

Mary Harney
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Ladies and gentlemen and especially the new graduates, good evening.

I graduated with a Science degree from Monash in 1978 – yes nearly 40 years ago. Causes me to pause for breath

Although I can remember the day and the pride I felt and that of my parents, just as you are today.

But I can honestly say I don't remember that graduation address at all.

I'm not sure mine will be any more memorable and in any case I have resisted any attempt to liven it up with jokes as under strict instructions from my children to not "go there" as apparently, I am the least funny person they know.

So the bar is not high but if there is one thought I want you to remember – life is not linear. I can say that as a biological scientist.

But rest assured, whatever projections you have for your career tonight, they won't conform nor happen. It will be far more varied and rich than you can imagine, and more global than for preceding generations.

My advice to you is to always say yes to opportunities and then ask the prudent set of whys, and a very non-linear path will unfold.

Maintain the rigour of science, the curiosity inherent in strong scientists, and overlay with courtesy. Always be curious and be courteous for this untraveled path you are embarking on tonight.

Forty years is a long time in science. Imagine doing your science degree with no calculators or computers (or social media for that matter) as I did.

I did VCE with slide rules and log books which seem like ancient history now. The big brick HP calculators came in while I was at university.

The IBM PC came 3 years after I graduated and the first Macintosh 6 years after I graduated. A world without personal computing devices – unimaginable.

Even some of the aspects I learned in immunology in 1977 such as antibodies, were theories – unbelievable now.

This pace of change has made for a great ride in my scientific career and I will touch on more of that presently.

There are fundamentally three things we need for the planet; to feed, fuel and heal. Feed, fuel and heal both our people and our planet.

Science medicine and technology underpins the great human endeavours of our past but is critically essential for the future for our stressed planet.

For that reason, your careers will be not only important to you but indeed to all of us.

Now perhaps more than any time in our history, we need science to conquer so many of our man made challenges which threaten our planet and ourselves.

We need you to be and continue to be at your best.

I don't need to share any thoughts with you about science because your presence down there – and somewhat ironically indeed, mine up here – means you are well ahead of me on that score, possibly even decades.

Your scientific career and global journey however will need more than your specialist expertise in your chosen scientific discipline.

Within a couple of years, odds on, you will have your first promotion and within about five, you will possibly have another one and before you know it you will be heading up:

- The scientific lab
- Or the department of a pharmaceutical company
- Or a section head in a government department
- Or probably a business you have created yourself as an entrepreneur
- Or even more probably in a job that doesn't exist today

And then you will be grappling with business cases, revenue streams, budget setting, people management, collaborative grant applications, unions, policy setting, maybe even board reporting and governance.

Your success will require you to have more than just your scientific acumen. You will need to consciously develop a parallel stream of personal and professional development to get you wherever your non-linear career is going to take you.

It may sound odd given the rigours of scientific thinking that you excel at but you will need to embrace ambiguity as from here on, you will be working with people and their responses to life, and professional situations certainly can't be predicted in a linear or scientific fashion.

I'd encourage you to familiarise yourselves with cognitive psychology and behavioural economics. You'll need it.

I'd like to leave you with three observations this evening; mentorship, ambition, and rate of change.

Mentorship

Mentorship is a very bandied term currently and formal matching Tinder-like programs abound. I believe to be avoided like the plague!

This is not to suggest that mentorship is not important; I believe it to be critical for all of us at every stage.

I encourage you all to think deeply about mentorship in its many guises. And remember that the flip side of mentors is tormentors and quite possibly your first boss may well be just that!

My first great mentor (AKA tormentor) was indeed my first boss.

Incredibly strict about work matters like punctuality, how we responded on landline phone (yes it was that long ago) to doctors and patients, conducted ourselves in meetings with other professionals, standard of dress, cleanliness in the lab, zero tolerance for not wearing of protective gear, and absolutely no frivolity with the other young scientists in neighbouring labs. We were in diagnostic cytopathology and that was a serious pursuit.

I wouldn't say we butted heads; after all, there was almost a 40 year age difference and she had too much composure, maturity and steadfastness for that. But I wanted to move quickly, author my first paper, to have fun at work and organise Friday night drinks.

I resisted the lessons she was teaching me in spades. Over time, I realised that in the politics of public health and hospitals, she was a seasoned campaigner; never losing lab size nor infrastructure nor number of employees.

She was an effective and seasoned trooper in the trenches without getting people off side; always gracious, courteous and steadfast.

She was also phenomenally loyal to her staff. Ultimately she supported me to start my second degree part time, allowing me time off work and then providing an incredibly strong reference to my first promotion at a relatively very young age, in charge of the cytopathology department at RMH in the mid-80s.

It is only as my career has progressed that I have realised what an extraordinary mentor she was.

So my point is that sometimes the mentor relationship won't be formally articulated nor enacted. That doesn't mean it doesn't exist; it is up to you.

Take note of all the influencers around you:

- Note how a good chairperson chairs a meeting and those that don't
- Note when meetings are well planned with pre-reading and when some are not
- Note when great managers have a strong and positive culture and when some don't
- Note when a great manager professionally develops staff and note the ones that don't

That last point; mindful of the old saying: CFO asks CEO, “What happens if we invest in developing our young people and they leave us”. CEO response, “What happens if we don’t and they stay?”

Always have an eye to your own development but make it easy for your boss to support you

So I hope you will see from this, that you will learn as much if not more from observing positive workplace situations and negative ones, it is up to you to develop yourself from these observations.

Basically be in a self-imposed but constant state of menteeship from the get go of your career.

And then of course there will be the more formal approaches of monthly coffees or so, where you identify someone you admire to draw on their wisdom. At any given stage, there may be multiples of these individuals helping you.

An attribute that is deeply imbued in high calibre mentors, and for that matter good managers and terrific employees, is optimism. General Colin Powell once said, “Optimism is a force multiplier.”

So for your own mentorship program:

- Be in a constant state of menteeship
- Remember that optimism is a force multiplier
- And of course, be curious and be courteous

Ambition and followership

Ambition

There is also a notion of followership; it is not familiar to many but it is the immutable inverse of leadership.

There is so much focus on leadership today. In management speak, in courses, MBA’s, our political arena, our military, our sports field, but think about it– it’s a fairly simple numbers game.

The top of the tree only has one leader –proportionately there has to be a larger number of followers

The reality for most of us is that our time in our career may well be defined as being great followers, as not everyone can get to the most senior or leadership position. There are only 200 CEO’s of the top 200 companies in the ASX or eight Chancellors of the Go8 universities, for example.

In essence however, the attributes of strong followership are the same attributes we seek in our leaders. Practising effective followership throughout your career will stand you in good stead to constantly move up in your own career.

Effective followers are defined as enthusiastic, intelligent, courageous, ambitious and self-reliant (I would add humour to that list) but note it does include ambitious and self-reliant.

So being a good follower doesn't mean just following blindly or always being subservient. It does absolutely mean showing initiative and having a level of healthy ambition.

I encourage you all to have a level of healthy ambition; aim high but understand that if you are not practising active and positive followership in your work environment, you may compromise yourselves.

Don't ever let it be said of you the common management lament that 'someone has their ambitions and competencies really mixed up!' Be realistic about your ambition and actively support or follow your colleagues and those that are supposedly further up the career path than you.

There is also suboptimal followership:

- Yes people (sheep)
- The pragmatics (who don't challenge the status quo or consider visionary solutions)
- The alienated (who carp and undermine)

And by contrast, the stars (you, of course!) or to quote Tim Minchin, "be pro stuff not anti stuff."

Always do whatever is asked of you no matter how whacky it sounds.

I'm not sure how many of you might remember Y2K or the millennium bug that may have caused problems; another example of a time or event that now seems to have come from a galaxy far, far away.

In the years coming up to 2000, there was a widely held view that all the global computing systems had been built on a numbering system and that any dates beyond 31 December 1999 would cause chaos.

This arose because 20th century software had four digit dates so 2000 was indistinguishable from 1900 to the computer.

So on 1 January 2000, it was conjectured that many computer based systems (and by now, that's everything) would malfunction.

Airlines didn't even schedule to fly on that New Year's Day. The concerns were extreme.

I was working in a biotech subsidiary of an ASX listed company at the time and it seemed like this was the single biggest issue or risk facing the corporation.

Myself and the head of microbiology (so non IT folk) were assigned as the reps to the weekly corporate war councils on how to prepare for this. The predictions became gloomier and gloomier as we approached the end of 1999.

We left one meeting quite bemused as the doomsday precautions seemed to be getting way out of hand. We, the non IT mycologist and the non IT COO and I, queried if he genuinely believed it might be this bad or we would have to do half what was being asked of us.

He replied that he was just going to continue to give his wife \$20 a week to buy toilet paper (remember this is 1999 a lot of money). I drew the bait and asked why.

“Well, if everything does go west, there’ll be no power, no refrigeration, then food will go off, then there’ll be food poisoning, everyone will be sick. And also sanitation won’t work, people will get disease, everyone will get sick. Everyone will have the ‘squitters’ and need toilet paper!”

Either he would make a killing in the black market toilet paper business or alternatively, Y2K would be a furphy and he would have a lifetime’s supply of toilet paper.

We were followers in that instance but our involved, measured, optimistic and humorous injections into the parent company represented and displayed the attributes of good followership and ultimately a career upward projection for both of us.

We both espoused the motto be curious and be courteous, optimism is a force multiplier.

Rate of change, own it!

Now to my final point, rate of change. You need to not just experience it but to own it!

I’m mindful of an event that happened in the early to mid-90s. I was travelling on an international flight in business class with a female colleague, the Director of Clinical Trials.

I was going to audit the clinical trials this ASX-listed company was running overseas. We were talking animatedly about the project when we looked up to see two of the staff (male) just staring at our rapid speech probably full of medical acronyms. And in a friendly manner they were on for a chat.

First they started with a ‘Now where are you two lovely young ladies going to your lucky husbands’ type line.

As they filled our glasses we indicated that we didn’t have husbands. They then assumed we were going over to meet sugar daddies (why else would two young, well dressed women possibly be in expensive business class...).

We indicated we were going for work and that it was indeed business. Without missing a beat, they both said in unison, “Really? They have conferences for secretaries?”

By which time we were highly amused (and probably having another glass) and indicated again that we weren’t secretaries.

At this point, this look dawned on their faces; they thought we were a same sex couple! And then, in almost hushed tones, said, “Really? They have conferences for lesbians?”

It was 1995 not 1895. It was inconceivable to these two educated gentlemen who met a lot of business travellers that two women could be at executive level and travelling for their companies for work. So social mores are changing.

No, we are not where we need to be on so many issues; diversity, indigenous equality, poverty, climate change. We can’t take the foot off the pedal on those issues but social change is nothing to the rate at which technology, science and computing has changed.

Looking back

I started school before the JFK Assassination and can remember that day in 1963; saw the moon landing in 1969; did AI testing for infertility before IVF technology in the late 70s.

I’ve seen and worked with Moore’s Law unfold unremittingly over 4 decades; was at work when widespread use of the internet entered the work space; have seen cancer diagnosis change from a 5 year life expectancy to a chronic well managed disease in most cases.

It’s been a great ride, I’ve loved being a part of that ride and involved with the development of science and technology over that time. But I suspect that mine will be nothing like the pace and scale of what your scientific careers will be.

We now produce in an hour the amount of data that all of human kind had produced up till 2006.

From the days of the ancient Sumerian clay tablets, humans have published at least:

- 310 million books
- 1.4 billion articles and essays
- 180 million songs
- 3.5 trillion images
- 330,000 movies, 1 billion hours of videos, TV show and short films, and
- 60 trillion public web pages

All contained in all the libraries in all the world.

When it was first planned to fully digitise the sum of human achievement, it would be compressed to a digital footprint the size of building. Now that digital footprint would fit in a room and possibly with tomorrow’s technology, will all fit onto your phone.

It is said you have more computing power in your smart phone today than President Clinton had in his presidency.

Your cohort has never known any different or alternate universe where you weren't globally connected. Don't ever underestimate the power of this.

This isn't about a big 'wow' about computing or big data or "life was different in my day" or "the pace of change is amazing?"

It's about what all this exponential converging technology change has ultimately got us to; a hyper connected planet.

It is about what we all do about the consequences:

- Artificial intelligence – AI challenges what we think of as intelligence and what it means to definition of our species
- Ownership – a changing concept. Think Airbnb, Uber Netflix. It's not about owning CD's DVD's but access, and immediate access like binge watching Game of Thrones. What does this mean for law, for IP, for copyright and so on and, your freedom to be untethered by bricks and mortar. Just think of the global employment opportunities
- Cognitive computing – adverts in Google and Amazon that 'know' what you are interested in. These algorithms that seem to know more about you than you do, the sheer power of all this connectivity. Medical Groups in US monitor Twitter feeds and other social media and can now pick up disease outbreaks, like Ebola ahead of WHO.

In *The Inevitable*, Healey asserts, "The third millennium (your millennium) will be amazing. This is the time when inhabitants of this planet first linked themselves together into one very large thing, part human, part machine. At its core seven (soon to be 9) billion humans cloaking themselves with an 'always on' layer of connectivity."

Never has the consequence of all this change been so momentous. And the onus to fuel, feed, heal ourselves and our planet, will be on you.

I am optimistic for you and I believe your optimism will be a force multiplier.

So in conclusion, three observations to leave with you, to augment your science credentials.

Remember to:

- First – Seek and understand what you need in a mentor and initiate those contacts at every stage of your career and life. Proactively seek them, don't wait for a match making service. Be in a constant alert state of menteeship.
- Second – Keep a balance between healthy wise ambition and respectful followership. Learn how to recognise the difference.
- Third – We now have converging exponential technologies and a hyper connected planet. It is an exciting time to be in science. Take full advantage of global connectivity and global responsibilities. Understand, relish, enjoy how special your time in science is.

And always be optimistic, be curious and be courteous.

The essence of this is captured in a wonderful reflection from the early 20th century

- God, grant me the serenity to accept the things I cannot change
- Courage to change the things I can
- And the wisdom to know the difference
- The wisdom to know the difference

I salute you and wish you luck for the great endeavour ahead of you.

Good night.