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Robots on the rise as Americans experience record job losses amid pandemic (Lauren Aratani, 27.11.2020; https://www.theguardian.com/technology/2020/nov/27/robots-replacing-jobs-automation-unemployment-us)

They can check you in and deliver orange juice to your hotel room, answer your questions about a missing package, whip up sushi and pack up thousands of subscription boxes. And, perhaps most importantly, they are completely immune to Covid-19. While people have had a hard time in the coronavirus pandemic, robots are having a moment.

The Covid-19 pandemic has left millions of Americans unemployed – disproportionately those in the service industries where women and people of color make up the largest share of the labor force. In October, 11 million people were unemployed in the US, compared with about 6 million people who were without a job during the same time last year.

And as humans are experiencing record job losses and economic uncertainty, robots have become a hot commodity. Multiple technology manufacturers have reported increased demand for their bots over the course of the pandemic, from drone-like machines that can roam hallways to make deliveries and AI-powered customer service software to increased use of self-service checkouts at supermarkets.

A recent report from the World Economic Forum predicted that by 2025 the next wave of automation – turbocharged by the pandemic – will disrupt 85m jobs globally. New jobs will be created but "businesses, governments and workers must plan to urgently work together to implement a new vision for the global workforce".

The hospitality industry, which has been one of the hardest-hit by the pandemic, has seen a clear uptick in the adoption of new technology during the pandemic. Hotels are allowing guests to use kiosks to check themselves in, apps to control the television and light switches in their room and a few use delivery bots to send to guests' room when they want a refreshment.

Ron Swidler, chief information officer of the Gettys Group, a hotel design and development consultancy firm, said more hotels are experimenting with new technology during the pandemic. Swidler leads the Hotel of Tomorrow, a consortium of hospitality leaders that was re-upped in the middle of the pandemic to think of ways to innovate the industry. The group came up with five "big ideas" on how the industry needs to change, and new technology – including robots – are a core part of the equation.

"The cost [of automation] is coming down, the technology is getting better and we are seeing innovation working effectively in other parts of the world that we can transfer here," Swidler said, citing Alibaba's FlyZoo hotel that is staffed nearly entirely by technology, from check-in to room service.

While the idea of being serviced by a BB-8 lookalike in a hotel may seem strange, Swidler said permanent job losses in the industry will be a reality as hotels adopt new technologies to try to save on labor costs.

It is unclear whether the increased demand for new technology has directly caused job losses during the pandemic, but a discussion paper published by the Federal Reserve Bank of Philadelphia in September found that "automatable" jobs – occupations that could be replaced by technology that is in development or is

already available – lost 4.2 more jobs per every 100 than occupations that are less at risk for automation. Occupations that are considered automatable include hotel desk clerks, shuttle drivers and retail salespeople, according to the paper.

The paper's authors raise the widely shared concern that the automation undertaken during the pandemic will be a permanent replacement for jobs.

"The longer time it takes to fully control the virus, the higher the probability that the labor-saving technology will become permanent," said Lei Ding, senior economic advisor at the Federal Reserve Bank of Philadelphia and co-author of the paper. "Job losses will become permanent losses."

Currently, there are only anecdotal examples of permanent job loss due to an uptick in automation brought on by the pandemic, but the layoffs of hundreds of Pennsylvania toll booth workers provides one clear example of how labor-saving technology can sweep away jobs.

In June, the Pennsylvania Turnpike Commission laid off about 500 toll collectors in the state when it switched to all-electronic toll collecting.

For years, the commission had talked about replacing toll booth workers with automated collectors, and they finally gave workers a timeline. Per a union agreement, workers were supposed to be kept on payroll until at least October 2021, with final layoffs happening by January 2022.

The longer time it takes to fully control the virus, the higher the probability that the labor-saving technology will become permanent. When the pandemic arrived, collectors were sent home in March and were promised that the commission would still uphold the October 2021 date. But in June, the commission permanently laid off all workers, over a year before the agreed date.

"We understand the safety of employees is the most important thing, but for them to have safety mean the elimination of their jobs … It's been devastating," said Jock Rowe, principal officer for Teamsters Local 77, the union representing 300 of the laid-off toll workers.

Rowe cited other toll-collecting agencies that brought back toll workers with enhanced safety measures, including the Port Authority of New York and New Jersey.

The impact of a recession on the growth of automation has been well-documented by economists and has shown that automation does not grow steadily, but rather happens in bursts. Businesses are more likely to automate after experiencing economic shocks, when they have strong incentives to save on labor.

For a study published in 2016, researchers from the University of Rochester combed through 87m job postings online from before and after the Great Recession. They found that employers in cities that were hit hardest by the recession were replacing workers with labor-saving technology and more skilled workers. A report published by the Century Foundation found that "robot intensity" increased in 2009, in the immediate wake of the Great Recession, particularly in the manufacturing industry.

While an increase in automation can be good for educated workers and help to stimulate the economy, studies have also shown that new technology tends to leave low-wage workers behind.

"Automation has been a major driver in the increase in inequality," said Daron Acemoglu, an economist at the Massachusetts Institute of Technology. Acemoglu co-authored a study published in May that showed automation creates a "prosperity gap" that benefits high-skilled workers at the sake of lower-skilled workers.

Low-wage workers are not only more susceptible to job loss and wage depression due to automation, but they also experienced the most job losses due to shutdowns. Higher-wage workers are more likely to be able to work from home during the pandemic, while lower-wage workers – a disproportionate number of whom are Black or Hispanic – were more susceptible to layoffs due to shutdown orders.

An important caveat many roboticists will point out is that artificial intelligence technology is not quite smart enough to cause mass waves of layoffs due to robots. New AI technology can take a lot of money, time and resources to set up, something that many businesses do not have during the pandemic.
“You should definitely not worry about losing your job to an AI-enabled robot right now. If you’re going to lose your job to automation, it’s going to be … some proven, well-known automation that is more than 10 or 15 years old,” said Matt Beane, an assistant professor at the University of Santa Barbara’s Technology Management Program.
AI has “tremendous potential for making humans more productive” without replacing humans, Acemoglu said, if society takes a human-centric approach to technological advances. But without the political will to make sure those who do lose jobs are taken care of, by training them for new jobs, for example, the impact of automation may be devastating and a pandemic that has already hit those workers hardest could be leave a lasting legacy of unemployment.
“I’m not saying automation is terrible … What I’m saying is it would be terrible if we put all the eggs in the automation basket,” Acemoglu said. “We have to a large extent done so over the last 30 years. [The pandemic] will just exacerbate that.”

Europe’s demographic crisis: How to get older workers back into the labour market (Efi Koutsokosta and Fanny Gauret, 12.02.2020; https://www.euronews.com/next/2020/02/12/europe-is-getting-older)

Europe's ageing population is a demographic phenomenon which sees a decrease both in fertility and in mortality rate and a higher life expectancy among European populations.
And the 'greying of Europe' looks set to have a significant impact on most aspects of society and the economy.
The European Social Fund is Europe’s main instrument for supporting jobs, helping people get better jobs and ensuring fairer job opportunities.
"I think we live in a situation where we have a lot of challenges linked to the technological developments and the population ageing both in general and also the workforce," says Deputy Director-General of the EU Commission, DG Employment Andriana Sukova.
"So we need to act. We need to use the funds for helping people…we need to help them find and face new job opportunities but also be ready for new working relations."

- **How the EU is integrating older people into the labour market in Cyprus**

After the financial crisis that hit the country in 2012, Cyprus has regained a positive growth. However, many workers remain unemployed – especially those over 50 years old.
The European Social Fund finances projects that aim to integrate and maintain older workers into the labour market.
For instance, the program 'Aid Scheme' encourages Cypriot employers to hire full-time people over 50 years-old, by covering a part of their salary.
Quality Manager, Paolo Patitucci was working for an airline when a social plan forced him to quit his company at the age of 60.

Since then, he found a new job in a transport company in Nicosia. A stable job that he was able to keep.
"In my case, the employer was offered the scheme by the government and that's how I continued working for the company."
"After my old company stopped a lot of my colleagues had very big difficulties in finding a job."
"So this scheme was helpful for persons like these."
Over the last 3 years, Aid Scheme has been helping around 1200 people over 50 years old to find a job, according to the European Commission.
But this was not the case for Elena Charalambous Valianti, who was an accountant for 26 years.
She decided to start her own business, due to a lack of good job opportunities.
"It is difficult to look for a job not only if you are over 50, maybe if you are over 40. Because they know you have experience and they cannot find the experience as an excuse for less salary. So they prefer to find younger people."

- **Making a better place for older workers**

This is a growing challenge for Europe. The median age of the EU should rise up to almost 4 years, to reach nearly 47 years old in 2050.
It could even rise by up to 8 years in Cyprus, and also in Malta, Poland and Slovakia.
"People over 50 normally are not the target group approached for the majority of employers, workers are not able to change their main skills that's why we give emphasis in training and retraining in order to make those people able to re-enter the labour market," says Andreas Matsas, General Secretary, The Cyprus Workers' Confederation.

- **The impact of the ageing demographic on the economy**

Nobel Prize-Winning Economist Christopher Pissarides says there are demographic imbalances between north and south and these are an outcome of more fundamental underlying forces:
"For example, if you look at various studies that were done on how ready European countries are to take on the new technology, there is a huge gap between the north and the south."
"You have the Scandinavians and Germany being more than prepared to take on any kind of new technologies that we have, they are doing a lot on R&D providing the infrastructure and you look at the South and maybe one or two things are there, it's more likely that they haven't done anything yet."
"That's what is going to happen in the next 10 to 20 years. Divergence is going to increase more."

- **How can this practically affect public finances?**

"There is no doubt that Health as a sector of the economy will attract more spending and will attract more employment," says Pissarides.
"So we have to be very careful about how we plan it in relation to the private sector and the public sector. The pension system is entirely depending on the policies."

"In the past, pensions in many countries were planned without the view to what it's going to happen in the future forgetting that when someone enters the labour force and is signed up to a pensions' scheme, that will be an operation for the next forty years."
"So we have to rethink on how we treat work beyond retirement age, which is sometimes in the sixties and how we do it conditional on the healthy age expectancy."

- **Managing the future for Europe's ageing workforce**

"We need to be very careful about technology and make sure that we have the infrastructure for the application of digital technologies throughout Europe and not leave it entirely in national hands because we know that if we leave it there, some countries and especially those that are currently very advanced should go up even more," says Pissarides.
"We need to reform our pension systems and change them to funded pensions at the very least."
"We need to take care of the overcrowding of our cities, of our environment, of congestion and we need to act together on developments that could break up the unity and the cohesion of the EU."
"Technology is one but immigration is a huge issue that we are now slipping under the carpet because we don't know what to do basically but sooner or later we are going to face the music.

The globalisation of work - and people (Lynda Gratton, 7.9.2012; https://www.bbc.com/news/business-19476254)

- **What is fundamentally transforming work is extraordinary connectivity**.

In the near future, at least five billion people around the world will use some form of mobile device to download information, access knowledge and coach and teach each other.
Some will have the intellectual capacity and motivation to really make something of this opportunity, wherever they happen to be born.
These people will want to join the global talent pool and, if possible, migrate to creative and vibrant cities.
By doing so, this vast crowd of talented people will increasingly compete with each other, continuously upping the stakes for what it takes to succeed.
It seems to me that this will impact all of us in three ways - the hollowing out of work, the globalisation of virtual work, and the rise of the 'transnational'.

- **Hollowing out of work**

As a result of connectivity and globalisation millions of jobs across the world are disappearing.

This hollowing out of work is seeing the disappearance of middle-wage, middle-skilled jobs such as managers, secretaries, or assembly line workers.
These jobs are at risk because they can either be outsourced to a region with lower wages, or they can be replaced by technology.
So what is left is the jobs at each end of the skill and wage spectrum.
At one end there are high-skill, high-wage jobs - like investment bankers, lawyers, engineers, or IT specialists - which need complex knowledge and expertise and cannot (yet) be substituted by technology.
You can expect these jobs to be paid increasingly well. At the other end are the low-skilled, low-wage jobs like hairdressers, waiters, bank tellers and shop assistants.
The jobs are difficult to automate because you have to be there to do them. But because many of these jobs require limited training, there is always a willing supply of workers - so wages will always be highly competitive.

- **Globalisation of virtual work**

The West's positional advantage in educating its population will be rapidly eroded even for higher skilled jobs as online education platforms like MIT's OpenCourseWare, Open Yale, iTunes U and Khan Academy connect students in vast numbers, whilst enabling them to have very similar learning experiences and work towards similar qualifications.
It might mean a youngster in an Indian village will have some of the same experience as her contemporary in downtown New York. Being educated is one part of the work equation, but there is also the question of jobs.
What will a highly-educated person in an Indian village actually do? It seems that in the coming decade even people in the remotest parts of the world will be able to work on online global tasks and projects.
So in principle, whether you live in Uzbekistan, Uruguay or Uganda, the state of your national economy will not necessarily affect your ability to find work, as the virtual market transcends national economies.
Right now, platforms like oDesk, eLance and Guru are able to connect buyers of specialist skills to sellers of these skills, providing access to web designers, software programmers, salespeople, translators and administrators from across the world.These platforms are enabling distributed buyers and sellers to be combined with speed and accuracy.
There is every possibility that this combination of scaled education and scaled job finding will move work to regions where the most talented and motivated happen to be living.

- **Rise of the “transnational”**

The implications of the globalisation of education and job market is the rise of what we might call "transnationals".
In the past this is a word to describe corporations - now it's a word to describe people. These are a worldwide group of people who are able to relocate at any time, making decisions based on relative global employment and investment opportunities.

This global elite, with hybrid associations among multiple cultures and societies, will build competencies that bridge societies in terms of their management style, cultural sensitivities and social networks.
Transnationals, able to speak more than one language and often carrying dual citizenship, will be able to adapt to the sort of cross-cultural communication that is so important for global organisations.
In the past, people with these transnational capabilities predominately came from the developed West.Now, they are emerging from many countries around the world, amid clear signals that this re-balancing will continue.
Expect to see a whole cohort of leaders emerging from India in the coming decade, and from China in the following decade as these countries' diaspora create ever stronger corridors between markets.

How climate change will transform business and the workforce (Amanda Ruggeri, 10. 07. 2017; https://www.bbc.com/future/article/20170705-how-climate-change-could-transform-the-work-force)

Our planet is already feeling the effects of climate change, but it's also poised to cause irreversible shifts in the ways we work, and the skills that employers need.

When we think of climate change, most of us think of environmental consequences like rising sea levels, elevated temperatures and melting glaciers.
In some parts of the world, like south Florida or the mountains of Switzerland, those shifts already are affecting daily life. In Miami, for example, wastewater treatment plants are being re-built higher, seawalls raised and car parks designed with flood gates – not only in response to flooding today, but with an eye to the sea levels of tomorrow.
But experts say that those effects may only be the tip of the (melting) iceberg. Climate change is shaking up everything from finance to health. As a result, it isn't only urban planners in at-risk areas who will have to shift their framework for planning for the future. From financial planners to farmers, civil engineers to doctors, an increasingly wide range of other professionals are likely to find their industries affected.
That means there may be another consequence of climate change that often gets overlooked: what it means for your career.
"Everyone is going to need to understand [climate change] the same way you'd assume everyone in business needs to have some fluency in social media today, or that everyone would able to use a computer 20 years ago," says Andrew Winston, author of the book The Big Pivot: Radically Practical Strategies for a Hotter, Scarcer, and More Open World.
Because it is difficult to know exactly how dramatic the effects of climate change will be, it is hard to know just how much it will affect various industries. But some of the changes already are being

seen. Climate-related disasters like droughts and hurricanes, for example, are hitting pocketbooks and insurance premiums – even for people living on the other side of the world. Meanwhile, the complicated supply chains of a globalised retail industry mean that a disruption in one place can cause consequences elsewhere. That was shown recently when earthquakes hit Japan in April 2016, damaging plants that sold parts to Toyota and forcing the auto giant to suspend production.

Even the health industry may be affected. As well as affecting the availability of clean water and food, warmer weather is increasing the vulnerability of areas already at risk of diseases like malaria and dengue. The recent Zika epidemic may have been exacerbated by warmer weather patterns. Between 2030 and 2050, the World Health Organisation predicts that climate change will cause roughly 250,000 additional deaths per year.

"One of the most interesting things that hasn't been talked a lot about, but that there's a lot of work on in WHO and NIH, is what's coming at us in terms of disease, and how the weather is changing and spreading diseases and epidemics faster," says Michelle DePass, dean of the Milano School of International Affairs, Management, and Urban Policy at the New School in New York. "We might listen to the BBC to hear all about Ebola and other things, and not quite grasp that we are very, very vulnerable to [these kinds of epidemics] here in the United States, as well, because of what's happening with climate."

In fact, this year, the World Economic Forum's Global Risks Report, which draws on assessments from 750 experts, found that one of the five biggest risks faced by the world in 2017, in terms of potential impact, is weapons of mass destruction. All of the four others are climate-related: extreme weather events, water crises, major natural disasters, and failure of climate-change mitigation and adaptation.

We don't have the right people with the right skills in the right places - Daniel Kreeger, executive director, Association of Climate Change Officers

Despite the size of the challenge, fewer employees are trained in incorporating climate patterns in their planning for the future than should be, says Daniel Kreeger, executive director of the nonprofit Association of Climate Change Officers. (One of ACCO's initiatives is to run training and credentialing programmes in climate-related skills). "We don't have the right people with the right skills in the right places," he says.

He points to one example: civil engineering. "We don't expect to get monster inundations of rain, and then drought for six months. We expect to get periodic, smaller amounts of rain. So our systems aren't equipped to deal with larger rainfalls," Kreeger says. "When those parameters change, you need a workforce to deal with those changes.

"Well, our civil engineers haven't been trained to deal with climate change in their training. Our urban planners, our city managers, our architects. Nobody's been taught this stuff."

- **Hiring climate**

Right now, the top 10 most-desired skills for getting hired, according to LinkedIn's data analysis, all have to do with tech: think cloud computing, SEO marketing and web architecture. In the same way

tech has transformed today's workforce, some say that climate change could transform tomorrow's.

One industry that already shows some of that evolution is energy. According to data provided by job listings search engine Indeed, in the first quarter of 2014 in the UK, job postings in the renewable energy sector – made up of bioenergy, geothermal, hydroelectric, solar, and wind – accounted for a third (32.9%) of all energy-sector job postings in the first quarter of 2014. In 2017, that had risen to over half of all energy sector job postings, or 51.5%.

Our civil engineers haven't been trained to deal with climate change in their training. Our urban planners, our city managers, our architects. Nobody's been taught this stuff - Daniel Kreeger Although these numbers are UK-specific, the same pattern of a shift to renewables was seen worldwide, says Tara Sinclair, Indeed's senior fellow and an economist at George Washington University.

Those changes have been the result of a variety of factors, including the fall in oil prices and competitiveness of natural gas: over the same three years, job postings for oil and coal in the UK fell from two-thirds (66.5%) of the energy sector to under half (47.7%).

But it's also a result of how both employers and job-seekers are becoming interested in mitigating emissions and climate change, says Sinclair. After oil prices declined several years ago, she says, jobs in the oil industry dropped off, as did job-seekers' interest in them.

"Part of it is there are fewer opportunities, and people respond to that they know what the landscape of the labour market is, broadly," she says. "But also there does seem to be this increasing attractiveness of green economy jobs." In the same way that many people from the oil and gas industry have been able to transition into green energy, says Sinclair, many employees already should have skills which are transferable to climate change-specific issues. Take production and supply chains.

Many employees already should have skills which are transferable to climate change-specific issues

"Generally, planning production differently around potentially volatile weather phenomena, etc, is going to be a piece of the skill set you'd be required to have", Sinclair says. "But I don't see that that's so much different than planning around other sorts of destructive phenomena, whether they be political or anything else. I don't think that as new skill we haven't seen before."

- **Money talks**

It remains to be seen how much climate change will affect the expected skill sets for employees in industries less immediately affected by climate change than, say, civil engineering or catastrophe bonds.

But even companies in industries that would appear to be less directly affected by climate change are tuning into the issue.

Winston, who consults with a variety of businesses to help them get ahead of global trends – one of which is climate change – points to Unilever. The mega-corporation, which makes everything from Dove soap to Magnum ice cream, has pledged serious action on a variety of sustainability

initiatives – including sourcing 100% of its energy for production from renewable sources by 2030 (it already cut its carbon emissions by 43% from 2008 to 2016). Other companies are working on similarly ambitious initiatives: Coca-Cola, Ikea and Walmart also have committed to 100% renewable energy.

If it seems odd that companies seem to be talking the kind of talk heard more at NGOs, it shouldn't. For one, it appeals to consumers. Recent research by Cone Communications, a PR agency for consumer brands, found that 87% of Americans said they would purchase a product because of a company's alignment on an issue they cared about. It also attracts would-be workers: nearly two-thirds of millennials – the generation that will make up half of all US employees by 2020 – said they take a company's social and environmental commitments into account when weighing a job offer.

But it isn't just about brand appeal. As Unilever outlines on its site, cutting waste and energy use, for example, means cutting both costs and exposure to price volatility. (The company says it already has shaved €700 million in costs since 2008 in this area alone).

Corporate interest in climate change mitigation is also, of course, out of concern for global economic health. One 2016 study found that simply the effect of rising temperatures on workers' productivity, particularly in already-warm climates like Asia and Africa, could cost the global economy more than $2 trillion by 2030.

"The change in discussions in corporate boardrooms, and companies in general, on climate has been pretty profound," says Winston. "There isn't a large company in the world that isn't talking about sustainability or climate. It's just not possible to operate your business without talking about this."

Those factors may help explain why executives of companies from Goldman Sachs to Facebook expressed anger at President Trump's announcement to withdraw the US from the Paris Climate Agreement. Some US CEOs, including Walt Disney's Bob Iger and Tesla's Elon Musk, resigned from the president's advisory board in protest.

Another signifier of how much corporations are not only taking climate change seriously, but also valuing climate-related skills, is in the salaries they're paying people with that kind of expertise.

In 2016, a survey of employees working in the corporate responsibility and sustainability sector, most of whom were in North America or Europe, found that the average salary was £61,000 ($87,000 in 2016 values); 12% of respondents earned £100,000 ($143,000) or more. Even in the UK, where the average salary was under that at £57,000, the average corporate responsibility professional pulled in twice the amount of the average full-time UK employee – who in 2016 made £28,000.

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Still, 63% of the same professionals in the study had a master's or doctorate. "Frankly, they are underpaid relative to the expertise and value that they offer," writes director of SystemiQ Jeremy Oppenheim in the study. One explanation, he says, is that "not enough companies still fully appreciate the economic value which the sustainability team brings to their business."

Similarly, says Winston, in their search for potential employees, most human resources departments, particularly in the US, seem to be behind in terms of how much they are weighing

potential employees' climate change competencies. "It's lagging given the scale of the challenge. That's because, for so many years, people thought it was political. You wouldn't get in trouble saying 'Hey, everyone should be trained in social media', but you could if you were saying, 'Hey, everyone should be trained in climate change," he says.

"But," Winston adds, "that's changing." And that shift is already happening, he says – with or without US participation in the Paris Agreement.