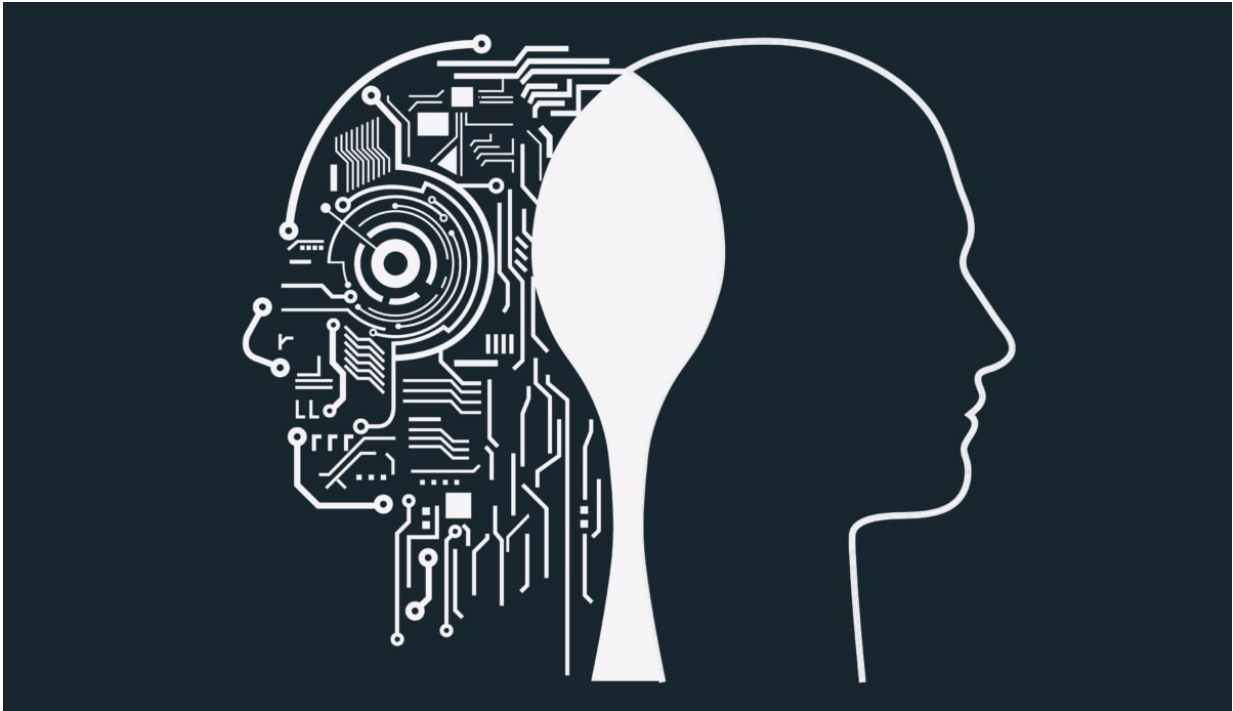# How policymakers should approach AI

January 24 2018, by Dr Joanna Bryson

Credit: University of Bath

Artificial intelligence poses a range of challenges to policymakers. As a technology that is now pervasive, it is impacting on democracy, security and the global economy in ways that are not yet well-known to publics around the world – and, being covert, these impacts are generally not balanced against strong political will to shape them with effective policymaking. Equally, it is a field of technology beset by alarmist sentiments that have little bearing on the actual risks which it presents, or

may yet present, to humanity.

Thoughtful policymaking will be required over the coming years and decades if AI is to be successfully and productively incorporated into human society – and it was with this in mind that I recently answered the call by the UK's House of Lords for evidence on AI. My answers to their questions are below, and I will add some concluding notes at the end.

The pace of technological change

What is the current state of AI and what factors have contributed to this? How is it likely to develop over the next 5, 10 and 20 years? What factors, technical or societal, will accelerate or hinder this development?

AI is now a pervasive technology. For clear thinking about AI policy it is best to take a very simple, straightforward definition of AI as any technological artefact that generates action in response to its own perception of context. With this definition we can see a clear continuous progress from the mechanical governors of the industrial revolution to the "self-learning" systems of the last few years. While machine learning has produced advances that stun us all with their capacity to capture human intelligence, it is important to realise that a) there is a great deal of precedent for what happens each time technology advances our capacity to compute, and b) that computation is a physical process. This latter is important because it excludes one class of alarmist concerns about AI: that one nation, company, or even machine will suddenly create perfect omniscience and thus dominate the world. In fact, laws of computation are laws of nature, and it is provably intractable to know or foresee everything. Computation is not an abstraction like math; computation requires time, energy, and space for storage of intermediate results.

Having said that, AI is already super-human in many domains and in the next 5-20 years it is quite likely that we will be able to capture and express all of extant culturally-communicated human knowledge with it. Already we are far better at predicting individuals' behaviour than individuals are happy to know, and therefore than companies are happy to publicly reveal. Individuals and parties exploiting this are very likely compromising democracy globally, notably in the UK. There is an incredibly large project here for the social sciences and the humanities as we urgently address the political, economic, and existential (in the philosophical sense) challenges of massive improvements in communication, computation, and prediction.

Again, natural laws of biology tell us to anticipate an accelerated pace of change given the increased plasticity of increased intelligence. Therefore we need to ensure our societies are robust to this increase, with sufficient resilience built into the system to allow individuals to have periods out of work finding a new place in the economy. This requires adequate minimum wages, adequate individual savings, and an adequate civil safety net. The greatest decelerators of this process would be: 1) war – including cyber/stealth war inducing democracies to dismantle their own critical infrastructures and 2) cybersecurity. The government's present policy of outlawing adequate encryption is a severe threat to the UK on many levels, but particularly with respect to AI.

Is the current level of excitement which surrounds artificial intelligence warranted?

See above. Basically, yes, it is if anything belated given that AI is already the core technology of the richest corporations on both sides of the great firewall of China, and given the impact on individual security and on democracy. But no, AI itself is not itself a legal or moral actor and will not take over the world on its own, and there is no particular new threat

beyond the damage already done and our increasing reliance on a more-easily-assaulted digital/electric infrastructure. I say again because I cannot understate the importance: having backdoors in our encryption is a substantial security error.

Impact on society

How can the general public best be prepared for more widespread use of artificial intelligence?

See first my answer to Question 1, which addresses retraining. The most important thing is that we reduce the Gini coefficient so that our population retains (or recovers) its social mobility, and those able to innovate have the freedom to do so and the ability to hire others. The productivity and invention intelligent technology should generate should be sufficient to solve the problems of society providing that the economic and political renovations necessary to handle the new redistribution challenges are made.

I am particularly concerned that we are again, as in the nineteenth through mid-twentieth centuries, in a context of increased inequality and its concomitant political polarisation. We need to remember, as we knew in 1945, that it is in the interest of the elite even more than the rest to have a society sufficiently stable to run nations and businesses. The redistribution we practiced from 1945-1978 was not a (successful) war on communism, but rather a necessary economic tactic to counter the technological innovations of petroleum and early ICT. Late (contemporary) ICT requires even greater innovations in shared transnational regulation; the treaties the EU has been experimenting with are not perfect but they need to be improved and extended globally, because the economy is now global.

Who in society is gaining the most from the development and use of artificial intelligence and data? Who is gaining the least? How can potential disparities be mitigated?

It is critical to realise that we have all gained immeasurably from having knowledge at our fingertips. Poor people now have a longer life expectancy than billionaires a century ago. Any talk of "wage stagnation" just tells us how impoverished prices are as an indication of economic value, and how poorly the discipline of economics is serving our society – we need to make massive investment to improve the social sciences. Having said that, and reiterating from Question 3, the current aggravation of the essential political problems of a high Gini coefficient economy, and also of sustainability, must necessarily be addressed because they threaten stability.

Public perception

Should efforts be made to improve the public's understanding of, and engagement with, artificial intelligence? If so, how?

The UK is doing an outstanding job of this, a credit to universities, government, the BBC, The Guardian, and the Royal Society. We should maintain this level of investment, and probably offer more – particularly through digital university outreach.

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