Andy Dong – 'Is Innovation Really Worth All The Hype?'

Moderator: Welcome to the Podcast Series of *Raising the Bar Sydney*. Raising the Bar in 2016 saw 20 University of Sydney academics take their research out of the lecture theatre and into 20 bars across Sydney; all on one night. In this Podcast you will hear Andy Dong's talk *Is Innovation Worth All the Hype?* Enjoy the talk.

Andy Dong: Thank you Christian. Now we've already done the sound check but I am American so I do have a relatively loud voice, so if it's too loud say something and maybe we can go mic-less as well. So this is okay? It's not too loud? Very good.

Well first of all I'm really glad that all of you took your time to come out and hear me speak tonight. I'm really pleased that you decided to come out and maybe some of you came out tonight because its tightwad Tuesday's at different bars in the neighbourhood but hopefully the main reason that you came out tonight was to hear me speak a little about innovation.

Now I've already had a little bit of a chance to speak to a few of you about what brought you out tonight and what interested you in the topic of innovation and already some of you have already said "Well, gosh I guess the reason why I'm interested in the topic innovation is that everybody talks about it". The Prime Minister talked about it a lot during the last election and unfortunately one person talked about it a little too much in the last election and didn't make it back in because he didn't do a good job talking about innovation. But nonetheless I like to actually think of the problem with innovation a lot like exercise. Right, we all know we should exercise more and we have people telling us we should be exercising a lot more but unfortunately most of us don't exercise a whole lot. There are a few of us who do a pretty good job of exercising. We hire lots of people to try to help us exercise more but for the most part, most of us are on Instagram looking for the next cronut place to go to and exercise is something that we'll think of a little bit later.

So what I'm going to share with you tonight is something that we don't talk a lot of about when it comes to innovation. And it actually has to do with the very problem of picking the right innovation to pursue. The reason why this is actually an important topic is it's actually a very difficult decision to take. And I want to talk to you about why that decision is so difficult. And in particular what we're really going to address is actually that the common sense way of thinking about making these kinds of decisions which is to try to find more information, look for some evidence, evidence based reasoning, coming up with more criteria, talking to more people and finding more rules, doesn't always necessarily get you to the right answer. And that's what we're really going to talk about tonight. How do you think about these kinds of problems but get to the right answer?

I think we said in our opening, it's about separating the wheat from the chaff but also you don't want to separate the wheat from the chaff so much that all you are left with is actually nothing because you don't even have enough wheat to bake your bread.

So what I'm going to talk to you about tonight is actually something that's a little counter intuitive to what you are probably going to be familiar with. You're familiar with making lots of decisions and lots of choices every single day and you're going to be familiar with the type of thinking processes that I'm going to talk to you about tonight.

But I'm going to introduce to you one specific way of thinking that we have found that actually boosts the rate of accuracy by which you take these decisions and this particular way of thinking actually is something that we do already in every day but we tend to discount its value when we think about innovation projects.

So I'm going to start out just by giving you a little bit of a thought exercise and the thought exercise is the following. You don't actually have to tell me what your answers are going to be because I really just want you to think about how you're thinking through these particular problems. So the first thing is that you have some money. Maybe this is your holiday money, we're going to dip into it and you have three choices. The first choice is you can put it into a bank account. So if you put it into a bank account you know you're going to earn about 3% right? That's the current bank cash rate and we're pretty confident we're going to get our 3% and it's not likely that the banks are going to go bust any time soon so you can pretty much guarantee that if I put my money into the bank account I'm going to get 3%.

Okay, that's one thing you can do, it's not a great return but it's reliable. Now I'm going to give you a second option. And the second option is well you can put your money into a real estate investment. Real estate investment's not too bad. We hear that there are certain up and coming suburbs, they have pretty good returns, maybe I should buy an apartment in one of those up and coming suburbs. Yep? It's not totally reliable. If you do these kinds of investments, and there are many types of investments like these, the regulators often always ask, require that you have to have that notorious statement. Past performance is not a predictor of future performance.

Now I'm going to give you the third type of option, which is what we mean in this particular problem of looking at and selecting interesting innovations to fund. Imagine this, by the way, the story is synthetic but almost real. So two friends, one of whom works for Suncorp and one of whom works for the Bureau of Meteorology. Two rookies. They've come up with this really interesting idea to sell micro insurance based on long term weather forecasts. For people who want to insurance against bad weather for personal events like weddings and birthdays. Okay? So instead of buying a large insurance package, what micro insurance basically means is I'm only going to buy insurance for one little event. I'm only going to buy this for my wedding because I want to make sure that my wedding on the beach is going to be sunny. If it's not going to be sunny you're going to pay me the damage associated with me not having a sunny wedding.

What would you do? How do you think about that particular problem? It's not like the bank problem right? You can't go and say "Ooh I know I'm going to get 3%". We don't really know how much money this company may or may not produce. We're not even sure if in the long run that's actually what they're going to sell. Micro insurance for people who want to buy long term weather forecasts for personal events. So we can't really apply those rules.

Well we might try the second thing. Maybe we look at other companies who have sold things like micro insurance but you know the problem is that there is not that many of them around. It's pretty difficult for us to go find information about those companies. And then we might try to do things like, "Oh well since I don't know that, let's just add more things to look at". This is typically what most companies do in fact when they try to look at innovation projects.

Possibly one of the reasons why some of you have already said, “It’s great the idea comes around but if it’s too difficult, we put it in the difficult bucket”.

So there’s this actually this one company called Bessemer Venture Partners. And what they do is actually quite fun I thought and also very telling to show how difficult of a problem this issue really is. They publish what’s called the Anti Portfolio. So most venture capitalists or any kind of investor will have a portfolio. These are the things I invest in and these are typically the things that people talk about. This is what people get their fame from because I have a great portfolio and it has returns that are much higher than what you can get from any other indices, your beta’s very very high. But they publish the Anti Portfolio. And these are all the things that they didn’t invest in and kicked themselves in the butt afterwards for having not done so. And it’s a very telling Anti Portfolio. So for example, let’s say that you heard me say, well these are two rookies. One from Suncorp, one from Bureau of Meteorology. One who’s kind of been working in a kind of governmentish company for a long time. What does he know or she know about making money? And it’s insurance. Oh my god, way too much regulation. Forget it.

If you thought that, that’s what they thought about PayPal. Two rookies, Internet payment system? Banks are there, highly regulated, bye bye. No thank you. There’s another company they looked at. And this company they applied the rule of margins. I’m only going to invest in a company where there’s a lot of margin on every transaction if you will. So every time they sell something, there’s a lot of money there. Good profits. This company helped people to sell stuff. Stuff from their garage sales. They’re like what? Stuff, junk? How are we going to make money on that? That company is called eBay.

And finally there was another company that they had an opportunity to invest in. And this company made a thing called a search engine. And at the time when this company came around and said, you know, “Come and invest with me, I have a search engine”. They’re like “What”? There are multiple search engines already, there’s this great search engine already called Yahoo and then you have four other competitors which are well resourced. Alta Vista, Lycos and Excite. I don’t know if any of you are old enough to know those company names. They don’t exist anymore. And that company by the way happens to be Google.

So as you can see it turns out that when you make these decisions that you try to apply all these rules that we think are the right rules, I mean intuitively they sound right. Invest in people who have experience, invest in an idea that has a great margin, invest in a thing in which there is really no competitors that you can have a competitive advantage because that’s actually what I learned in my business school classes. The resource based (10:41) invest in companies that have non-imitable not unique not movable resources right?

It turns out that that’s actually just not enough in order for you take accurate decisions when it comes to these types of problems. Because these problems are actually a very interesting class of problems which have the following kind of properties. Number one, we can’t draw any kind of probability distribution over what the outcomes are going to be. So it’s kind of silly to talk about risk in a sense. Because risk demands that you have a utility curve for those of you are in your Mcom programs and what not right? You have to have a utility curve. No curve, no risk analysis. The second thing is that these environments are subject to what are called a very low validity.

In other words, once you make a decision it could be a very very long time before you get any feedback about whether or not your decision was any good. And we know that people tend to be prone to a hindsight bias when that happens. So in other words, you took this decision, multiple years pass by, oh my god it made a lot of money see. I was really smart, I found that company before it made a lot of money. Or, you make a decision, you invest in it, time goes on, it actually went bust. You said "Well, I guess there were a lot of problems. The team probably wasn't very good. The market conditions changed, oh well, I did my very best".

As it turns out though from our research that there is actually a third way of thinking about these particular problems. And it involves a form of reasoning which is called abductor reasoning. See the first, in the first instance when you had your bank option, that's actually an example of what we would call deductor reasoning. You could start from a very good solid rule and I can guarantee you the outcome. All deposits in a bank account will get 3% or whatever it is your bank is giving you. You've put your money into a bank account, you're going to get 3%.

The second one is what we call inductor reasoning. In inductor reasoning you look at past evidence and you try to draw some empirical patterns. So for example, you know that I was walking around tonight trying to look for a pattern, and I kind of found one. I hope none of you break my rule, but I looked around and said "this person is drinking beer, and he's a man. This person is drinking beer, he's also a man. These three people over here are drinking beer, they're also men". So therefore I can come up with perhaps some funny rule that says all beer drinkers are men. And that's inductor reasoning and that's a very common way that people try to find patterns to help them support their decisions.

The final reasoning technique that we have been investigating in our research is called abductor reasoning. And abductor reasoning is not about stealing someone's idea, as typically thought by the word abductor. Abductor reasoning has to do with introducing a brand new hypothesis to explain something that doesn't seem to make sense to you. In other words, you encounter some anomaly. Something new that doesn't quite make sense. Something that doesn't fit within the patterns that you have already seen. And when that happens you're forced to come up with a hypothesis in order to explain what it is that you have seen. It turns out that some of the very best and most interesting start up companies and others are all based upon abductor reasoning.

So for example, if you look at Airbnb, Airbnb ran some very small scale tests early on to determine what it is what they are actually doing. And what they found was, and they wrote about this, which they call their uncomfortable truth, is that people were living with strangers. That's kind of an odd and unusual observation because you don't normally see people living with strangers. So what could be the possible best explanation that will explain why it is that I see people living with strangers. And as they have written, that best explanation happens to be, that people want to live like a local. So their entire business is based upon that abductor hypothesis which may or may not be true by the way, that what people want to do is they want to live like a local.

If you look at Yahoo and Google's IPO filing, you will also find, at least in Google's case, evidence of abductor reasoning. What Google said, which didn't exist at the time, was that there was going to be this thing which is relevant online advertising. Didn't exist really when Google started. That was actually not a well-known concept.

It is certainly today and I can tell you as somebody who worked at Internet 1.0, there was no such thing as relevant online advertising when I was doing the Internet way back when with an ad server called Open Ad server, which also, the company, does not exist anymore. And I can tell you why, because all of that we were able to do was to do ad placements based upon the most non granular criteria. My favourite example being that one time we simply had to get enough page impressions of dog ads for pet foods for pets.com. They don't exist anymore either. And basically what happened, I got a phone call from my CEO saying, "Andy our entire website looks like a dog ad", because every single ad position was a dog ad. We didn't have what Google was talking about.

So what we're finding from our research is that it turns out that when you are encountered or faced with a particular decision which you really don't know what the outcomes could be in which you're going to have very low validity in being able to really look back at your particular decision, that it's very important for you to think about the abductive hypothesis that actually explains why it is that that innovation should or should not exist.

Now there's actually really good reasons why we think we found that particular finding and I'll explain a little bit towards the end of my talk the research that led to that. But it's really quite straightforward in some ways. First of all we're not saying that you should not do any deductive reasoning at all. In other words you should look at the numbers to a certain extent but don't rely upon them completely. But it's very very tempting for us to start and then stop with those deductive rules believing that things that we've seen in the past and thought that they were hard and fast rules are going to hold for the future is a fast way to lull us into believing that the future will never change.

So for example, you can ask Fairfax and their ideas about whether or not classified ads and newspapers would always be coupled. Because that's what Fairfax thought. Fairfax thought for a very long time that there was never ever going to be a situation where classified ads would be decoupled from newspapers. That was their rule. So when Seek came along as an opportunity, they thought yeah, they need us, we don't need them. Turned out they were wrong. Inductive reasoning also has similar kinds of problems. The first of which is that it tends to lead us towards what we call a confirmation bias. In other words, once we see some evidence, all men drink beer, I just start ignoring all the other evidence that actually might make sense but actually should probably change the way I look at this particular problem. It also causes what we call a (18:51) bias. In other words, we tend to pay attention to and give way to much credence to a specific event than we should be doing.

So for example, during the first Internet bust. Basically a lot of companies lost money. But one of the reasons they lost money was a lot of the hardware companies kind of teetered and went out of business. So nobody wanted to do the hardware anymore. Oh my god, Internet bust. No hardware, no hardware, no hardware. This is a very big event for everybody because there was too much money being lost. And there was this funny little guy, he's known as Tony Fidel, some of you may have heard that name. He was trying to shop around this particular idea called a portable music player, piece of hardware. He went to two companies first. He went to Philips and he went to Real Networks. Again depending on how old you are you might know what Real Networks is, they had this software called the Real Player for streaming, they are no longer in business as well. Both of them turned him down. Said, "We don't do hardware. We want software". So he went to 80 venture capitalists and got 80 rejections. Finally there was only one person who gave him an ear, sorry for the pun.

And that person was Steve Jobs. So Steve Jobs saw a potential there and had a different kind of hypothesis about why it is that portable music players coupled with this music store that Apple was working on could be a source of potential value.

So obviously what I'm talking about is the Apple iPod. So all those investors who said no because of a particular (20:27) bias against things that they were doing with hardware because of this big event which basically made them all completely scared about that.

And finally it causes what's called the hindsight bias, which I've already alluded to before. In the hindsight bias what we do is we say look I made this decision in the past, it turned out great, I have no reason to believe why that decision turned out to be great. But it was great, it's kind of like a Donald Trumpism thing, it's going to be great. And so therefore the next time another thing that comes through that looks exactly like that decision I took in the past, I'm like yep, that's it, I'm going to put my money to that because that looks exactly like that fantastic decision I took in the past.

In contrast, when we asked people to do abductor reasoning, in other words let me just repeat, to propose a brand new hypothesis to explain why it is that they think that they see this innovation happening, it turns out that it causes you to overcome some of those bias' because you have to come up with a brand new explanation to tell me why it is that you think this should, or that this should not exist, but the most important part being that abductive reasoning is known to be what's called fallible. In other words we cannot guarantee that that's going to be the right answer. So it causes people to look for evidence, to generate brand new evidence rather than to rely upon what it is that they already know in order to take their decisions.

Now let me finally back up and just say a few words about how it is that we came to this particular finding. As with a lot of research it started with the big disaster. It started with the project that was going on with a colleague of mine who by the way is a student of Professor Dan Kahneman who won the Nobel Prize in Economics although he's a psychologist. And they basically wanted to prove that certain compositions of committees would reject or accept innovative ideas in different ways. That was well proven, in a sense proven by other economists.

So what they did is they came to me and they said "Andy we need innovative design ideas and we're going to give them our business school students and we're going to ask them to look at them and then they're going to select and say yes or no". We're going to fund this project or we're not going to fund this project. We did all the nice work, the student came back to me and said "Andy, guess what? Everything failed. Nobody wanted any of the projects that your students came up with. All of them were rejected unanimously." I thought, well that doesn't surprise me too much and when we looked at the videos we realised wow, all they're doing is applying deductive reasoning. They were saying "Oh where is the money, where is the customer and where is the technological feasibility? I don't see any of this, zero. Reject."

So we thought, this is something that's worth looking into because I knew from my own research and design thinking that people who do design (23:30) engage in a very different kind of reasoning which is abductor reasoning. So we went out and reconstructed our study and looked at the problem in the following way.

First we went and interviewed managing directors and CEO's of multi business companies. So companies that are the kind of company that you probably buy products and services from, but I can't really tell you, but one of them helps you go far places. And we asked them how do you take your innovation decisions? And of course when we asked them these questions it was very interesting, it was very telling. It was almost as if they thought that I was an analyst expecting that they had to give me the right answer.

By and large what they told us of course is that they look at the metrics. But when I asked them what were the metrics, do you remember the metrics? They're like "Oh no no, I don't remember any of the metrics now." So I said, "What did you think about?" Well what they did think about was they looked at the hypothesis. What hypothesis has actually been tested by this particular new innovation that I'm interested in. The CEO of Dolby says the same thing. He says that what they look for in the main innovation that they're interested in, is tell me the thing that I have to believe. Because if I already believe it and know it's true, there are probably other companies that already know that. But I want to look for the thing that is not necessarily true yet. We ran the same experiment now online with hundreds of participants many of whom who had many years of experience in selecting these kinds of projects. And we did two things. In the first group we gave them all the kind of criteria that you need to have to make this kind of decision. And then we gave them a selection of projects, which were randomised. We were also randomised in a sense that some of the projects were definitely good and some of the projects were definitely bad because we got this information from a crowd sourcing funding website. So we knew which project ideas got the most money already.

In the second group we did the same thing, but before we asked them to make a decision we asked them to do some abductor reasoning. We asked them to think about extensions to the projects and we asked them to think about new reasons why they think this could be an interesting idea. And what turned out was that the second group made more accurate decisions. In other words they did better at rejecting the ideas that were not good but they also did better in not rejecting the ideas that were good.

So let me sum up. What I wanted to talk to you about tonight is a particular problem in innovation, which is the particular problem of selecting or choosing innovations. But really this particular problem probably transcends into our personal lives as well. There are many decisions that we have to take in which we really don't know what the outcomes could be. It doesn't make sense for us to think of probabilities and we probably can't even actually obtain more information to help us take these particular decisions. And it turns out that under those particular cases, once you've gone through your deductive reasoning, applying some reasonable rules, once you've gone through your inductive reasoning and looked for some evidence, you need to apply one more type of reasoning. Which is the abductor reasoning. Come up with that hypothesis that you think might explain this particular outcome and it should be a hypothesis that we don't know is true or false. But it turns out that by doing so, coming with a hypothesis is pretty much the second best way to predict the future other than to create the future itself.

And with that, I'd like to close and give you a chance to ask any questions that you might have about my talk or anything else about Australia's performance in innovation. Thank you.

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