



**Speaking Notes  
for  
Ted Hewitt, President  
Social Sciences and Humanities Research Council**

**To deliver at  
Global Forum 2019  
*Shaping the Future – Roll-out of the Digital Transformation***

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## **Introduction**

Aujourd'hui, j'ai pour mandat de vous présenter un avenir transformé par le développement et l'application des technologies numériques.

À la tête de l'organisme subventionnaire de la recherche en sciences sociales et humaines, je ne suis pas forcément le mieux placé pour savoir ce qui se prépare dans ce domaine technologique, mais je peux tout de même offrir quelques indications quant à la façon dont nous devrions y réfléchir et préparer les sociétés aux changements qui s'en viennent.

I propose to you that we need to think about two poles of risk. On one hand, the danger that promising technology won't be used in ways that deliver its promise. On the other, the risk that technologies will get used in ways that bring about significant social harm. And on both of these fronts, knowledge gained from social science and humanities researchers working in collaboration with other stakeholder is absolutely essential to helping us learn how to use emerging technologies wisely and well.

I'll start with a history lesson—but a very lively one, I promise. Today, as you all know, electric vehicles are seen as the modern and environmentally-friendly way of the future. But despite the recent embrace of this technology, it's far from new. In fact, electric vehicles first hit the market in the mid-19<sup>th</sup> century, even before gasoline-fueled cars. The electric ones had better braking, were more maneuverable, and accelerated faster than their later gas counterparts. Yet, as we know, gasoline-powered cars have dominated the global auto market for more than a century.

So what was responsible for this 150-year lag in the uptake of electric cars? The cost of production and original business models were largely to blame—but there was another factor at play too.<sup>1</sup> Electric cars were often marketed as suitable for women drivers because they were easy to operate. And that meant that they came to be stigmatized by the perception that they were 'women's cars'. Internal combustion engines, with thrusting pistons and explosions, were deemed more manly. They were harder to start and drive, and

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<sup>1</sup> [http://autolife.umd.umich.edu/Gender/Walsh/G\\_Overview.htm](http://autolife.umd.umich.edu/Gender/Walsh/G_Overview.htm)  
[http://www.autolife.umd.umich.edu/Gender/Scharff/G\\_casestudy1.htm](http://www.autolife.umd.umich.edu/Gender/Scharff/G_casestudy1.htm)  
[https://en.wikipedia.org/wiki/History\\_of\\_the\\_electric\\_vehicle](https://en.wikipedia.org/wiki/History_of_the_electric_vehicle)



they had a greater operating range. As men made up the bulk of consumers, the die was cast in favour of combustion engine vehicles for cultural reasons as well as business ones.

The lesson is that technological excellence is not enough to guarantee a technology's success. Human considerations are often paramount. If those factors are not taken into consideration, a new technology will fail to find users, reward its investors, or deliver potential for social value.

### **Worries about technology**

Our rejection of many innovations is based on fear: what we perceive that technology could mean for our health, security, or opportunities. A number of North America cities, for instance, are looking at setting limits to the use of facial and biometrical recognition systems due to perceived risks around unreliable identification.

These technologies have been developed largely by white people in North America —and the norm has been established against which other body types, body groups, may present less usable data, leading to their disadvantage.

In another example of reasonable fears around the use of AI, Amazon attempted to develop machine learning tools to score job candidates. For a while it was using software that relied on data about past applicants to predict which people were best-suited for the company. This approach led to a problem: since many previous applicants were men, the program penalized candidates whose resumes contained the word “women’s” or listed certain all-women’s colleges as an alma mater.

**Again, the point is that when used in ways that don’t deliberately guard against bias, technology can amplify existing discrimination and biases, adding to the disadvantages facing groups who are already disadvantaged.**

Willful abuse of technology is also a great concern. And we have a lot of recent examples of how AI technology can be abused. For example, Amazon's facial recognition software was [used by US police forces](#) without rules to guide it. China's government is blending video footage with data from online transactions to give their citizens a "social credit score" that can seriously undermine their reputation, limit mobility, deny access to education and jobs.

University of Montreal professor Yoshua Bengio is a recent co-winner of the prestigious Turing Award, and he considers that the dangers of abuse, especially by authoritarian governments, are very real. As he says, “AI is a tool that can be used by those in power to keep that power, and to increase it.”<sup>2</sup>

One of the solutions to this threat is to gather together experts and practitioners in relevant fields to develop guidelines for the socially beneficial use of AI. Bengio was central to the development of the [Montréal Declaration for Responsible Development of Artificial Intelligence](#) in December 2018.

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<sup>2</sup> <https://www.nature.com/articles/d41586-019-00505-2>



Who will benefit and who will be disadvantaged by digital transformation depends on two things: how well we continue investigating these questions, and what steps we take to weave these answers into our laws, regulations and institutions.

### **SSHRC's approach**

The organization I lead — the Social Sciences and Humanities Research Council of Canada, which we refer to as SSHRC — has been mobilizing research to help inform how that future will be created.

Recently, we undertook a foresight exercise that identified 16 future global challenges that could have a major impact on Canada in the next decade. These global challenges, such as living within the Earth's carrying capacity and working in a digital economy, have the potential to shape society in significant ways.

All the future global challenges we identified cross multiple sectors and research disciplines. Most of them — 11 of the 16— mention AI in some capacity: in relation to media and democracy, to education, and to labour force participation, among other issues.

This year, in collaboration with our fellow Canadian federal research funding agencies and four research councils part of [UK Research and Innovation](#), we launched the Canada-UK Artificial Intelligence Initiative. This new funding program draws on the expertise of researchers in Canada and the United Kingdom to maximize the social and health benefits of AI. To be funded, the research will need to blend social sciences and humanities with either health and biomedical sciences; or natural sciences and engineering — including computational and/or mathematical sciences.

The impact of our work — or rather the work of the researchers we fund — extends well beyond our borders. For example, a 6-year partnership will leverage artificial intelligence to prevent and resolve conflicts, to the benefit of justice stakeholders and access to justice. This multi-million-dollar project brings together 45 researchers and 42 partners representing the world's leading research centres on the implementation and use of technologies in the field of justice.

Dubbed the most important international research project on artificial intelligence and justice, it aims to increase access to justice through artificial intelligence. It will provide a better understanding of the socio-legal and ethical issues stemming from the integration of artificial intelligence tools within the judicial system.

And of course, SSHRC is also supporting projects that look at the use of disruptive technologies within our own borders, and what risks that might bring for Canadians.

For instance, we recently funded a project by two scholars<sup>3</sup> at the University of Ottawa looking at new evidence on the ways in which big data is enabling Canadian political parties to collect and analyze massive amounts of identifiable voter information. Because this could

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<sup>3</sup> Elizabeth Judge and Michael Pal



put privacy and public confidence in the political system at risk, the researchers concluded that new Canadian legal policies are needed to fill the regulatory gap.

### **Ensuring that technologies get used beneficially to their full potential**

I wouldn't want to leave you with the impression that social science and humanities expertise is all about ensuring that bad things don't happen from new technologies. Quite the contrary: think back to the example of the very belated uptake of the electric car, and what that example shows about the importance of taking social context into account.

At SSHRC, we recognize that massive public benefits are at stake in bringing social insight to the process of developing and introducing technologies. Quite a few of our recent grants deal with ensuring that the full potential of emerging technologies actually gets developed and used for the benefit of all segments of Canada's population.

One project led by University of Toronto researcher Arlene Astell looked at research on factors preventing Canada's rapidly aging population from making use of technology for improving their quality of life. It finds that technologies are adopted or rejected by older adults to the extent that they are perceived to preserve or conflict with potential users' self-image as being capable and independent.

In another project, two Queen's University researchers<sup>4</sup> explored the state of knowledge on what social arrangements would make it easier for Canadians with disabilities to take advantage of 3D printing to create customized assistive technology.

Another recent SSHRC project concerns the social uptake of disruptive technology for more than utilitarian ends, as well as Canada's commitment to advance reconciliation with Indigenous peoples within our borders. Researcher Eldon Yellowhorn of Simon Fraser University is looking at the potential for using AI technologies to revitalize the use of the Indigenous Blackfoot language, through collaboration between computer scientists and language experts in the Blackfoot community.

### **My call to action:**

The crucial thing, I urge you, is to keep in mind that technology will bring more benefits and fewer harms when developed hand in hand with sound knowledge on how humans are likely to react and adapt to them, and on how the uptake of those technologies might impact other things that individuals and societies care about.

Ceci est vrai pour tout type de technologie : l'automobile, les vaccins, les OGM, les données massives et, bien évidemment, l'intelligence artificielle. Le succès de leur application dépend autant de la science que de la compréhension de leurs impacts sociétaux.

Thank you.

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<sup>4</sup> Theresa Claire Davies and Elizabeth Delarosa