

**CONCOURS COMMUNS  
POLYTECHNIQUES****EPREUVE COMMUNE - FILIERES MP - PC - PSI - TSI - TPC****LANGUE VIVANTE A : ANGLAIS****Mercredi 3 mai : 14 h - 17 h**

*N.B. : le candidat attachera la plus grande importance à la clarté, à la précision et à la concision de la rédaction. Si un candidat est amené à repérer ce qui peut lui sembler être une erreur d'énoncé, il le signalera sur sa copie et devra poursuivre sa composition en expliquant les raisons des initiatives qu'il a été amené à prendre.*

**L'usage d'un dictionnaire et de machines (calculatrice, traductrice, etc.)  
est strictement interdit.**

**Rédigez en anglais et en 400 mots une synthèse des documents proposés, qui devra obligatoirement comporter un titre.**

Indiquez avec précision, à la fin du travail, le nombre de mots utilisés (titre inclus), un écart de 10 % en plus ou en moins sera accepté.

Vous aurez soin d'en faciliter la vérification, soit en précisant le nombre de mots par ligne, soit en mettant un trait vertical tous les vingt mots.

Veillez à bien indiquer, en introduction, la source et la date de chaque document. Vous pourrez ensuite, dans le corps de la synthèse, faire référence à ces documents par "document 1", "document 2", etc.

Ce sujet comporte les 4 documents suivants :

- **document 1** - The effect of today's technology on tomorrow's jobs will be immense – and no country is ready for it (extrait et adapté de *The Economist*, 18/01/2014).
- **document 2** - Don't fear the robots, tech creates jobs, Kalyeena Makortoff (extrait et adapté de *ETCNBC.com*, 19/08/2015).
- **document 3** - When robots take our jobs, should everyone still get a paycheck? Randy Rieland, (extrait et adapté de *smithsonian.com*, 21/03/2016).
- **document 4** - Image illustrant l'article : Humans are underrated, Geoff Colvin (extrait de *fortune.com*, 23/07/2015).

Les documents ont une égale importance.

**Document 1 - The effect of today's technology on tomorrow's jobs will be immense – and no country is ready for it.**

*The Economist*, 18/01/2014

Innovation, the elixir of progress, has always cost people their jobs. In the Industrial Revolution textile workers were swept aside by machines. Over the past 30 years the digital revolution has displaced many of the mid-skill jobs that underpinned 20th-century middle-class life. Typists, ticket agents, bank tellers and many production-line jobs have been dispensed with, just as the workers were.

For those, including this newspaper, who believe that technological progress has made the world a better place, such churn is a natural part of rising prosperity. Although innovation kills some jobs, it creates new and better ones, as a more productive society becomes richer and its wealthier inhabitants demand more goods and services. A hundred years ago, one in three American workers was employed on a farm. Today less than 2% of them produce far more food. The millions freed from the land were not consigned to joblessness, but found better-paid work as the economy grew more sophisticated. Today the pool of secretaries has shrunk, but there are ever more computer programmers and web designers.

Optimism remains the right starting-point, but for workers the dislocating effects of technology may make themselves evident faster than its benefits. Even if new jobs and wonderful products emerge, in the short term, income gaps will widen, causing huge social dislocation and perhaps even changing politics. Technology's impact will feel like a tornado, hitting the rich world first, but eventually sweeping through poorer countries too. No government is prepared for it. [...]

Unemployment is at alarming levels in much of the rich world. In 2000, 65% of working-age Americans were in work; since then the proportion has fallen, during good years as well as bad, to the current level of 59%.

Worse, it seems likely that this wave of technological disruption to the job market has only just started. From driverless cars to clever household gadgets, innovations that already exist could destroy swathes of jobs that have hitherto been untouched. The public sector is one obvious target: it has proved singularly resistant to tech-driven reinvention. But the step change in what computers can do will have a powerful effect on middle-class jobs in the private sector too.

Until now, the jobs most vulnerable to machines were those that involved routine, repetitive tasks. But thanks to the exponential rise in processing power and the ubiquity of digitised information ("big data"), computers are increasingly able to perform complicated tasks more cheaply and effectively than people. Clever industrial robots can quickly "learn" a set of human actions. Services may be even more vulnerable. Computers can already detect intruders in a closed-circuit camera picture more reliably than a human can. By comparing reams of financial or biometric data, they can often diagnose fraud or illness more accurately than any number of accountants or doctors. One recent study by academics at Oxford University suggests that 47% of today's jobs could be automated in the next two decades.

At the same time, the digital revolution is transforming the process of innovation itself. Thanks to off-the-shelf code from the internet and platforms that host services (such as Amazon's cloud computing), provide distribution (Apple's app store) and offer marketing (Facebook), the number of digital startups has exploded. Just as computer-games designers invented a product that humanity never knew it needed but now cannot do without, so these firms will no doubt dream up new goods and services to employ millions. But for now they are singularly light on workers. When Instagram, a popular photo-sharing site, was sold to Facebook for about \$1 billion in 2012, it had 30m customers and employed 13 people. Kodak, which filed for bankruptcy a few months earlier, employed 145,000 people in its heyday. [...]

If this analysis is halfway correct, the social effects will be huge. Many of the jobs most at risk are lower down the ladder (logistics, haulage), whereas the skills that are least vulnerable to automation (creativity, managerial expertise) tend to be higher up, so median wages are likely to remain stagnant for some time and income gaps are likely to widen.

Anger about rising inequality is bound to grow, but politicians will find it hard to address the problem. Shunning progress would be as futile now as textile workers' protests against mechanization was in the 1810s, because any country that tried to stop would be left behind by competitors eager to embrace new technology. [...]

Innovation has brought great benefits to humanity. Nobody in their right mind would want to return to the world of textile workers. But the benefits of technological progress are unevenly distributed, especially in the early stages of each new wave, and it is up to governments to spread them. In the 19th century it took the threat of revolution to bring about progressive reforms. Today's governments would do well to start making the changes needed before their people get angry.

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### Document 2 - Don't fear the robots, tech creates jobs

Kalyeena Makortoff, *ETCNBC.com*, 19/08/2015

Those modern-day textile workers complaining that technology is taking people's jobs may have to eat their hat. Research by economists shows technology has created more jobs than it's destroyed – and they have 140 years of data to prove it.

Data compiled by management consultants Deloitte from the census data for England and Wales stretching back to 1871 suggest that the growth of jobs in the creative, care, tech and business service industries has more than offset the loss of jobs in the agricultural and manufacturing sectors.

The report, which was shortlisted for an economics prize earlier this year, focused on the employment numbers between sectors that have either been hit or helped by technology.

"It's been very easy to identify where jobs have been destroyed. Job losses generally are very conspicuous, whether it's a middle manager replaced by software, or checkout staff displaced by auto terminals, whereas job gains are harder to identify," Ian Stewart, a chief economist at Deloitte, and one of the three authors of the report, told CNBC.

For example, 6.6 percent of the U.K. workforce was classified as agricultural workers in 1871. That number has fallen by 95 percent to 0.2 percent in 2011. Manufacturing jobs have dropped from 38 percent of the labor force in 1948 to 8 percent in 2012, Stewart said. Meanwhile, the number of accountants counted in the U.K. in 2011 was over 2,000 percent higher than it was 140 years ago, the report showed. Technology has also complemented industries like medicine and management consultancy, where it has boosted productivity and subsequent demand for these specializations has increased, Stewart explained.

Since 1992 alone, U.K. Labour Force Survey data shows a 909 percent increase in nursing auxiliaries and assistants, and a 580 percent increase in teaching staff. That's against a 82 percent decline in footwear and leather trade positions and a 79 percent slide in textile workers.

Stewart also emphasized the effect of technology on consumer behavior. As machines replace labor, and products become cheaper, consumers are throwing their money at new products and services.

"They spend it on entirely unthought-of new areas: gym membership, short holidays, and overpriced coffees. Those sectors in turn create new employment."

"Human desires are infinite," Stewart explained. "And once we have enough food to eat, 100 pairs of trousers, we look for more. I wouldn't bet against the evolution of human desire."

But the future of work isn't entirely rosy, with the report predicting that income inequality will widen as economies increasingly reward high level education and skills that can service a high-tech society.

It will require governments to review education and training policies as well as income distribution schemes, Stewart said. "I'm not saying tech is answer to everything, but there's very strong evidence of job creation."

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### Document 3 - When robots take our jobs, should everyone still get a paycheck?

Randy Rieland, *smithsonian.com*, 21/03/2016

There's nothing new about worrying that machines will take our jobs. More than 200 years ago, textile workers started taking sledgehammers to machines.

But tech anxiety got a fresh jolt last month when the White House sent out a Council of Economic Advisers report including a projection that people making less than \$20 an hour have an 83 percent chance of eventually losing their jobs to a robot. The odds for those earning up to \$40 an hour are more than 30 percent.

Not that most Americans would find that very surprising. According to a Pew Internet Survey released last week, more than two-thirds of Americans think that within 50 years, most jobs will be done by robots or computers – although the vast majority conveniently thought that won't happen with their own jobs.

No matter how this plays out, it's pretty clear that machines will be handling more and more work, particularly now that increasingly sophisticated artificial intelligence is enabling them to take on mental tasks too. And that is raising a big question: When machines dominate the work world, what are all the people they replace going to do for money?

Remarkably, one idea starting to gain traction is known as universal basic income (UBI). It's a simple, if somewhat radical concept – each citizen of a country would receive a monthly check from the government, no matter how much money you make and without any strings attached. You wouldn't have to meet any conditions to qualify, you wouldn't have to show you were looking for a job, you wouldn't face any restrictions on how you spent the money.

Plenty of people think this is a bad idea, or at least a seriously unbaked one. Critics say all that easy money could result in a nation of game-playing, binge-watching freeloaders. But others counter that if there's a tech takeover of the job market, society will need a safety blanket, not a net. They also posit that those who don't have to take just any job to cover basic expenses may be able to do things that are more fulfilling or perhaps more beneficial to society.

The truth is that no one knows how people will respond. But there's a growing consensus that it's time to start finding out. Next year, government researchers in Finland will begin a two-year study, in which up to 100,000 Finns will receive as much as 1,000 euros a month, without any conditions. The scientists running the experiment will track how often the subjects use public services, such as health clinics, and attempt to get a sense of how much they really want to work. The researchers will also try to determine if a monthly, strings-free check lets people lead happier lives.

Several Dutch cities are considering their own UBI experiments for this year and a yet unchosen community in the Canadian province of Ontario will follow suit this fall. Plus, in June, Swiss voters will be weighing in on a proposal to pay every adult in the country the equivalent of \$2,500 a month.

The response to UBI in the U.S. has been mixed at best, with much of the enthusiasm for exploring the concept coming from Silicon Valley. One of its biggest proponents has been Sam Altman, president of Y Combinator, the firm that has helped startups such as Reddit, Airbnb and Dropbox hook up with investors. [...]

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**Document 4 - Humans are underrated**, Geoff Colvin, *fortune.com*, 23/07/2015

