

Research translation and innovation

A report by the EMCR Forum Executive on the Nature Research symposium

On 11 August 2016, some of the Early- and Mid-Career Researcher (EMCR) Forum Executive had the privilege of attending a symposium on research translation and innovation, hosted by Nature Research. The program included an impressive line-up of speakers, successful case studies of academia–industry interactions, and discussion panels. There were some excellent points raised, and we thought it would be useful to summarise some of the discussion and what we learned. As the Chatham House rule applied, attribution of the discussions are not provided here.

Collaboration

Collaboration was, perhaps not surprisingly, a centrepiece of the discussions throughout the day. The symposium even opened with how, instead of ‘publish or perish’ the research landscape has changed to be ‘partner or perish’. Listening to the needs and requirements of (potential) collaborators is key to long-term success.

Here we refer to collaborations as being between organisations, academia and industry, disciplines, or internationally. Collaborations need to be fit-for-purpose, and value needs to be brought to the table by all collaborators; don’t attempt to work with people simply as a box-ticking exercise to have access to another funding source. There is a transaction cost of setting up a collaboration, especially from the industry side where lawyers must be involved.

Running a collaboration between multiple universities in a more industry-like project management fashion with very goal-oriented research and yearly milestones can help both drive the research and (future) interactions with industry.

Measuring value

Value must be obtained in any collaboration or translation of research, whether that value is monetary or through social or environmental good. This is sometimes referred to as impact. Understanding the metrics and KPIs, for yourself and your collaborators, is key to understanding how this value will be measured and will influence how you set obtainable and mutually acceptable goals. For example, keep in mind that unlike most researchers, traditional industry partners don’t admire the problem; they just want the solution.

Increasingly, quality of research alone is not sufficient. Funding bodies in Australia and other ranking systems are increasingly looking at industry engagement and/or impact. The idea is to help drive behaviour change in Australia to further close the gap between academia and industry. (Though keep in mind one should not be box-ticking.)

False dichotomies

There were several false dichotomies that were highlighted throughout the day.

Problem- versus curiosity-driven research

There is not an either/or situation of grand challenges (to solve problems) versus blue-sky style research. As a research community, we need to make sure there's scope for both. With regards to grant proposals to funding bodies, this often comes down to peer review—it's up to us as researchers to make sure there is scope for both.

Translatable versus publishable

There is an ongoing, though increasingly diminishing, view in academia that collaborating with industry (or translating research more generally) means that research cannot then be published. This is due to IP ownership; specifically, commercial-in-confidence or patenting requirements. While it's true that these issues sometimes occur, patenting generally delays but does not stop publication. Expectations from all sides should be discussed early on (see 'Measuring value') to help prevent issues around this. That is, be very deliberate about publication, and design projects and expectations to allow for it.

A career in academia versus industry¹

Having a fluidity of the workforce between what is currently the academia–industry divide will go a long way towards reducing a number of current problems. For example, reducing the problem of reaching in (from industry) versus reaching out (from academia), as stronger professional networks and understanding will develop.

There is a changing landscape in academia, in terms of ranking and funding bodies valuing industry experience and other forms of engagement. However, there are still cultural and attitudinal difficulties faced by those who choose to work in industry. For example, the stigma of having 'failed out' of an academic career, or the fear from selection panels that people who have been in industry will not be successful getting grants when returning to academia.

Other barriers

The main other barriers that were discussed during the day were the effect instability of Australian regulations and financial incentives (such as tax credits) have on businesses, especially small to medium businesses (including start-ups).

IP ownership can also be an issue, depending on the university, the business, and expectations on all sides (see 'Collaboration' and 'Measuring value') Listen to each other and consider what value is required from any given collaboration. Set clear expectations at the beginning, and problems should be minimised.

Flexibility is required in the timing of when industry wants to partner or collaborate with, or seek help from, academia. However, academia is not known for its flexible timetable or short-term projects (this is especially true for teaching academics, and inflexibility is understandable, but still a barrier).

¹ Here we are including start-ups as 'industry'.

The bureaucratic structures of institutions, organisations and universities are not always set up in a way to engage. That is, there can be bureaucratic issues on all sides.

Leadership required

A continuing theme through most of the case studies and discussion panels was about the need for leadership in Australia to help promote research translation and innovation; specifically, the need for certainty and consistency through equitable decisiveness. Leadership is needed to address each and every one of the discussion points above.

Adaption of international models of research translation can (and should) help inspire endeavours in Australia, but a plan that takes into account the local landscape is a necessity. That is, you can't pick up an international model, drop it into Australia, and expect it to work given the local environment and needs (e.g. building a Silicon Valley here).

Recognise our advantages, such as taking advantage of our proximity to Asia. Leverage retirees through mentoring. The discussion about the role of the government was more about removing some of the valleys of death (for start-ups), not on 'fixing' the path to market per se.

Attitude

Changing the culture, or underlying attitudes, is essential for successful research translation in Australia. This includes:

- starting with the belief that we can change the world
- overriding tall poppy syndrome; we have great people, with great minds, and world class skills locally
- commitment to our belief that we can change the world
- believing that part of changing the world might mean not being in academia for a period
- understanding that the (academics') desire to be relevant is critical.

Our takeaways

A discussion paper on [starting the conversation with industry for EMCRs](#) is very timely, given the changing emphasis on industry engagement. Attending this event has helped further shape our thinking towards this goal. We look forward to feedback from the broader EMCR Forum, and hearing from EMCRs about successful academia–industry collaborations. Workforce mobility is an essential ingredient with helping to (further) reduce the gap between academia and industry in Australia. Ranking and funding bodies in Australia are making moves to further value industry engagement, so one of the last remaining barriers is cultural.

What can you do?

- Contribute to our discussion paper on starting the conversation.
- Consider your own attitude and biases about academia and industry.
- Ask yourself, how are you going to change the world?

Our favourite quotes from the symposium

In no particular order (and some are paraphrased):

- ‘Partner or perish.’
- ‘Traditional industry partners don’t admire the problem; they just want the solution.’
- ‘An A-product with a B-team won’t go anywhere, but a B-product with an A-team will.’
- ‘Think of a reaction of Science->innovation->dollars/human solutions, where we want to engineer the reaction to optimise all aspects of the system (rates, yields, etc).’
- ‘Pick a big program, believe in it and yourself, dedicate yourself to it for 10-15 years.’
- ‘Rumours of our incompetence are premature.’
- “Being neighbourly is a mindset. It doesn’t have anything to do with geography.”
- “Collaborations happen between individuals, not organisations.”
- “Public good through private effort.”