need to discuss how people can take control into our own hands. How we can reorganize society from the bottom up. We ought to be engaged in creatively visualizing what the world can be, how people can take control and decide how they want to live, what kind of technology they want to develop and employ, how they want to interact with each other and with the world around them. The basis for doing this is there, if we realize it and take control of our destinies and the fate of the entire world around us.

jobs are gone.” McNamara conveniently overlooked the loss of jobs and of control over working conditions working to “semi-automation” – starting with containerization, and continuing through to the acceptance of self-driving vehicles on the docks. But now, another leap is occurring, as ports around the world are poised to rapidly install fully automated terminals. And as they do, the jobs still remaining on the longshore – stevedores, warehouse workers, clericals – will be squeezed out. No jobs, no work. Even the ILWU leaders can grasp this – no jobs, no work; no work, no dues; no dues, no union staff. And not just the longshore, but all of shipping, is going this way. Engineering firms are designing unmanned, remote-controlled ships – for example, Rolls Royce is developing drone cargo ships controlled from land. And before drone ships become prevalent, it’s very likely that the trucks that transport (containerized) cargo to and from the port will be unmanned, “self-driven” robots.

As I sat and listened to the presentations, two thoughts ran through my mind. First, what are the implications for areas other than longshore? Second, what (if anything) could be done about this?

As to the first: For starters, all branches of transportation are now threatened. “Disrupting” trucking by eliminating the drivers is an area of active research. Self-driving trucks will be appearing soon, and are likely to be prevalent within the next ten to twenty years (along, perhaps, with airborne delivery drones – and we can expect that over the road long haul drivers, whose routines are the easiest driving jobs to automate, will be the first to go. Taxicabs are being squeezed out by Uber, Lyft, et al (and by one-way car share startups – e.g., GIG, in the Oakland / Berkeley area, which is sponsored by AAA); but Uber and Lyft are planning to dump their human drivers ASAP, massively funding development of self-driving vehicles. Indeed, the celebrated “gig” economy itself celebrates “disruption” – but at root, disruption in practice means using technol-

ogy to displace workers. Now, even if such job displacement were confined just to drivers of trucks and farm machinery, there would be a huge effect – a 2015 survey found that “truck driver” (including over the road drivers, local delivery drivers, and farm machinery drivers) was the most commonly held job in 29 of the 50 states (“Map: The Most Common Job in Every State”, National Public Radio, February 5, 2015, npr.org). Like trucking, farming is an active research target for “disruptive” technologists.

But of course, we know that massive disruption – full, or nearly full, technological displacement of labor – isn’t and / or will not be confined to the transportation sector. Clearly, full automation – complete (or near-complete) elimination of jobs – is looming well beyond just the longshore. Indeed, ports are being used as a laboratory for perfecting robotic technology that will be used in other sectors. “Ports are the ideal testing grounds for robots. It is a controlled area with lots of space,” observed Markus Kueckelhaus, Vice President of Innovation and Trend Research at logistics firm DHL. Applying robotic logistics to warehouses is a major target, says Kueckelhaus: currently, 80% of the world’s warehouses are still mainly operated by people. Kueckelhaus et al aim to change that, and they’re using the ports as proving grounds for perfecting the technology that’s needed. Manufacturing jobs have already been hit in the U.S., and while they have increased in China, this may not hold permanently. An Oxford University study found that 77% of job categories in China are vulnerable to near-term advances in robotics and machine learning, compared to 47% in the U.S. and 69% in India. Thus Foxconn, the world’s largest manufacturer and maker of device screens for Apple, Google, et al is replacing assembly workers with one million robots. And, as we have seen, the world’s first completely automated port is in China. Robots don’t commit suicide. Robots don’t strike.) (From time to time, Foxconn announces plans to build a new plant, somewhere – as it just did in Wisconsin – that

(especially to the financial, insurance, and health care industries).

The future won’t be decided by schemes like UBI. Nor will it be decided by “disruptive” technology. These may be the forms that are used by the state and the capitalists to deliver discipline and punishment. But clearly, under other circumstances we could envision universal income and technology as beneficial, as means to help minimize suffering and overall help reduce inequality and help people and the planet.

We need to begin by visualizing what we want, how things ought to be. What kind of technology do we want (it’s often said that technology is neutral, but it’s a no-brainer that the kind of technology that’s developed depends upon what society values and rewards. A socialist society organized with the power of decision-making and control democratic based and emanating locally will necessarily value and therefore create very different technology than does global capitalism. And even where the devices are the same, they will be put to very different use – microelectronics and biometrics would not be used to spy on the populace and to impose performance metrics on the workforce.)

We need to think about how we want to live, how we want to interact with each other and with the world. What kind of work should we assign to machines? What activities does each individual want to engage in? This won’t come easy: most of us have for decades had it battered into our heads that we need to work for a boss (except for those who become bosses), that we need to compete with others, that if we’re not working 40+ hours a week at something – anything – then we’re lazy good-for-nothing parasites sponging off of others.

We really need to talk about – to put forward – our conception of what work ought to look like and how society ought to be organized. Short of this, we are left fighting a rearguard battle to preserve wage slavery under capitalism. Yes, we must absolutely oppose throwing workers out of jobs, cutting wages,

been a major push to introduce scripted learning in elementary schools, which when and where successful degrades the work, routinizes it, and thus makes it more susceptible to disruption by cyber learning [and, additionally, there has been a big push to increase class size, which where successful reduces the number of teaching positions.] Another example from the same article: guidance counselors are listed as less susceptible to automation. But guidance counselor jobs are being greatly reduced or even outright eliminated in many urban school districts. For example, in the Oakland California school district, the number of students per guidance counselor was tripled over the past decade. A third example: surgeons are listed as less susceptible to automation. But robots are being introduced into surgery routinely now as part of surgical teams, and I see no evidence that this trend will not increase.) And even if they are created, barring massive social struggle, they are likely to be subject to the kind of degradation that we discussed above. But, massive social struggle can occur, and when it does it will likely transform those categories in ways that are not and cannot be captured in the NY Times' abstract approach.

So how to take this on? We need to talk about social solutions.

One proposal that's beginning to gain support – and not just from leftists – is the idea of a universal basic income (UBI). The basic idea of the UBI is that the state provides a stipend to every citizen – a guaranteed floor level of income set at least at or above the poverty line. At first glance, this seems to be absolutely appealing. But there's a dark side: UBI proponents among neoliberal “free market” proponents visualize UBI as a way to eliminate what they call “entitlements”: social security, Medicare, Medicaid, and most other components of the social safety net. The UBI stipend then would effectively be just another way to redirect public funds to giant private corporations

will supposedly bring thousands of jobs to the lucky chosen locality. But time after time, even when Foxconn does go forward with the project, far fewer jobs than were heralded actually materialize. Foxconn pockets billions in incentive funding from the state, but most of the work goes to robots, and the robots (and performance monitoring technology) barbarically degrade working conditions (hence the oft-reported high suicide rate and general despair among Foxconn workers.)

But the biggest “disruption” is likely to be in retail, where self-checkout, automated point-of-sale processes, and cyber-shopping (led by Amazon) may eliminate as many as five of every six jobs. And in warehousing, where robotic warehousing and fulfillment (“intelligent stocking, sortation, routing, and picking”, barcoding, etc.) is rapidly taking over.

This leaves the service sector. Adam Greenfield, in his book *Radical Technologies*, cites Ed Rensi, the former head of U.S. operations for McDonald's, arguing against increasing the minimum wage as saying that “it's cheaper to buy a \$35,000 robotic arm than it is to hire an employee who's inefficient, making \$15 an hour bagging fries.” Beyond burger flipping, AI robot programs are being used for medical diagnoses; robots are being employed routinely in surgery; etc. In education, cyber learning displaces teachers; other forms of distance learning allow massively increased class size, again displacing teachers. Cyber learning and most (not all) distance learning goes hand in hand with the drive of the educational deformers (Bill Gates, Eli Broad, Arne Duncan, Barack Obama, Jeb Bush, Hillary Clinton ...) to reduce teaching to rote scripts that can be delivered by machines or by untrained, low paid, pliable recruits.

Disruptive technology, even if / where it doesn't massively reduce jobs, will almost certainly massively degrade working conditions. The pattern is the same on the docks; on the roads; in the warehouses; on the farms; in the classrooms; in the supermarkets: Routinize, and convert tasks to simple, easy to program algorithms. Then: choose machines or

workers, whichever is more cost-effective (or some combination), and where machines don't take over completely, use their potential introduction as a threat to discipline workers, hold down wages, degrade working conditions, etc. As we observed above, scripted learning squeezes concepts out of education, reducing teaching to rote lessons taught by reading a script – thus, teachers can be replaced by untrained script readers. Another example: Amazon – workers are hired on short-term contracts (no raises, no benefits, little chance of permanent employment), subject to “rationalized oversight” of performance metrics. Yet another example: Target scores its cashiers according to their average speed of checkout. And another: Hitachi call center employees must attach wearable devices that monitor their performance (as well as their activity during break periods).

We are opposed to putting any workers out of work, and we're opposed to forcing them to take wage cuts and / or to be subjected to degraded working conditions. But just holding the line – fighting to defend the status quo – is a losing proposition. Moreover, it is reactionary: it's an attempt to take a snapshot of capitalism, as it is today, and fight to freeze it and preserve it. This has been a losing strategy for decades – witness the decimation of the formerly powerful industrial unions that were the backbone of the 1930s labor revolt. And it reflects an unfortunate attitude of much of the left: a fetishizing and romanticizing of wage slavery. I'm sure many readers will have encountered leftists who consider “workers” to be morally superior to “petty bourgeois types.”

Before proceeding, two points:

1. In education, this takes the form of “defend public education” – that is, defend a system that has been a universal failure in low-income communities – black communities, brown communities, rural communities. Just shouting “no privatization; defend public education” is inadequate.

Parents whose students are consigned to squalid, under-resourced, dangerous hellholes will opt to try for alternatives that promise a better way. The fact that charter schools are not a solution but in fact make things worse did not stop millions of parents in high poverty areas from giving them a shot. And, unless we hold up a vision of what's needed and fight forward for it, many parents of students in inner city schools will go for the next silver bullet scheme that's proposed – because they feel that their kids have no shot at a decent life if they stay where they are.)

2. There is a legitimate discussion, and a needed one, of agency: in the past, many socialists – and not just Marxists, but also syndicalists (the IWW) and others – looked to industrial workers to lead revolutionary struggle (to be the agents of change) because of their power at the point of production. But, in the U.S. at least, that power has eroded to the point of virtual disappearance. Refusing to recognize this is not only pig-headed; it is reactionary. But it raises a crucial question: if not the industrial working class, then who will be the agents of change?

Finally, it's important to note that we're really speculating at the scope and pace with which technological disruption – job displacement – will occur. But that it is occurring, and that it is occurring in the key sectors cited above, seems clear. Perhaps new jobs will be created elsewhere. But where? (An article in the July 28, 2017 New York Times presents a graphic indicating jobs that it categorizes as more susceptible to automation and those that it categorizes as less susceptible. Most importantly, in my opinion, such abstractions ignore the presence or absence of social struggle, and therefore are artificial and may not hold up. For example: elementary school teachers are listed as less susceptible to automation. But there has