



THE HENRY PARKES ORATION 2017
A steed to be harnessed:
Science for the benefit of the nation

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Sir Henry Parkes Memorial School of Arts, Tenterfield
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I stand here this afternoon as a proud Australian, born in Australia to parents born in Australia.

All four of my grandparents, by contrast, were born British subjects in the colony of Victoria. Although they became Australians in 1901, frankly I am not sure that they truly and fully relinquished the whole of their birthright – to be Victorians.

Like so many then, and some people even now, they were parochially state-based when it came to who was selected ahead of whom in the Australian cricket team, or who had the cleanest water supply, or the best or the fastest or the nicest or the tallest or the most beautiful of anything we could compare and contrast.

Notwithstanding that, my four grandparents grew up Australians even if they had to wait until 1949 to be legally citizens of their own country when the Australian Citizenship Act (1948) came into force.

Their lives were profoundly affected by Henry Parkes, a man they never knew though probably knew of, when he added his weight to shift the murmurings about federation into concerted but considered action – here in this hall in Tenterfield where it was observed by a member of the audience that *for the first time the voice of an authoritative statesman gave soul and utterance to the aspirations of a people.*¹

Imagine.

In all that followed, neither Parkes nor his colleagues assumed that federation was so obviously beneficial that the federationists did not have to make their case. They knew there would be opposition, and there was.

They knew that there were implications for trade, for immigration, for taxation, things that are easy to speculate about in newspapers but not necessarily easy to understand or explain.

And they knew that in politics you kick where it hurts – in the hip-pockets. Which is what their opponents proceeded to do as well.

So Parkes and his colleagues set out to make the case. He made it in more than a dozen speeches in the nine or so months between Tenterfield and the Conference in Melbourne in 1890. And a lot more thereafter.

¹ *The Cockney Columbus*, 1898. Page 277. See B. R. Wise. (1912) *The Struggle for Union: Episodes in the Movement for Australian Federation*. University of Sydney Library, online: <http://adc.library.usyd.edu.au/data-2/fed0042.pdf>.

He said many things, and many things often – in the knowledge that every speech in every town might count.

Among the many, there are four words that should be etched in our Australian souls: at the Sydney Town Hall in 1891, Parkes proposed a toast to *one people, one destiny*.²

Today we would probably call it a mantra, although it has too many characters for our impatient times.

When proposing that toast Parkes noted that the Federation should embrace the power which is conferred by bringing science as a harnessed steed into our service and by bringing to bear upon our fortunes all the abundance of an advanced civilisation.

Our country voted itself into existence. We got our Federation by peaceful and democratic means – possibly the only country ever to have done so.

We got there because we were led by people who argued principles, who were consistent and coherent, and who used evidence and logic with patience and commitment. People who could negotiate and compromise without losing sight of their primary goal.

They took care to articulate a case for their cause and didn't take it, or the people, for granted: there were leaders who ultimately crafted and delivered the Constitution and our way of governance – people like Deakin, Barton, Griffith – all persuaders and masters of detail. Experts in their craft. People with vision who knew how to construct and use a narrative to paint the picture as they made their case.

Imagine.

My grandparents and their parents heard the words and set about contributing to the new Commonwealth of Australia.

Of course I can't really say what they saw when they looked to the legacy they would leave. But I think it's significant that our forebears settled on that ancient word: Commonwealth – meaning the common weal or the common good.

'Commonwealth' would have been a word in their minds, because it appeared in a popular song of the time – the song that became our national anthem, after we tidied it up a bit.

We don't often notice, but we kept two verses.

*Australians all let us rejoice,
For we are young and free;
We've golden soil and wealth for toil;
Our home is girt by sea;
Our land abounds in nature's gifts
Of beauty rich and rare;
In history's page, let every stage
Advance Australia Fair.
In joyful strains then let us sing,
Advance Australia Fair.*

*Beneath our radiant Southern Cross
We'll toil with hearts and hands;
To make this Commonwealth of ours
Renowned of all the lands;
For those who've come across the seas
We've boundless plains to share;
With courage let us all combine
To Advance Australia Fair.
In joyful strains then let us sing,
Advance Australia Fair.*

The first talks about wealth. Golden soil, girt by sea, nature's gifts. Mines, beaches and koalas.

The second talks about a Commonwealth renowned of all the lands. Toil with hearts and hands. Boundless plains to share with those who've come across the seas; with courage let us combine.

You see the difference?

² Henry Parkes (1891). "One people, one destiny : speech of the Hon. Sir Henry Parkes, G.C.M.G." Online: <https://parkesfoundation.org.au/resources/sir-henry-parkes-2/in-his-own-words/>.

Wealth is what we happened to find.

A Commonwealth is what we chose to be.

We chose to be one people with one shared destiny.

We chose to be more than lucky – we chose to be ambitious, courageous, generous and fair.

And I think that ought to mean something, still.

While we have done pretty well, and have a lot to be proud of, we haven't got everything right in our 116 years. Above all, we have a better understanding of our relationship with Indigenous Australians, their culture and their relationship with the land that began long before Europeans arrived. I hope that a contemporary Henry Parkes would still toast *one people, one destiny* and that we would make it real.

To make our country better than it is, maybe better than the federationists imagined, we will need expertise and we will need leadership that can take us to a higher plane – a united country where we, all of us, our one people, do indeed share that one destiny. A country where we are unaccepting of intolerance, hostile to inequality, fair in our use and distribution of our resources, civil and civilised and dignified, and proud of what we do together. In the world we share.

What does that *world we share* actually mean? It has a local sense, of course. We share this room this afternoon, and each other's company. Obviously. We share this town for a time, maybe this State, and wherever we live we share this Commonwealth. But how we live, how we build our country is affected by how people in other places build theirs: how they act, how they respond to issues, how they conduct themselves. Our existence is not a zero sum game.

To explain what I mean, let me turn to science and the words of a scientist.

Forty years ago, in 1977, a spacecraft set off from Cape Canaveral in the United States.

Its name was Voyager.

As the world looked on, it lifted off and travelled on, for 13 years.

Through the Cold War.

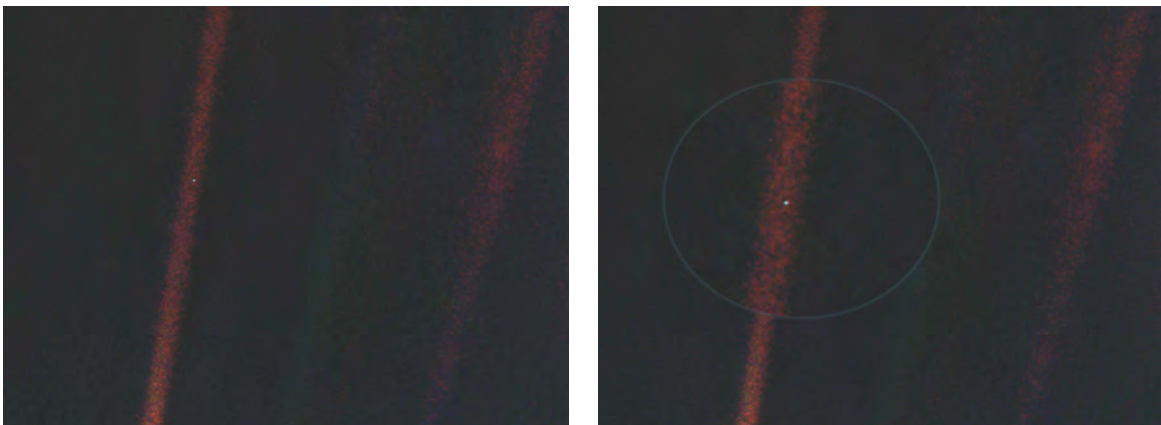
Through the birth of the internet and the fall of the Berlin Wall.

Through famines, and recessions, and prime ministers, and presidents.

By Valentine's Day, 1990, it was at the edge of the solar system, six billion kilometres from home; and the global population had grown by more than 1 billion people since it left.

NASA commanded it to turn its cameras back towards Earth – and take our picture.

The image the Voyager captured became known as the Pale Blue Dot.



And the great scientist Carl Sagan wrote the only words that needed to be said.³

Look again at that dot. That's here. That's home. That's us. On it everyone you love, everyone you know, everyone you ever heard of, every human being who ever was, lived out their lives... the (entire) history of our species lived there -- on a mote of dust suspended in a sunbeam.

... Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity, in all this vastness, there is no hint that help will come from elsewhere to save us from ourselves... Like it or not...Earth is where we make our stand...

... There is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. To me, it underscores our responsibility to deal more kindly with one another, and to preserve and cherish the pale blue dot, the only home we've ever known.

I think of Carl Sagan's words every time I turn on the television, and people are shouting, and I know it must be politics because it happens in Parliament – and I watch the people we employ to lead our country behave in a way we would not tolerate in our own small children.

At a critical time in world affairs, we need leadership of the calibre the federationists provided: courageous, articulate, persuasive; experts in their craft intent on building an enduring legacy – acting out what our present Prime Minister said seven years ago: *it is our job..to look over the horizon beyond the next election..and do what we can to make Australia a better place, a safer place for future generations to live in.*⁴

Seven years on, when we need people with vision and principles who can construct and use a narrative, leaders who can describe the sort of Australia they are intent on building and show how their policies meld to get us there, too often we get theatre underpinned by populism riddled with self-interest.

We are told by (senior) politicians that you can't trust politicians. Really! It is not that we might not accept the point, but trash the brand because they can't be bothered to work hard enough to develop an argument to persuade us that their position is the right one.

That intellectual laziness is too common: oppose something because it is the easy way to possible electoral advantage. Support us, not them - because we are not them.

Imagine. Imagine how much better we could be.

Then I get a little bit nostalgic for a time when I think politics seemed to be something to be taken more seriously, with speeches in Parliament that were carefully prepared, and printed in the newspapers.

A time when it mattered to politicians that people beyond their own electorate cared. And since they cared, politicians did what they could to explain the complex so that when people voted, they would choose the vision and the policies they thought were better, the ones they thought would make Australia a better place.

Reality strikes when I look back to the debates that eventually gave birth to Australia.

I see that politics then were probably a good deal like politics now: sometimes worthy, sometimes shameful, often petty and, for the most part, distracting theatre when there was serious work to be done.

That's not all though; I **also** see very clearly how committed and determined leadership can make a real difference.

The reality is that the dross burns away, and the things that matter endure.

³ Carl Sagan (1994). "A Pale Blue Dot." Public lecture, Cornell University, 13 October.

⁴ Malcolm Turnbull (2010). Carbon Pollution Reduction Scheme Second Reading Debate, Commonwealth Hansard, 8 February. Online: http://parlinfo.aph.gov.au/parlInfo/genpdf/chamber/hansardr/2010-02-08/0018/hansard_frag.pdf;fileType=application%2Fpdf.

So I turn off the television and the shouting people behaving poorly. And I think about our planet, our home.

I think of our small fraction of a fraction of one pixel, the bit we call Australia, the bit that we pledge to make renowned of all the lands.

What do I see?

FIRST, that we are a continent unlike any other, with species and ecosystems that are found nowhere else, and I think if we don't study them or treasure and sustain them, who will?

SECOND, I see that the planet is warming and that the global climate is changing – and so is ours. And I see that there is very strong evidence that the changes we currently experience are at least partly a consequence of human activities.

The costs of change will be counted in things that matter to us: the Great Barrier Reef, agriculture, rural communities, coastal cities, water and energy supplies, health... to name just a few.

Something must be done. As an American colleague once said: **we** have to avoid the unmanageable as **we** manage the unavoidable.

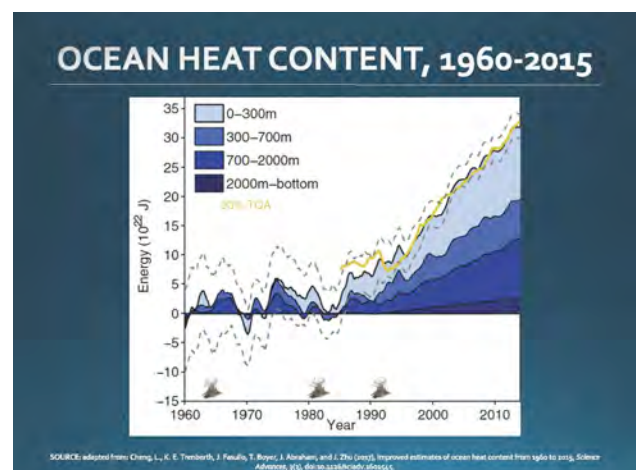
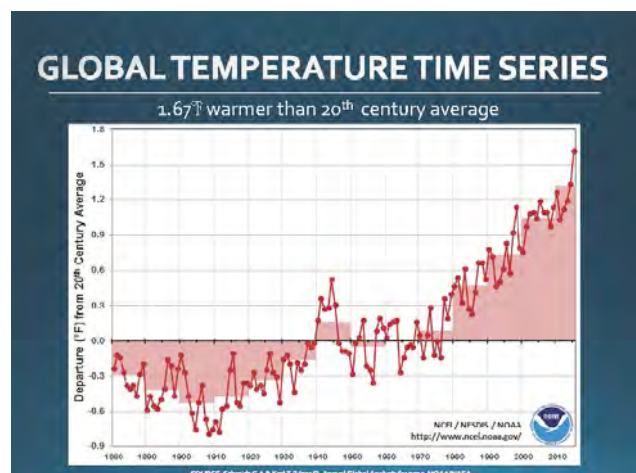
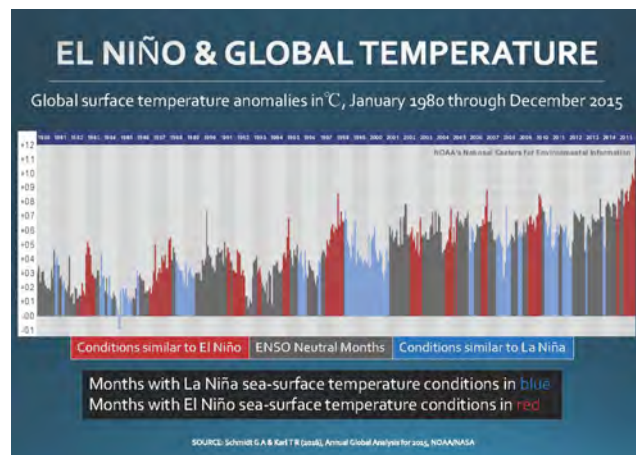
No one country in isolation can do that, but it does require strong leadership for the '**we**' to yield a suitable collective and effective global response for **us**.

Given our vulnerable position, I think we should play a leading role as the world crawls to appropriate global action. If we don't, or if governments around the world do not make the decisions that need to be made, we had better prepare ourselves for the consequences of their inadequate responses; if we don't, who will?

THIRD, I would see that our economy is heavily reliant on what we dig up and sell, and there will come a time when the world doesn't want to buy it in the quantities we need to sell it, and if we don't create new jobs in new industries to carry us, who will?

FOURTH, I would see that the spread of artificial intelligence and automation is changing the world of work, and if we don't prepare our children, and our companies, to adapt, who will?

FIFTH, I would see that governments at all levels will be confronted by increasingly complex challenges requiring an under-



standing of ever more sophisticated scientific data, and if we don't bother to collect the data or to build our capacity to use it wisely, who will?

SIXTH, I would see that all of us will be asked to grapple with almost unfathomable technologies rushing fast from the world of research into our lives.

Technologies that might allow us to edit the genetic profiles of our children, put cars with no drivers on the roads, wipe whole species off the earth in the space of years. Technologies that will let us do more but won't tell us whether doing more is good or bad, right or wrong. We have to decide which is which.

If we don't think in advance about which to adopt, how to adapt and which to ignore, who will?

SEVENTH, I would see that many of the problems we now face won't be visible if we simply rely on what radio or television pundits tell us is "common sense", or if we think that the only thing that matters is what I want, me, right now.

If we don't cast our minds forward a bit, to the Australia we would be pleased to bequeath to coming generations, who will?

EIGHTH, I would see that the world is facing many great challenges in health care that only collective action can solve - challenges like epidemics, pandemics, complications from the global spread of bacteria resistant to our present antimicrobials.

If our country doesn't harness science to make our contribution to the solutions we need, how can we expect everyone else to do our share as well as their own?

And finally **NINTH**, I would see that all of these things will generate confusion and concern, but also creativity, optimism, and appetite for change in the nations where people come together and decide that their dreams and not their destiny will define them.

I would look at those things, and I would say that in each of them science is a critical capability, *a steed to be harnessed* in the words of Parkes. Harnessed for our direct benefit and for the place of our Commonwealth in the world – a constructive and respected global citizen that plays its part as we work to preserve and cherish that *mote of dust suspended in a sunbeam*.

In our Commonwealth, science should be part of everything we do.

Our defence. Our agriculture. Our mining. Our manufacturing. Our cities and regions and infrastructure. Our literature and culture and media.

Science would help us do all the things we need to do for our country to be *renowned of all the lands*.

Science will help us solve or manage or mitigate many of the problems we face. But it is not just about problems, science can take us to new heights as we *advance* our *civilisation*⁵, because science is not only something we do, it is also a culture; it is a way of doing and a way of thinking.

It is more than just smart people being smart. It should have an influence on our community way beyond the laboratory or a clinic, a space station or a farm.

Science is ambitious - it points us to the future, and gives us hope.

Science is cooperative, because everyone might be trying to be the best, but the wisest amongst us know that you only get to be the best with the help of others.

And science is patient, because scientists know that every great leap for humanity is really many thousands of tiny, stumbling steps, that only add up to something important with time.

These are characteristics that should define our community: smart, ambitious, cooperative, patient, determined.

⁵ Henry Parkes (1891). "One people, one destiny : speech of the Hon. Sir Henry Parkes, G.C.M.G." Online: <https://parkesfoundation.org.au/resources/sir-henry-parkes-2/in-his-own-words/>.

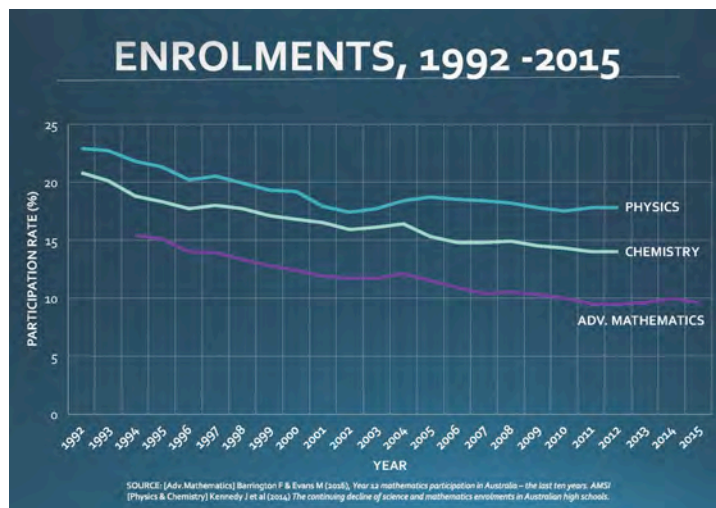
I would recognise all this, and say to myself that we must ensure that our science, our scientific expertise and is ready to serve Australians, and the world, as we require it: constantly.

Would I rely on the market to pull through all the skills we need, across all the scientific disciplines, and pay for the critical research, in the national interest?

No – because I would look at the data and see that it doesn't.

I would see that both performance and participation in science and advanced mathematics in schools is in steep decline – notwithstanding sporadic calls for more from what we call 'the market'.

The last time we collected the nation-wide data, in 2014, participation in science subjects in Year 12 was at a twenty year low.⁶



That's right - students who were born after the internet, who grew up in a world of laptops and mobiles, were less likely than their parents to study science.

At Year 4 level, about one in two students say they like science.⁷

By Year 8, it's one in four. Halved in four years of schooling across the primary/secondary boundary.

The gap between the children in the highest income bracket, and the lowest income bracket, is the equivalent of about two and half years of schooling.

That's also the gap between Indigenous and non-Indigenous students.

Country students are on average a year and a half behind those in the city.

Intelligence isn't allocated by postcode, but it would appear that opportunity is.

I would look at all that evidence and ask how have we let it come to this? Whatever happened to *one people, one destiny*?

The answer is simple: it happens because we let it happen. Our 'leaders' have let it happen. We can't allow it to continue.

There is a clear role for government if we are to reverse the trend. That role is in both education – ensuring all our community is prepared for the future – and research.

Education is obviously critical to the development of our country – and the way we develop and support our teachers has to be better. Teaching has to be given the esteem that such a critical part of our future warrants – support at a level we have never reached before.

Research lets us build the knowledge base we need to develop a future in which we *bring to bear upon our fortunes all the abundance of an advanced civilisation*.⁸

Appropriate government support would make sense to me, because I would know from the history of science and technology, in this extraordinary era we call the Information Age, that almost every innovation of any significance can be traced back to publicly funded research.

⁶ Kennedy, Lyons and Quinn (2014). *The continuing decline of mathematics and science in Australian high schools*, Teaching Science, Volume 60, Number 2.

⁷ See Office of the Chief Scientist (2016). *Science and maths in Australian secondary schools*. Online: <http://www.chiefscientist.gov.au/2016/07/science-and-maths-in-australian-secondary-schools-datasheet/>.

⁸ Henry Parkes (1891). "One people, one destiny : speech of the Hon. Sir Henry Parkes, G.C.M.G." Online: <https://parkesfoundation.org.au/resources/sir-henry-parkes-2/in-his-own-words/>.

Research is about knowledge and understanding. It may take a long time to come to fruition, and a lot of research doesn't have particular commercial advantages – sometimes not ever, sometimes not for a long time.

But we do research to learn more because we want to know more – driven by an insatiable curiosity.

Even though learning and curiosity are a potent pairing, we can't assume that a corporate board somewhere is going to be sufficiently motivated by it to get their shareholders to pay for it.

There is a continuing role for government – because there is a critical public interest and that is what governments are supposed to look after.

I would gird my loins and grit my teeth and tell our leaders something that they might not want to hear.

We have to invest in science and education. We have to build then nurture expertise.

We have to do it strategically, and at scale.

We have to demand that of our governments, just as we demand that they keep the lights on and collect the bins.

We have to ready our Commonwealth for new challenges: in the interests of all of us.

If we do, I think we could agree on a new expectation, and it would be something like this.

All of us should leave school with at least enough knowledge of science to know what it is, to be able to distinguish science from snake oil, and to take an interest in the way that science, mathematics and subsequent technologies will shape our lives.

Enough of us should leave school with the preparation to study science at a higher level, across all the disciplines.

And we wouldn't rely on the market to direct teenagers into the right courses through the power of its magical mind rays.

No, we would think about what the future of our country should be and then identify what the economy to support that future should look like – we will get the sequence right at last, an economy shaped to support the vision rather than limit it; we would work backwards to the messages we need to send to our children. Other countries do it, western liberal democracies we might be happy to compare ourselves with do it: planned, strategic, determined.

When we look to the horizon, we would also see that we need people with science degrees in all industries and in many roles other than just research positions – for their knowledge and for the culture they bring.

We want people who understand science starting companies, planning cities, working on farms, and teaching in schools.

Finally, we should support those students who do have the ambition and the ability to be practising scientists.

We would do them the courtesy of a strategic and forward-looking national science policy, with bipartisan support, so that they could plan good careers in science in Australia.

They would be joined by smart people, from across the seas, who would look to Australia as everything we promise in the national anthem.

And we would welcome those people. We would honour them for choosing to be Australian.

We might even elect them to Parliament, if they can get their paperwork sorted.

But if nothing else, we would strive to be better; to get better.

We would never accept that success simply means getting something done, no matter how low the bar may be set.

Our leaders would rise to the challenge and develop a serious vision for the future of our country, along with smart evidence-based policies to deliver that vision. For our part we would be persuaded to vote for the best.

Expertise and leadership would combine to take us where we could get to because that's how the world changes – by people willing to say what they believe, stand for principles, marshal evidence, build support and enact. People more concerned with what they do with their job than simply how to keep it.

As Carl Sagan said in 1994(!): If we continue to accumulate only power and not wisdom, we will surely destroy ourselves...If we become even slightly more violent, short sighted, ignorant, and selfish than we are now, almost certainly we will have no future.”⁹

Presuming that we don't want to destroy ourselves, we need our leaders to be wise, courageous and people of principle, who use their power for the common good.

Our future depends on it; so we must *harness the steed* and use it to bring benefit to our fraction of a fraction of a pixel as well as to the *mote of dust suspended in a sunbeam* that we share.

One people. One destiny.

One planet. One home.

Imagine.



⁹ Carl Sagan (1994), *Pale Blue Dot: A Vision of the Human Future in Space*. Random House.