

**MAY 2016**

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**ARTIFICIAL  
INTELLIGENCE**

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**ROB LYONS**



DEBATING MATTERS  
**TOPIC  
GUIDES**

[www.debatingmatters.com](http://www.debatingmatters.com)

**MOTION:**

**“HUMANITY SHOULD  
FEAR ADVANCES  
IN ARTIFICIAL  
INTELLIGENCE”**

# ABOUT DEBATING MATTERS

Debating Matters because ideas matter. This is the premise of the Institute of Ideas Debating Matters Competition for sixth form students which emphasises substance, not just style, and the importance of taking ideas seriously. Debating Matters presents schools with an innovative and engaging approach to debating, where the real-world debates and a challenging format, including panel judges who engage with the students, appeal to students from a wide range of backgrounds, including schools with a long tradition of debating and those with none.

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## KEY TERMS

[Artificial Intelligence](#)

[Deep learning](#)

[GO - board game](#)

[Luddite](#)

# INTRODUCTION

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# NOTES

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In March 2016, Google’s AlphaGo computer program beat master player Lee Se-dol, at the notoriously difficult and abstract ancient Chinese board game GO [Ref: [Guardian](#)], in what was seen as another example of the march of artificial intelligence. It follows in the footsteps of IBM’s Deep Blue, which beat world chess champion Garry Kasparov in 1997 [Ref: [Time Magazine](#)], and Watson, another IBM machine that defeated two former champions in the US TV quiz show, Jeopardy! in 2011, demonstrating an ability to understand questions in natural language [Ref: [TechRepublic](#)]. However, artificial intelligence isn’t just being used to beat humans at games - for some, its impact will have profound implications for the way in which we will live our lives in the future. Currently, AI is being developed in numerous fields, such as driverless transport, finance, fraud detection, as well as robotics and text and speech recognition for numerous other applications. As such, supporters of AI suggest that: “It’s a massive opportunity for humanity, not a threat” [Ref: [Huffington Post](#)], and argue that machines which can learn to do tasks currently requiring humans could speed up processes, allowing humans more leisure time in the future [Ref: [The Times](#)]. But critics worry that if we develop machines that can learn very rapidly, drive our cars and do our jobs, we may reach a situation where they become more intelligent than humans – thus posing existential issues for the future of humans in the workplace as well as our place in the world more broadly. Given the continued development of aspects of AI, such as deep learning [Ref: [Tech World](#)], opponents wonder whether at some point it might develop interests of its own and come to dominate humanity, or do us harm in particular situations. In light of these concerns, should we fear advances in artificial technology?



# THE ARTIFICIAL INTELLIGENCE DEBATE IN CONTEXT

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## The ethics of AI

By way of definition: “AI can be seen as a collection of technologies that can be used to imitate or even to outperform tasks performed by humans using machines” [Ref: [The Conversation](#)], and encompasses everything ranging from search engines on the internet to self-teaching programs which have the ability to learn from experience, such as Google’s Deepmind technology [Ref: [Financial Times](#)]. At a time when: “Machines are rapidly taking on ever more challenging cognitive tasks, encroaching on the fundamental ability that sets humans apart as a species: to make complex decisions, to solve problems – and, most importantly, to learn” [Ref: [Financial Times](#)], AI will continue to pose some fundamental ethical questions for society. For example, how should we view the potential for AI to be used in the military arena? Although there is currently a consensus that, “giving robots the agency to kill humans would trample over a red line that should never be crossed” [Ref: [Financial Times](#)], it should be noted that robots are already present in bomb disposal, mine clearance, and anti-missile systems. Some, such as software engineer Ronald Arkin, think that developing ‘ethical robots’ which are programmed to strict ethical codes could be beneficial in the military, if they are programmed never to break rules of combat that humans might flout [Ref: [Nature](#)]. Similarly, the potential for the increased autonomy and decision making that AI embodies, opens up a moral vacuum that some suggest needs to be addressed by society, governments and legislators [Ref: [The Times](#)], whilst others argue that a code of ethics for robotics is urgently needed [Ref: [The Times](#)]. After all, who would be responsible for a decision badly made by a machine? The programmer, the engineer, the owner or the robot itself? Furthermore, critics say that driverless cars may be involved in situations where there is a split-second decision either to swerve, possibly killing the passengers, or not to swerve,

possibly killing another road user. How should a machine decide? To what extent should we even allow machines to decide? [Ref: [Aeon](#)]. Others argue that technology is fundamentally ‘morally neutral’, as: “The same technology that launched deadly missiles in WWII brought Neil Armstrong and Buzz Aldrin to the surface of the moon. The harnessing of nuclear power laid waste to Hiroshima and Nagasaki but it also provides power to billions without burning fossil fuels”. In this sense: “AI is another tool and we can use it to make the world a better place, if we wish.” [Ref: [Gadette](#)]

## A threat to humanity?

“Entrenched in our culture is the idea that when man overreaches himself by playing God, he faces disaster” [Ref: [The Times](#)], and for some critics, advances in AI pose very real existential problems for humanity in the future. Oxford professor Nick Bostrom, for instance, has voiced concerns about what might happen if the ability for machines to learn for themselves accelerates very rapidly - what he calls an ‘intelligence explosion’. Bostrom believes “at some point we will create machines that are superintelligent, and that the first machine to attain superintelligence may become extremely powerful to the point of being able to shape the future according to its preferences” [Ref: [Vox](#)]. Professor Stephen Hawking has expressed the fear more bluntly: “The development of full artificial intelligence could spell the end of the human race... It would take off on its own, and re-design itself at an ever increasing rate. Humans, who are limited by slow biological evolution, couldn’t compete, and would be superseded.” [Ref: [BBC News](#)]. Technology entrepreneurs Bill Gates and Elon Musk have also publicly stated fears about the dangers of artificial intelligence, and caution that there are very real risks associated with the march of the technology if left unchecked [Ref: [Guardian](#)]. Autonomy is a key issue



# THE ARTIFICIAL INTELLIGENCE DEBATE IN CONTEXT CONTINUED...

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that some critics are especially concerned about, with technologist Tom Ditterich warning that despite proposals to have driverless cars, autonomous weapons and automated surgical assistants, AI systems should never be fully autonomous, because: “By definition a fully autonomous system is one that we have no control over, and I don’t think we ever want to be in that situation.” [Ref: [Business Insider](#)]

Additionally, there are also practical issues critics are keen to explore, such as the future of work, with many suggesting that advances in automation will result in certain jobs becoming obsolete. Commentator Claire Foges reflects on these developments, and draws parallels with the Luddites 200 years ago, who attempted to resist the increasing automation of their jobs during the onset of the industrial revolution [Ref: [History.com](#)]. She notes that amid recent forecasts that up to 5 million people could lose their jobs because of automation [Ref: [The Times](#)]: “Two hundred years on, a braver newer world is arriving at astonishing speed, and threatens to make luddites out of us all. The robots are coming, they are here; creeping stealthily into factory, office and shop.” [Ref: [The Times](#)]

## A brave new world?

For advocates, the advance of AI has the potential to change the world in unimaginable ways, and they largely dismiss warnings about the dangers that it may pose. As Adam Jezard observes: “Such concerns are not new...From the weaving machines of the industrial revolution to the bicycle, mechanisation has prompted concerns that technology will make people redundant or alter society in unsettling ways.” [Ref: [Financial Times](#)]

Moreover, supporters ask us to consider the benefits that AI has already brought to us, such as speech recognition and autonomous vehicles, which will continue to develop and revolutionise the way we live our lives. In the field of medicine, one commentator

posits the increasingly plausible idea, of having a program which may in future be able to recognise the difference between cancer tumours infinitely better than humans, which would revolutionise healthcare [Ref: [The Times](#)]. Others also criticise arguments that advances in AI signal the end of humanity, and point to the fact that: “After so much talking about the risks of super intelligent machines, it’s time to turn on the light, stop worrying about sci-fi scenarios, and start focusing on AI’s actual challenges.” [Ref: [Aeon](#)]

Perhaps more profoundly, others question why we are so quick to underestimate our abilities as humans, and fear AI. Author Nicholas Carr observes that although: “Every day we are reminded of the superiority of computers...What we forget is that our machines are built by our own hands”, and in actual fact: “If computers had the ability to be amazed, they’d be amazed by us.” [Ref: [New York Times](#)]

In addition, fundamental to the pro AI argument is the idea of technological progress being a good thing in and of itself. Futurist Dominic Basulto summarises this point when he speaks of ‘existential reward’, arguing that, “humanity has an imperative to consider dystopian predictions of the future. But it also has an imperative to push on, to reach its full potential.” [Ref: [Washington Post](#)]

From the industrial revolution onwards we have gradually made our everyday lives easier and safer through innovation, automation and technology. For instance, the onset of driverless vehicles is predicted to drastically reduce the number of road traffic incidents in the future, and: “Machines known as automobiles long ago made horses redundant in the developed world – except riding for a pure leisure pursuit or in sport” [Ref: [The Times](#)].

So with all of the arguments in mind, are critics right to be wary of the proliferation of AI in our lives, and the ethical and practical problems that it may present humanity in the future? Or should we embrace the technological progress that AI represents, and all of the potential that it has to change our lives for the better?



## ESSENTIAL READING

[Brave new era in technology needs new ethics](#)

John Thornhill *Financial Times* 20 January 2016

### FOR

[Are robots going to steal your job? Probably](#)

Moshe Y Vardi *Guardian* 7 April 2016

[It's time to put these robots in their place](#)

Ben McIntyre *The Times* 11 March 2016

[‘This Oxford professor thinks artificial intelligence will destroy us all’](#)

Dylan Matthews *Vox* 19 August 2014

[Automated Ethics](#)

Tom Chatfield *Aeon* 31 March 2014

### AGAINST

[I for one welcome the rise of the robots. They can do the work while I play](#)

Dominic Lawson *The Times* 20 March 2016

[Will artificial intelligence destroy humanity? Here are five reasons not to worry](#)

Timothy B. Lee *Vox* 29 July 2015

[Why robots will always need us](#)

Nicholas Carr *New York Times* 20 May 2015

[Why the world's most intelligent people shouldn't be so afraid of AI](#)

Dominic Basulto *Washington Post* 20 January 2015

## IN DEPTH

[The doomsday invention](#)

Raffi Khatchadourian *New Yorker* 25 November 2015

[‘Omens’](#)

Ross Anderson *Aeon* 25 February 2013

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## BACKGROUNDERS

### [Should we be afraid of AI?](#)

Luciano Floridi *Aeon* 9 May 2016

### [Robot revolution: rise of the intelligent automated workforce](#)

Danushka Bollegala *The Conversation* 5 May 2016

### [How unprepared are we for the robot revolution?](#)

Martin Ford *Financial Times* 3 May 2016

### [Military killer robots create a moral dilemma](#)

John Thornhill *Financial Times* 25 April 2016

### [The robot age will make Luddites out of all of us](#)

Clare Foges *The Times* 25 April 2016

### [The danger isn't artificial intelligence – it's us'](#)

Jennifer Harrision *Gadette* 6 April 2016

### [What is the future of artificial intelligence?](#)

Michael Brooks *New Statesman* 18 March 2016

### [How much should we fear the rise of artificial intelligence?](#)

Tom Chatfield *Guardian* 18 March 2016

### [All systems GO for the robot takeover](#)

Josh Glancy *The Times* 13 March 2016

### [Technophobia is so last century: fears of robots, AI and drones are not new](#)

Adam Jezard *Financial Times* 2 March 2016

### [They robots](#)

*The Times* 1 January 2016

### [Robot panic peaked in 2015 – so where will AI go next?](#)

Charles Arthur *Guardian* 27 December 2015

### [Will artificial intelligence surpass our own?](#)

Christof Koch *Scientific American* 1 September 2015

### [Machine ethics: The robot's dilemma](#)

Boer Deng *Nature* 1 July 2015

### [Why I don't fear artificial intelligence](#)

Peter Diamandis *Huffington Post* 18 May 2015

### [Artificial intelligence: Rise of the machines](#)

*Economist* 9 May 2015

### [March of the robots](#)

Andrew Keen *The Times* 22 February 2015

### [Did Deep Blue beat Kasparov because of a system glitch?](#)

Jennifer Latson *Time Magazine* 17 February 2015

### [IBM Watson: The story of how the Jeopardy-winning supercomputer was born](#)

Jo Best *Tech Republic*

## AUDIO/VISUAL

### [Davos 2016: The state of artificial intelligence](#)

*World Economic Forum* 20 January 2016

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## IN THE NEWS

[Google patents 'sticky cars to save pedestrians hit by driverless vehicles'](#)

*Telegraph* 19 May 2016

[Brave new world? 'Sci-fi fears hold back progress of AI' warns expert](#)

*Guardian* 12 April 2016

[Microsoft created a Twitter bot to learn from users. It quickly became a racist jerk](#)

*New York Times* 24 March 2016

[Google's AI wins final GO challenge](#)

*BBC News* 15 March 2016

[Google driverless car crash was 'not a surprise'](#)

*Independent* 14 March 2016

[Rise of robots 'will cost 5 million jobs'](#)

*The Times* 19 January 2016

[Artificial intelligence: Elon Musk backs open project 'to benefit humanity'](#)

*Guardian* 12 December 2015

[The real problem with artificial intelligence](#)

*Business Insider* 10 September 2015

[Robot kills worker at Volkswagen plant in Germany](#)

*Guardian* 2 July 2015

[Apple co-founder Steve Wozniak says humans will be robots' pets](#)

*Guardian* 25 June 2015

[Bill Gates on AI: "I don't understand why some people are not concerned"](#)

*Washington Post* 29 January 2015

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[Elon Musk and Stephen Hawking join forces to avoid "pitfalls" of artificial intelligence](#)

*Washington Post* 12 January 2015

["Artificial intelligence could spell end of human race" – Stephen Hawking](#)

*Guardian* 2 December 2014

[Artificial intelligence is our biggest existential threat](#)

*Guardian* 27 October 2014





## ADVICE FOR DEBATING MATTERS



### FOR STUDENTS

#### READ EVERYTHING .....

In the Topic Guide and in the news - not just your side of the argument either.

#### STATISTICS ARE GOOD BUT.....

Your opponents will have their own too. They'll support your points but they aren't a substitute for them.

#### BE BOLD

Get straight to the point but don't rush into things: make sure you aren't falling back on earlier assertions because interpreting a debate too narrowly might show a lack of understanding or confidence.

#### DON'T BACK DOWN

Try to take your case to its logical conclusion before trying to seem 'balanced' - your ability to challenge fundamental principles will be rewarded - even if you personally disagree with your arguments.

#### DON'T PANIC

Never assume you've lost because every question is an opportunity to explain what you know. Don't try to answer every question but don't avoid the tough ones either.

### FOR TEACHERS

Hoping to start a debating club? Looking for ways to give your debaters more experience? Debating Matters have a wide range of resources to help develop a culture of debate in your school and many more Topic Guides like this one to bring out the best in your students. For these and details of how to enter a team for the Debating Matters Competition visit our website, [www.debatingmatters.com](http://www.debatingmatters.com)

### FOR JUDGES

Judges are asked to consider whether students have been brave enough to address the difficult questions asked of them. Clever semantics might demonstrate an acrobatic mind but are also likely to hinder a serious discussion by changing the terms and parameters of the debate itself.

Whilst a team might demonstrate considerable knowledge and familiarity with the topic, evading difficult issues and failing to address the main substance of the debate misses the point of the competition. Judges are therefore encouraged to consider how far students have gone in defending their side of the motion, to what extent students have taken up the more challenging parts of the debate and how far the teams were able to respond to and challenge their opponents.

As one judge remarked *'These are not debates won simply by the rather technical rules of schools competitive debating. The challenge is to dig in to the real issues.'* This assessment seems to grasp the point and is worth bearing in mind when sitting on a judging panel.



**“WORLD REQUIRES  
THE CAPACITY  
TO MARSHALL  
CHALLENGING IDEAS  
AND ARGUMENTS”**

**LORD BOATENG, FORMER BRITISH HIGH  
COMMISSIONER TO SOUTH AFRICA**