



Australian Government

Chief Scientist

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2018 Australian Olympiad Teams Announcement

Keynote Address

How the Future Will Find You

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**Parliament House
CANBERRA**

Usually when I come to Parliament House, it's to meet with the Prime Minister, or to testify before a Senate Committee, or perhaps to speak to an international delegation.

I always prepare very carefully for those meetings.

In my mind is just one thought: how can I use this little window of time to persuade someone with power to use it wisely?

Students, don't laugh – but I feel exactly the same way speaking to you today.

Because you also have power. And what you do with it is immensely important.

I know, you're not running the country. You can't vote. And I could be wrong, but I suspect that you don't have access to hundreds of millions of dollars. At least just yet.

But at the end of the day, politicians can only make decisions.

Science and mathematics, however, make new potential.

I think of them as humanity's superpowers.

And they're *your* superpowers.

Now I'm sure you won't mind if I give at least a little bit of the credit to your parents and teachers for their support.

Parents, you were the first teachers, and you were there every single day, with love and encouragement and support.

Teachers, you were there five days a week, setting the bar high, and helping these students to clear it.

Between you, you successfully raised these students in an environment where they could thrive.

But students, every one of you had to decide what you would do with that chance.

You chose to aim high. You chose to work hard. You made a commitment and you pursued it relentlessly.

That's how you developed your superpowers: not by chance, but by choice.

You have made that commitment at a fascinating time.

You are citizens of the twenty-first century: born in it, raised in it.

I'm an immigrant: born in the twentieth century, and now living here with you in the twenty-first.

So you can believe me when I say that this year, 2018, feels different from all the years I've lived before.

We know that progress in science and technology is an exponential curve.

Normally, I have to explain exponential curves, but in this crowd, I know that won't be required.

Adults, just try to keep up with the rest of the class.

At first, progress on an exponential curve is so slow that you don't seem to be moving anywhere at all... and then suddenly it's happening impossibly fast.

Well, I think we can say that in 2018 we are kicking up that curve. And it's exciting!

It staggers me to think of all the things that were science fiction when I was your age – that still seemed implausible when you were toddlers – but are leaping into reality today.

Let me give you two examples of developments that will define your world, driven by people with your skills.

The first is artificial intelligence: AI.

The term was first put forward at an academic conference in 1956, when I was just three years old.

But it seemed to go nowhere.

A big part of the problem was computers.

A great physicist named Richard Feynman sat down in the 1950s and tried to work out how big a computer would need to be, with 1950s technology, to be able to do one simple thing that any toddler can do. Look at a photograph, and recognise a person.

He estimated a computer that could do just that one thing would need to be the size of the Pentagon in Washington. And the Pentagon is a building so big that it has its own six postcodes.

So you'll understand why the idea of artificial intelligence seemed light years away.

Today, in 2018, Facebook tags your photos by AI and you don't even blink.

AI will be an ever-present force in your lives: an entirely new society of thinking, learning beings, making their way in your world.

It's going to take a lot of work to teach those robots, and all the humans, to play nice and get along.

But you're the ones to do it.

Another thing that seemed like science fiction when I was a student: hydrogen as an energy source.

No, I'm not talking about hydrogen fusion.

I'm talking about using the excess electrical energy from solar and wind farms to split water into hydrogen and oxygen... then capturing the hydrogen to use for heating and transport.

And when we use it, well, you of all people know the recipe. Take two atoms of hydrogen, one atom of oxygen, combine to form one molecule of water. There are no carbon dioxide emissions, just water vapour and heat.

Hey presto, a miracle fuel.

We can make as much of it as we could possibly use, for practically no impact on the planet, for as long as we want.

We could turn the global energy market upside-down.

Now politicians and journalists find this all a bit complicated – but you'll say to me: that's not complicated at all. It's just basic chemistry. So why don't we just do it?

Like most things: it comes down to money. When a scientist named John Bockris came up with the idea of doing this on a massive scale, way back in 1972, solar panels were really, really expensive.

They were so expensive that the only sensible place to use them was on satellites.

But what happened?

The world got serious about climate change.

With our superpowers – science and maths – we got better and better at harvesting cheap energy from sunshine and wind.

The price of solar panels and wind turbines plummeted. Solar panels are about a thousand times cheaper today than they were in the early 1970s.

And now it's happening. With cheap solar electricity, the hydrogen revolution has started. We're building the hydrogen plants, right here in Australia.

We're turning sunshine into money.

It's stunning.

But I haven't even mentioned all the other revolutions I keep an eye on. The rise of electric cars. Our soaring ambitions in space. In biology, the new tools that allow us to literally snip life-threatening diseases out of the human genome.

So I hope you wake up every morning fired with the importance of being alive, at this pivotal moment in human history, and imagining all the ways that you could use your superpowers for good.

Now along with superpowers, superheroes have capes.

Sadly, we won't be handing out capes today.

But you have been presented with some very attractive blazers instead.

Think of that blazer as your superhero cape, because in it you will do astonishing things.

And superheroes always start their journeys with a bit of advice.

So here's some advice from your Chief Scientist: you're doing exactly what you need to do.

Don't fixate now on a specific career.

Just keep perfecting your skills. Stay hungry for new knowledge. Truly master your subject matter. Never get comfortable in a place where the learning is easy. Surround yourself with people who challenge you, and inspire you.

Keep doing that, and I promise: the future will find you.

And you'll be ready when opportunity comes knocking.

It's probably traditional at this point to wish you luck. But you know better than anyone that success isn't luck: it's commitment. You've got all the commitment you need.

So as your Chief Scientist, I'll just say: may the Force be with you.

